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「C 型肝炎救済のための調査研究及び安全対策等に関する研究」

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C 型肝炎ウイルス感染経路に関するシステムティックレビュー

**Systematic review and meta-analysis of infectious route of HCV infection****研究要旨**

**【背景】**C 型肝炎ウイルス (HCV) は血液を介して感染し、肝癌や肝硬変などの重度の肝疾患を引き起こす。感染のリスクファクターとして、過去の輸血、血液製剤などが報告されている。

**【方法】**本研究では、日本およびアメリカにおける HCV の感染経路・感染リスク要因の経時的傾向を把握することを目的に、システムティックレビューを行った。また、HCV 感染経路のなかでもフィブリノゲン製剤による感染については、国内外の報告についてシステムティックレビュー・メタアナリシスを行った。

**【結果】**日本人を対象とした研究では、メタアナリシスの結果、性交渉 (OR=11.84、95%CI: 5.53-25.36)、透析 (OR=11.38、4.49-28.90)、輸血 (OR=4.93、2.71-8.95)、手術 (OR=3.42、1.92-6.07)、鍼治療 (OR=1.49、1.26-1.77) の 5 要因が HCV 感染と有意に関連していた。アメリカ人を対象とした研究ではドラッグユーザー (OR=15.00、7.58-29.68)、タトゥ (OR=2.33、1.49-3.62)、性交渉 (OR=2.24、1.07-4.68)、針共有 (OR=1.81、1.02-3.22)、輸血 (OR=1.73、1.13-2.64) の 5 要因が HCV 感染と有意に関連していた。また、フィブリノゲン製剤については 3 文献のみであるが、非 A 非 B 肝炎または肝炎と有意に関連していた (OR=333.27、2.80-39471.23)。また、急性白血病患者において、フィブリノゲン製剤投与歴のある患者では 12 例中 11 例に、フィブリノゲン製剤投与歴のない患者では 26 例中 4 例に HCV 感染を認めたとする報告があった (1998 年の会議録報告、ID:IC-F020)。また、血液製剤による HCV 感染リスクに関する動物実験 (国内外) について追加で調査した結果、9 つの文献が採用となり、 $\beta$  プロピオラクトン+UV 照射処理、60°Cで 10 時間以上処理、60°Cで 20 時間処理、98°Cで 30 分以上処理された第VIII因子製剤ではチンパンジーに非 A 非 B 肝炎の発症がなかったことを示す報告等があった (ID: Animal-06、Animal-08、Animal-09)。

**【結語】**本研究によって得られた、C 型肝炎ウイルスの感染経路・感染リスク要因ならびに特定製剤による C 型肝炎ウイルスの感染リスクに関する文献調査結果を、今後医療機関に提供し、特定製剤による C 型肝炎ウイルス感染患者の救済のための調査に活用可能であると考えられた。

**A. 研究目的**

C 型肝炎ウイルス (HCV) は血液を介して感染し、肝癌や肝硬変などの重度の肝疾患を引き起

こす。本研究では、日本およびアメリカにおける HCV の感染経路・感染リスク要因の経時的傾向を把握することを目的に、システムティックレビ

ューを行った。また、HCV 感染経路のなかでもフィブリノゲン製剤による感染については、国内外の報告についてシステムティックレビューを行った。

## B. 研究方法

### 1. 日本におけるHCV の感染経路に関する文献調査

#### 1) 文献抽出、文献レビューとメタアナリシスの方法

##### ① データベースと検索方法

文献の検索はPubMed および医中誌を使用した。検索は2019 年10 月24 日より行った。PubMed のキーワードは “hepatitis” AND risk AND (transmission OR route OR cause) AND (Japan OR Japanese)、医中誌のキーワードは(肝炎 /TH or 肝炎/AL) and (感染症伝播/TH or 感染経路/AL)) and (PT=原著論文)である。HCV 感染経路・感染リスク要因の経時的な傾向を把握するために、研究の対象期間は文献データベースに登録されている期間の全ての期間とした。文献データベースから入手した文献以外に、非A 非B 肝炎に関する厚労省肝炎研究班報告書についても検討に加えた。

##### ② 文献の選択基準と除外基準

1) のキーワードで抽出された文献のアブストラクトおよびフルテキストを選別するための選択基準・除外基準は以下の通り設定した。

選択基準・除外基準は以下のとおりである。なお、1989 年以前はC 型肝炎ウイルスが発見されていないため、基準1)-b)を設けている。

##### 【選択基準】

###### (i) 以下a), b)のどちらかをみたす

- a) 1990 年以降に実施された研究で、かつC 型肝炎ウイルスの感染経路・感染リスク要因についての記載がある
- b) 1989 年以前に実施された研究で、かつ肝炎のリスク要因に関する記載があ

るもの

- (ii) 対象者が日本人または日本に住んでいる

##### 【除外基準】

###### (i) 総説

- (ii) A 型肝炎・B 型肝炎・D 型肝炎・E 型肝炎のみを対象としたことが明らかである文献。

#### ③ アブストラクトレビューおよびフルテキストレビューの方法

PubMed、医中誌により抽出された文献のアブストラクトに対し、それぞれ2 名の研究者が独立にアブストラクトレビューを行った (PubMed : E.B.・O.S.、医中誌 : Y.N.・A.S.)。2) の選択基準・除外基準に従い、フルテキストレビューの対象であるか除外であるかを評価した。2 名の判定が異なった場合は、第3 者 (T.A.またはM.O.) が独立に評価し、3 者の話し合いにより最終判定とした。

フルテキストレビューの対象となった文献は、それぞれ2 名の研究者が独立にアブストラクトレビューを行った (PubMed : E.B.・O.S.、医中誌 : Y.N.・A.S.)。2) の選択基準・除外基準に従い、質的統合の文献であるか、除外であるかを評価した。

また、対象者数、オッズ比などHCV 有病率・感染リスクのメタアナリシスに必要な情報が掲載されているか否かの評価も行った。なお、質的統合の過程で、研究の質 (バイアス等) を記載しているが、システムティックレビュー・メタアナリシスの除外条件には用いていない。

#### ④ 質的統合の対象となった文献から抽出する情報

質的統合の対象となった文献から以下の情報を抽出した。

- 論文の基本情報：タイトル、著者、雑誌名、巻号、ページ、DOI
- 研究デザイン：ケースシリーズ、横断研究、症例対照研究、後ろ向きコホート研究、コホート研究

- 研究対象の種類：一般住民、妊婦、病院受診者
- 対象者選出方法：無作為抽出など
- 全対象者数
- 対象者の男女比
- 対象者の平均年齢±標準偏差
- HCV 感染の定義：HCV RNA 陽性、HCV 抗体陽性
- 検討された「リスク要因」：
- 「リスク要因」を持っている対象者数と感染者数（感染率）
- 「リスク要因」を持っていない対象者数と感染者数（感染率）
- リスク指標の種類：オッズ比、ハザード比
- 「リスク要因」に関する粗オッズ比、95%信頼区間、P 値
- 「リスク要因」に関する調整オッズ比、95%信頼区間、P 値、調整因子
- その研究において考えられるバイアス（選択バイアス、情報バイアス）

#### ⑤ メタアナリシスの方法

リスク要因（輸血、手術、透析）を有する集団におけるHCV 有病率について時代別に逆分散法によるメタアナリシスを行った。また、時期に分けてサブ解析を行った。また、対照群を置いている研究が2 つ以上ある場合は、Fixed effect model およびRandom effects model によるオッズ比のメタアナリシスを行った。なお、HCV 感染の定義を、HCV 抗体としている文献、HCV RNA としている文献ごとにサブ解析を行った。

## 2. アメリカにおけるHCV の感染経路に関する文献調査

### 1) 文献抽出、文献レビューとメタアナリシスの方法

#### ① データベースと検索方法

文献の検索はPubMedを使用した。検索は2019年10月24日より行った。PubMed のキーワードは“hepatitis” AND risk AND (transmission OR route OR cause) AND (US OR USA OR America)である。

HCV感染経路・感染リスク要因の経時的な傾向を把握するために、研究の対象期間は文献データベースに登録されている期間の全ての期間とした。

#### ② 文献の選択基準と除外基準

①のキーワードで抽出された文献のアブストラクトおよびフルテキストを選別するための選択基準・除外基準は以下の通り設定した。

選択基準・除外基準は以下のとおりである。なお、1989年以前はC型肝炎ウイルスが発見されていないため、基準1)-b)を設けている。

#### 【選択基準】

(i) 以下a), b)のどちらかをみたす

- a) 1990年以降に実施された研究で、かつC型肝炎ウイルスの感染経路・感染リスク要因についての記載がある
- b) 1989年以前に実施された研究で、かつ肝炎のリスク要因に関する記載があるもの

(ii) 対象者がアメリカ人またはアメリカに住んでいる

#### 【除外基準】

- (a) 総説
- (b) A型肝炎・B型肝炎・D型肝炎・E型肝炎のみを対象としたことが明らかである文献

#### ③ アブストラクトレビューおよびフルテキストレビューの方法

PubMedにより抽出された文献のアブストラクトに対し、それぞれ2名の研究者が独立にアブストラクトレビューを行った（各文献につき 5名の研究者EB, OS, RA, UM, TSから2名が担当した）。2) の選択

基準・除外基準に従い、フルテキストレビューの対象であるか除外であるかを評価した。2名の判定が異なった場合は、第3者（T.A.またはM.O.）が独立に評価し、3者の話し合いにより最終判定とした。

フルテキストレビューの対象となった文献は、それぞれ2名の研究者が独立にアブストラクトレビューを行った（各文献につき5名の研究者EB, OS, RA, UM, TSから2名が担当した）。2)の選択基準・除外基準に従い、質的統合の文献であるか、除外であるかを評価した。

また、対象者数、オッズ比などHCV有病率・感染リスクのメタアナリシスに必要な情報が掲載されているか否かの評価も行った。

なお、質的統合の過程で、研究の質（バイアス等）を記載しているが、システムティックレビューやメタアナリシスの除外条件には用いていない。

#### ④ 質的統合の対象となった文献から抽出する情報

質的統合の対象となった文献から以下の情報を抽出した。

- 論文の基本情報：タイトル、著者、雑誌名、巻号、ページ、DOI
- 研究デザイン：ケースシリーズ、横断研究、症例対照研究、後ろ向きコホート研究、コホート研究
- 研究対象の種類：一般住民、妊婦、病院受診者
- 対象者選出方法：無作為抽出など
- 全対象者数
- 対象者の男女比
- 対象者の平均年齢±標準偏差
- HCV感染の定義：HCV RNA陽性、HCV抗体陽性
- 検討された「リスク要因」：
- 「リスク要因」を持っている対象者数と感染者数（感染率）
- 「リスク要因」を持っていない対象者数

と感染者数（感染率）

- リスク指標の種類：オッズ比、ハザード比
- 「リスク要因」に関する粗オッズ比、95%信頼区間、P値
- 「リスク要因」に関する調整オッズ比、95%信頼区間、P値、調整因子
- その研究において考えられるバイアス

#### ⑤ メタアナリシスの方法

リスク要因（輸血、手術、透析）を有する集団におけるHCV有病率について時代別に逆分散法によるメタアナリシスを行った。また、時期に分けてサブ解析を行った。

また、対照群を置いている研究が2つ以上ある場合は、Fixed effect modelおよびRandom effects modelによるオッズ比のメタアナリシスを行った。なお、HCV感染の定義を、HCV抗体としている文献、HCV RNAとしている文献ごとにサブ解析を行った。

### 3. 国内外におけるフィブリノゲン製剤によるHCV感染

#### 1) 文献抽出、文献レビューとメタアナリシスの方法

##### ① データベースと検索方法

文献の検索はPubMedおよび医中誌を使用した。検索は2019年11月6日より行った。医中誌の検索については、2020年10月7日に検索式を見直し、再度検索を行った。PubMedのキーワードは“hepatitis” AND fibrinogen、医中誌のキーワードは「肝炎 AND フィブリノゲン【絞り込み条件：原著論文のみ】」および「肝炎 AND (フィブリノゲン OR 血液凝固因子製剤)【絞り込み条件：なし】※会議録含む」であった。

フィブリノゲン製剤による薬害肝炎に関する厚労省報告書についても対象とした。

## ② 文献の選択基準と除外基準

1) のキーワードで抽出された文献のアブストラクトおよびフルテキストを選別するための選択基準・除外基準は以下の通り設定した。

選択基準・除外基準は以下のとおりである。なお、1989年以前はC型肝炎ウイルスが発見されていないため、基準1)-b)を設けている。

### 【選択基準 Include criteria】

- (i) 以下a), b)のどちらかをみたす
  - a) 1990年以降に実施された研究で、かつC型肝炎ウイルスとフィブリノゲンについての記載がある
  - b) 1989年以前に実施された研究で、かつ肝炎のリスク要因に関する記載があるもの

### 【除外基準】

- (i) 総説
- (ii) A型肝炎・B型肝炎・D型肝炎・E型肝炎のみを対象としたことが明らかである文献

## ③ アブストラクトレビューおよびフルテキストレビューの方法

PubMed、医中誌により抽出された文献のアブストラクトに対し、それぞれ2名の研究者が独立にアブストラクトレビューを行った (PubMed : E.B.・O.S.、医中誌 : Y.N.・A.S.)。2) の選択基準・除外基準に従い、フルテキストレビューの対象であるか除外であるかを評価した。2名の判定が異なった場合は、第3者 (T.A.またはM.O.) が独立に評価し、3者の話し合いにより最終判定とした。

フルテキストレビューの対象となった文献は、それぞれ2名の研究者が独立にアブストラクトレビューを行った (PubMed : E.B.・O.S.、医中誌 : Y.N.・A.S.)。2) の選択基準・除外基準に従い、質的統合の文献であるか、除外であるかを評価した。

また、対象者数、オッズ比などHCV有病率・感染リスクのメタアナリシスに必要な情報が掲載されているか否かの評価も行った。

なお、質的統合の過程で、研究の質 (バイアス等) を記載しているが、システムティックレビューやメタアナリシスの除外条件には用いていない。

## ④ 質的統合の対象となった文献から抽出する情報

各文献から以下の情報を抽出した。

- 論文の基本情報 : タイトル、著者、雑誌名、巻号、ページ、DOI
- 研究デザイン : ケースシリーズ、横断研究、症例対照研究、後ろ向きコホート研究、コホート研究
- 研究対象の種類 : 一般住民、妊婦、病院受診者
- 対象者選出方法 : 無作為抽出など
- 全対象者数
- 対象者の男女比
- 対象者の平均年齢±標準偏差
- HCV感染の定義 : HCV RNA陽性、HCV抗体陽性
- フィブリノゲン製剤投与対象者数と感染者数 (感染率)
- フィブリノゲン製剤費投与対象者数と感染者数 (感染率)
- リスク指標の種類 : オッズ比、ハザード比
- フィブリノゲン製剤に関する粗オッズ比、95%信頼区間、P値
- フィブリノゲン製剤に関する調整オッズ比、95%信頼区間、P値、調整因子
- その研究において考えられるバイアス

## ⑤ メタアナリシスの方法

フィブリノゲンを処方された集団におけるHCV有病率について時代別に逆分散法によるメタアナリシスを行った。また、時期に分けてサブ解析を行った。

また、対照群を置いている研究について、Fixed effect modelおよびRandom effects modelによるオッズ比のメタアナリシスを行った。なお、HCV感染の定義を、HCV抗体としている文献、HCV RNAとしている文献ごとにサブ解析を行った。

#### ⑥ アメリカFDAレポート調査

上記1)～5)とは別に、FDAで公開されているフィブリノゲン製剤に関する情報を要約した。

### 4. 血液製剤によるHCV感染リスクに関する動物実験

#### 1) 文献抽出、文献レビューとメタアナリシスの方法

##### ① データベースと検索方法

文献の検索はPubMedを使用した。検索は2020年10月7日により行った。PubMedのキーワードは(Blood Coagulation Factor) AND (Chimpanzee OR mouse) AND hepatitisである。

##### ② 文献の選択基準と除外基準

1) のキーワードで抽出された文献のアブストラクトおよびフルテキストを選別するための選択基準・除外基準は以下の通り設定した。

選択基準・除外基準は以下のとおりである。なお、1989年以前はC型肝炎ウイルスが発見されていないため、基準1)-b)を設けている。

##### 【選択基準】

###### (i) 以下a), b)のどちらかをみたす

- a) 1990年以降に実施された研究で、かつC型肝炎ウイルスの感染経路・感染リスク要因についての記載がある
- b) 1989年以前に実施された研究で、かつ肝炎のリスク要因に関する記載があるもの

##### 【除外基準】

##### (i) 総説

(ii) A型肝炎・B型肝炎・D型肝炎・E型肝炎のみを対象としたことが明らかである文献

#### ③ アブストラクトレビューおよびフルテキストレビューの方法

PubMedにより抽出された文献のアブストラクトに対し、2名の研究者がアブストラクトレビューを行った。2)の選択基準・除外基準に従い、フルテキストレビューの対象であるか除外であるかを評価した。フルテキストレビューの対象となった文献は、2名の研究者がアブストラクトレビューを行った。2)の選択基準・除外基準に従い、質的統合の文献であるか、除外であるかを評価した。

#### ④ 質的統合の対象となった文献から抽出する情報

各文献から以下の情報を抽出した。

- 論文の基本情報：タイトル、著者、雑誌名、巻号、ページ、DOI
- 研究デザイン：動物実験
- 研究対象の種類：動物（チンパンジー、マウス、他）
- 対象数
- 対象血液製剤
- 不活化方法
- HCV感染結果
- その研究において考えられるバイアス

### C. 研究結果

#### 1. 日本におけるHCVの感染経路に関する文献調査

##### 1) 文献抽出、文献レビューとメタアナリシスの結果

###### ① 文献スクリーニングのプロセス

医中誌によるキーワード検索では274文献がヒットした。また、厚生省肝炎研究連絡協議会 研究報告（昭和57年～63年）、厚

生省非A 非B 肝炎研究 研究報告書（平成元年～平成9年）、非A 非B 肝炎の予防、疫学に関する研究（平成10年～13年）より16の研究を追加した。その後、タイトルとアブストラクトのレビューにより抽出された182文献がフルテキストレビューの対象となった。フルテキストレビューの結果、79文献がシステムティックレビューに採用された。

PubMed によるキーワード検索では605文献がヒットし、タイトルとアブストラクトのレビューにより抽出された82文献がフルテキストレビューの対象となった。フルテキストレビューの結果、46文献がシステムティックレビューに採用された。

PubMed と医中誌を合わせた127文献のうち、HCV 有病率のメタアナリシスには対象者数とHCV 陽性者数が明記されている輸血24文献、手術8文献、透析12文献が採用され、40対照群を設置している40文献がオッズ比のメタアナリシスに採用された。

② 調査時期別にみた、輸血・手術・透析歴を有する集団におけるHCV 有病率のメタアナリシス

(i) 輸血歴を有する集団におけるHCV 感染率（HCV 抗体陽性率）

研究開始年が1979年以前の文献はなく、1980-89年は5文献（統合有病率5.1%）、1990-99年は12文献（統合有病率15.9%）、2000-09年は1文献（有病率18.2%）、2010年以降の文献はなく、研究年不明6文献であり、全24文献の統合有病率は15.2%であった。

(ii) 手術歴を有する集団におけるHCV 感染率（HCV 抗体陽性率）

時期別にみた手術歴を有する集団におけるHCV 抗体陽性率の推移を図4に示した。研究開始年が1979年以前の文献はなく、1980-89年は3文献（統合有病率

14.3%）、1990-99年は4文献（統合有病率4.6%）、2000-09年・2010年以降の文献はなく、調査年不明が1文献であり、全8文献の統合有病率は6.9%であった。

(iii) 透析歴を有する集団におけるHCV 感染率（HCV 抗体陽性率）

時期別にみた透析歴を有する集団におけるHCV 抗体陽性率の推移を図5に示した。研究開始年が1979年以前の文献はなく、1980-89年は1文献（有病率20.6%）、1990-99年は8文献（統合著効率1.9%）、2000-09年は1文献（有病率11.0%）、2010年以降の文献はなく、調査年不明が2文献であり、全体10文献の統合有病率は2.6%であった。

③ 日本におけるHCV 感染リスク要因オッズ比に関するメタアナリシス

(i) 鍼治療によるHCV 感染オッズ比

3つの研究を統合した結果、統合オッズ比は1.49 (95CI: 1.26-1.77)であり、HCV 感染との有意な関連が認められた。また、研究数が少ないため、公表バイアスの影響については判断不能であった。

(ii) 輸血によるHCV 感染オッズ比

18の研究を統合した結果、統合オッズ比は4.93 (95CI: 2.71-8.95)であり、HCV 感染との有意な関連性が認められた。漏斗プロットでは左右の外れ値がともに同程度存在し、公表バイアスの影響が弱いと判断できる。

(iii) 母乳によるHCV 感染オッズ比

2つの研究を統合した結果、統合オッズ比は0.87 (95CI: 0.23-3.36)であり、HCV 感染との有意な関連性は認められなかった。また、研究数が少ないため、公表バイアスの影響については判断不能であった。

(iv) 透析によるHCV 感染オッズ比

2つの研究を統合した結果、統合オッズ

比は11.38(95CI: 4.49-28.90)であり、HCV 感染との有意な関連性が認められた。また、研究数が少ないため、公表バイアスの影響については判断不能であった。

(v)針刺しによるHCV 感染オッズ比

2 つの研究を統合した結果、統合オッズ比は8.49 (95CI: 4.27-16.88)であり、HCV 感染との有意な関連性が認められた。また、研究数が少ないため、公表バイアスの影響については判断不能であった。

(vi)性交渉によるHCV 感染オッズ比

2 つの研究を統合した結果、統合オッズ比は11.84 (95CI: 5.53-25.36) であり、HCV 感染との有意な関連が認められた。また、研究数が少ないため、公表バイアスの影響については判断不能であった。

(vii)手術によるHCV 感染オッズ比

6 つの研究を統合した結果、統合オッズ比は3.42(95CI: 1.92-6.07)であり、HCV 感染との有意な関連性が認められた。漏斗プロットにより1 例のオッズ比が高値（外れ値）であったため、公表バイアスの影響が強いと判断できる。

## 2. アメリカにおけるHCV の感染経路に関する文献調査

### 1) 文献抽出、文献レビューとメタアナリシスの結果

#### ① 文献スクリーニングのプロセス

PubMedによるキーワード検索では2315文献がヒットし、タイトルとアブストラクトのレビューにより抽出された214文献がフルテキストレビューの対象となった。フルテキストレビューの結果、126文献がシステムティックレビューに採用された。また、そのうちのHCV有病率のメタアナリシスには輸血22文献、手術3文献、透析7文献が採用され、59文献がオッズ比の

メタアナリシスに採用された。

#### ② 調査時期別にみた、輸血・手術・透析歴を有する集団におけるHCV有病率のメタアナリシス

##### (i) 輸血歴を有する集団におけるHCV感染率 (HCV抗体陽性率)

研究開始年が1979年以前は3文献（統合有病率3.8%）、1980-89年は7文献（統合有病率5.4%）、1990-99年は8文献（統合有病率14.1%）、2000-09年は3文献（統合有病率15.1%）、2010年以降の文献はなく、研究年不明1文献であり、全22文献の統合有病率は4.5%であった。

##### (ii) 手術歴を有する集団におけるHCV感染率 (HCV抗体陽性率)

研究開始年が1979年以前の文献はなく、1980-89年は1文献（有病率1.7%）、1990-99年は2文献（統合有病率6.5%）、2000-09年、2010年以降の文献はなく、全3文献の統合有病率は2.4%であった。

##### (3) 透析歴を有する集団におけるHCV感染率 (HCV抗体陽性率)

研究開始年が1979年以前は1文献（有病率14.1%）、1980-89年は1文献（統合有病率21.7%）、1990-99年はなく、2000-09年は4文献（統合有病率10.3%）、2010年以降の文献はなく、研究年不明1文献であり、全7文献の統合有病率は10.7%であった。

#### ③ HCV感染リスク要因オッズ比に関するメタアナリシス

##### (i) 針刺し事故によるHCV感染オッズ比

3つの研究を統合した結果、統合オッズ比は1.77 (95CI: 0.43-7.25)であり、HCV感染との有意な関連性は認められなかった。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

(ii) 鍼治療によるHCV感染オッズ比

2つの研究を統合した結果、統合オッズ比は1.20(95CI: 0.18-8.20)であり、HCV感染との有意な関連性は認められなかつた。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

(iii) 輸血によるHCV感染オッズ比

10つの研究を統合した結果、統合オッズ比は1.73(95CI: 1.13-2.64)であり、HCV感染との有意な関連性は認められた。

漏斗プロットはほぼ左右対称に分布しており、メタアナリシスの結果は公表バイアスの影響は少ないと判断できる。

(iv) ドラッグユーザーによるHCV感染オッズ比

12つの研究を統合した結果、統合オッズ比は15.0(95CI: 7.58-29.68)であり、HCV感染との有意な関連性は認められた。

漏斗プロットはほぼ左右対称に分布しており、メタアナリシスの結果は公表バイアスの影響は少ないと判断できる。

(v) 鍼共有によるHCV感染オッズ比

2つの研究を統合した結果、統合オッズ比は1.81(95CI: 1.02-3.22)であり、HCV感染との有意な関連性は認められた。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

(vi) ピアスによるHCV感染オッズ比

4つの研究を統合した結果、統合オッズ比は0.91(95CI: 0.42-1.97)であり、HCV感染との有意な関連性は認められなかつた。

漏斗プロットはほぼ左右対称に分布しており、メタアナリシスの結果は公表バイア

スの影響は少ないと判断できる。

(vii) 性交渉によるHCV感染オッズ比

10つの研究を統合した結果、統合オッズ比は2.24(95CI: 1.07-4.68)であり、HCV感染との有意な関連性は認められた。

漏斗プロットにより1例のオッズ比が高値（外れ値）であったため、公表バイアスの影響が強いと判断できる。

(viii) タトウによるHCV感染オッズ比

9つの研究を統合した結果、統合オッズ比は2.33(95CI: 1.49-3.62)であり、HCV感染との有意な関連性は認められた。

漏斗プロットはほぼ左右対称に分布しており、メタアナリシスの結果は公表バイアスの影響は少ないと判断できる。

### 3. 国内外におけるフィブリノゲン製剤によるHCV感染

#### 1) 文献抽出、文献レビューとメタアナリシスの結果

##### ① 文献スクリーニングのプロセス

医中誌によるキーワード検索（検索式1、2019.11.06）では42文献がヒットし、フィブリノゲン製剤による薬害肝炎に関する厚労省報告書（日本語）から抽出された7文献を加えた49文献についてタイトルとアブストラクトのレビューを行った。その結果抽出された9文献がフルテキストレビューの対象となった。フルテキストレビューの結果、4文献がシステムティックレビューに採用された。そのうち、1文献が有病率のメタアナリシスに採用された。オッズ比のメタアナリシスに関する情報を有する文献は含まれなかった。

医中誌によるキーワード検索（検索式2、2020.10.07）では106文献がヒットし、タイトルとアブストラクトのレビューを行った。その結果抽出された23文献が

フルテキストレビューの対象となった。フルテキストレビューの結果、10文献がシステムティックレビューに採用された。オッズ比のメタアナリシスに関する情報を有する文献は含まれなかった。検索式1の結果との重複文献が1つあり、最終的に検索式1、2をあわせた13文献がシステムティックレビューに採用された。

Pubmedによるキーワード検索では615文献がヒットし、フィブリノゲン製剤による薬害肝炎に関する厚労省報告書（英語）から抽出された30文献を加えた645文献から重複1文献を除く644文献についてタイトルとアブストラクトのレビューを行った。その結果抽出された68文献がフルテキストレビューの対象となった。フルテキストレビューの結果、25文献がシステムティックレビューに採用された。また、そのうち、12文献が有病率のメタアナリシスに採用され、3文献がオッズ比のメタアナリシスに採用された。

また、急性白血病患者において、フィブリノゲン製剤投与歴のある患者では12例中11例に、フィブリノゲン製剤投与歴のない患者では26例中4例にHCV感染を認めたとする報告があった（1998年の会議録報告、ID:IC-F020）。

## ② 時代別にみたフィブリノゲン製剤投与例におけるHCV有病率メタアナリシス

研究開始年が1979年以前は3文献（統合有病率29.8%）、1980-89年は6文献（統合有病率0.4%）、1990-99年ではなく、2000-09年は1文献（有病率3.2%）、2010年以降の文献はなく、研究年不明3文献であり、全13文献の統合有病率は2.8%であった。

## ③ フィブリノゲン製剤によるHCV感染リスクオッズ比メタアナリシス

選択された文献のうち、フィブリノゲン

製剤に関する文献のうち、非投与例を含むものは3文献であった。これらをメタアナリシスに用いた。3つの研究を統合した結果、統合オッズ比は333.27(95CI: 2.80-39471.23)であり、HCV感染/肝炎との有意な関連性が認められた。

## ④ アメリカFDAのフィブリノゲン製剤に関する情報要約

アメリカFDA（Food and Drug Administration）は出血時あるいはフィブリノゲン低値に対する治療薬としてフィブリノゲン製剤を1947年に初めて承認した。その後、1977年までに計5種類のフィブリノゲン製剤が承認されている。しかし1977年にフィブリノゲン製剤の治療効果が不確かであること、肝炎のリスクがあることを理由に承認を取り下げた。承認取り下げに関しては、Federal Register (vol43, No4. Jan6, 1978. p1131-1132)に以下のように記載されている（以下原文のまま）。

## FIBRINOGEN(HUMAN) Revocation of Licenses

**Summary:** This document announces that all licenses issued for the manufacture of the biological product fibrinogen (human) were revoked as of December 7, 1977, and the sale, barter, or exchange of fibrinogen(human) by any manufacturer was prohibited as of that date. This action was taken at the request of the licensed manufacturers because the effectiveness of fibrinogen(human) is questionable and other products that carry lower risks of transmitting hepatitis may be used in its place. The Commissioner further gives notice that fibrinogen(human) already sold and delivered by the

manufacture may not be resold after July 1, 1978.

*FEDERAL REGISTER, VOL.43, No.4-FRIDAY, JANUARY 6, 1978*

その後FDAは2009年に先天性フィブリノゲン欠損症の急性出血時への治療としてあらたにフィブリノゲン製剤(RiaSTap™)を承認した。次いで2017年にはフィブリノゲン製剤(FIBRYNA®)を承認した。

#### 4. 血液製剤によるHCV感染リスクに関する動物実験

##### 1) 文献抽出、文献レビューとメタアナリシスの結果

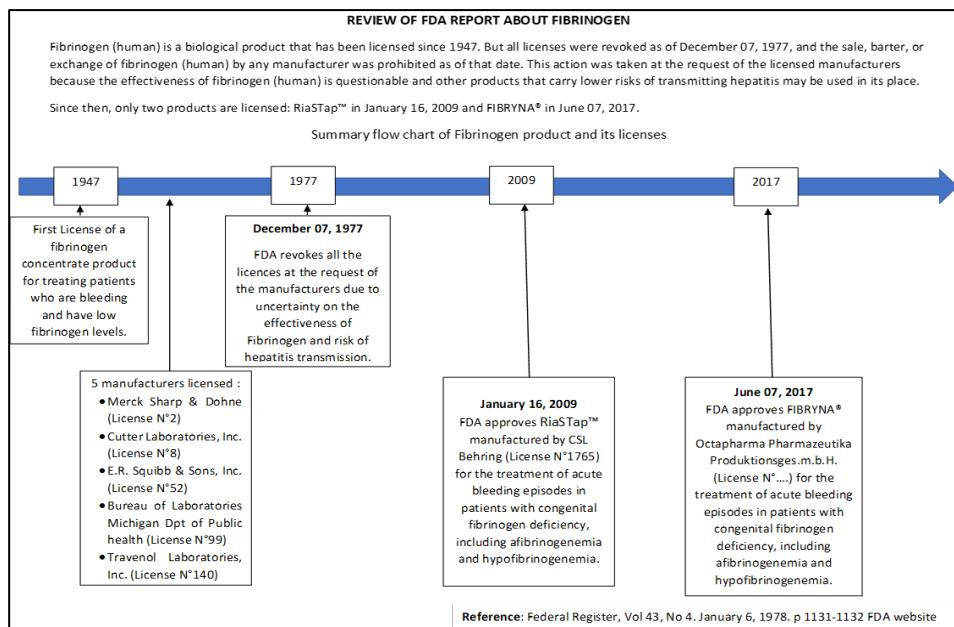
- ① 文献スクリーニングのプロセス  
Pubmedによるキーワード検索では218文献がヒットし、タイトルと要約を確認し

206文献となった。フルテキストスクリーニングを行い12文献が抽出されたが、うち3文献が除外の対象となり（1文献はHCVの内容ではない。2文献は動物が対象ではない）結果9文献となった。そのうちフィブリノゲン製剤に関する文献は1文献のみだった。

βプロピオラクトン+UV照射処理、60℃で10時間以上処理、60℃で20時間処理、98℃で30分以上処理された第VIII因子製剤ではチンパンジーに非A非B肝炎の発症がなかったことを示す報告等があった（ID: Animal-06, Animal-08, Animal-09）。

#### D. 考察・結語

本研究によって得られた、C型肝炎ウイルスの感染経路・感染リスク要因ならびに特定製剤によるC型肝炎ウイルスの感染リスクに関する文献調査結果を、今後医療機関に提供し、特定製剤によるC型肝炎ウイルス感染患者の救済のための調査に活用可能であると考えられた。



令和2年度

厚生労働行政推進調査事業費補助金（医薬品・医療機器等レギュラトリーサイエンス政策研究事業）

「C型肝炎救済のための調査研究及び安全対策等に関する研究」

分担研究報告書

## C型肝炎ウィルス感染経路に関するシステムティックレビュー

Systematic review and meta-analysis of infectious route of HCV infection

令和3年5月10日

田中 純子

広島大学 大学院医系科学研究科 疫学・疾病制御学

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  - (2) 手術歴を有する集団における HCV 感染率
  - (3) 透析歴を有する集団における HCV 感染率
- 4) HCV 感染リスク要因オッズ比に関するメタアナリシス
  - (1) 鍼治療による HCV 感染オッズ比
  - (2) 輸血による HCV 感染オッズ比
  - (3) 母乳による HCV 感染オッズ比
  - (4) 透析による HCV 感染オッズ比
  - (5) 針刺しによる HCV 感染オッズ比
  - (6) 性交渉による HCV 感染オッズ比
  - (7) 手術による HCV 感染オッズ比

### C. アメリカにおける HCV の感染経路

#### 1. 文献抽出、文献レビューとメタアナリシスの方法

- 1) データベースと検索方法
- 2) 文献の選択基準と除外基準
- 3) アブストラクトレビューおよびフルテキストレビューの方法
- 4) 質的統合の対象となった文献から抽出する情報
- 5) メタアナリシスの方法

#### 2. 文献抽出、文献レビューとメタアナリシスの結果

- 1) 文献スクリーニングのプロセス
- 2) 要因別 HCV 有病率および要因オッズに関するメタアナリシスで検討する文献数
- 3) 調査時期別にみた、輸血・手術・透析歴を有する集団における HCV 感染率
  - (1) 輸血歴を有する集団における HCV 感染率

- (2) 手術歴を有する集団における HCV 感染率
- (3) 透析歴を有する集団における HCV 感染率
- 4) HCV 感染リスク要因オッズ比に関するメタアナリシス
  - (1) 針刺し事故による HCV 感染オッズ比
  - (2) 鍼治療による HCV 感染オッズ比
  - (3) 輸血による HCV 感染オッズ比
  - (4) ドラッグユーザーによる HCV 感染オッズ比
  - (5) 鍼共有による HCV 感染オッズ比
  - (6) ピアスによる HCV 感染オッズ比
  - (7) 性交渉による HCV 感染オッズ比
  - (8) タトゥによる HCV 感染オッズ比

## D. 国内外におけるフィブリノゲン製剤による HCV 感染

### 1. 文献抽出、文献レビューとメタアナリシスの方法

- 1) データベースと検索方法
- 2) 文献の選択基準と除外基準
- 3) アブストラクトレビューおよびフルテキストレビューの方法
- 4) 質的統合の対象となった文献から抽出する情報
- 5) メタアナリシスの方法

### 2. 文献抽出、文献レビューとメタアナリシスの結果

- 1) 文献スクリーニングのプロセス
- 2) 時代別にみたフィブリノゲン製剤投与例における HCV 有病率メタアナリシス
- 3) フィブリノゲン製剤による HCV 感染リスクオッズ比メタアナリシス
- 4) アメリカ FDA のフィブリノゲン製剤に関する情報要約

## E. HCV 感染リスク要因のメタアナリシスのまとめ

## F. 血液製剤による HCV 感染リスクに関する動物実験

### 1. 文献抽出、文献レビューとメタアナリシスの方法

- 1) データベースと検索方法
- 2) 文献の選択基準と除外基準
- 3) アブストラクトレビューおよびフルテキストレビューの方法
- 4) 質的統合の対象となった文献から抽出する情報
- 5) メタアナリシスの方法

### 2. 文献抽出、文献レビューとメタアナリシスの結果

- 1) 文献スクリーニングのプロセス

## G. 考察

## H. 資料

## A. 研究目的 *Aim*

C型肝炎ウイルス（HCV）は血液を介して感染し、肝癌や肝硬変などの重度の肝疾患を引き起こす。本研究では、日本およびアメリカにおけるHCVの感染経路・感染リスク要因の経時的傾向を把握することを目的に、システムティックレビューを行った。また、HCV感染経路のなかでもフィブリノゲン製剤による感染については、国内外の報告についてシステムティックレビューを行った。

## B. 日本におけるHCVの感染経路に関する文献調査 *HCV infectious route in Japan*

### 1. 文献抽出、文献レビューとメタアナリシスの方法 *Method for paper selection, reviewing and meta-analysis*

#### 1) データベースと検索方法 *Database and searching strategy*

文献の検索はPubMedおよび医中誌を使用した。検索は2019年10月24日より行った。PubMedおよび医中誌のキーワードを表1~3に示す。

HCV感染経路・感染リスク要因の経時的な傾向を把握するために、研究の対象期間は文献データベースに登録されている期間の全ての期間とした。

文献データベースから入手した文献以外に、非A非B肝炎に関する厚労省肝炎研究班報告書についても検討に加えた。

表1. HCVの感染経路に関するデータベースおよび検索者

CQ	HCVの感染経路 To understand the trend of infectious rout by Hepatitis C (including non A non B, before 1989)
データベース	PubMed 医中誌
日付	2019.10.24
検索者	NY,EB,OS,RA

表2. HCVの感染経路に関する検索の検索式および検索数【医中誌】

#	検査式	
1	(肝炎/TH or 肝炎/AL) and (感染症伝播/TH or 感染経路/AL)) and (DT=1900:1989 PT=原著論文)	30

2	((肝炎/TH or 肝炎/AL) and (感染症伝播/TH or 感染経路/AL) and (( <u>ヘパシウイルス</u> /TH or HCV/AL) or (肝炎-C型/TH or C型肝炎/AL))) and (DT=1990:2000 PT=原著論文)	154
3	((肝炎/TH or 肝炎/AL) and (感染症伝播/TH or 感染経路/AL) and (( <u>ヘパシウイルス</u> /TH or HCV/AL) or (肝炎-C型/TH or C型肝炎/AL))) and (DT=2001:2019 PT=原著論文)	90
Total	#1 AND #2 AND #3	計 274

表 3. HCV の感染経路に関する検索式および検索数【PubMed】

#	Search Query	Number
1	“hepatitis” AND risk AND (transmission OR route OR cause) AND (Japan OR Japanese) AND (1900:1989[DP])	10
2	“hepatitis” AND risk AND (transmission OR route OR cause) AND (Japan OR Japanese) AND (1990:1999[DP])	114
3	“hepatitis” AND risk AND (transmission OR route OR cause) AND (Japan OR Japanese) AND (2000:2019[DP])	481
Total	#1 AND #2 AND #3	Total 605

2) 文献の選択基準と除外基準 *Include and exclude criteria*

1) のキーワードで抽出された文献のアブストラクトおよびフルテキストを選別するための選択基準・除外基準は以下の通り設定した。

選択基準・除外基準は以下のとおりである。なお、1989 年以前は C 型肝炎ウイルスが発見されていないため、基準 1)-b)を設けている。

【選択基準 *Include criteria*】

- (1) 以下 a), b)のどちらかをみたす Article which fall under any of the following a) or b)
  - a) 1990 年以降に実施された研究で、かつ C 型肝炎ウイルスの感染経路・感染リスク要因についての記載がある Study which is started after 1990 and article with description about HCV infectious route and/or HCV infectious risk
  - b) 1989 年以前に実施された研究で、かつ肝炎のリスク要因に関する記載があるもの Study which is started before 1989 and article which description about risk of hepatitis
- (2) 対象者が日本人または日本に住んでいる Study subjects is Japanese and/or people who live in Japan

【除外基準 *Exclude criteria*】

- (1) 総説 Review article
- (2) A 型肝炎・B 型肝炎・D 型肝炎・E 型肝炎のみを対象としたことが明らかである文献

The study only targeted HAV, HBV, HDV and HEV.

3) アブストラクトレビューおよびフルテキストレビューの方法 *Method for abstract review and full-text review*

PubMed、医中誌により抽出された文献のアブストラクトに対し、それぞれ2名の研究者が独立にアブストラクトレビューを行った（PubMed：E.B.・O.S.、医中誌：Y.N.・A.S.）。2)の選択基準・除外基準に従い、フルテキストレビューの対象であるか除外であるかを評価した。2名の判定が異なった場合は、第3者（T.A.またはM.O.）が独立に評価し、3者の話し合いにより最終判定とした。

フルテキストレビューの対象となった文献は、それぞれ2名の研究者が独立にアブストラクトレビューを行った（PubMed：E.B.・O.S.、医中誌：Y.N.・A.S.）。2)の選択基準・除外基準に従い、質的統合の文献であるか、除外であるかを評価した。

また、対象者数、オッズ比などHCV有病率・感染リスクのメタアナリシスに必要な情報が掲載されているか否かの評価も行った。

なお、質的統合の過程で、研究の質（バイアス等）を記載しているが、システムティックレビューやメタアナリシスの除外条件には用いていない。

4) 質的統合の対象となった文献から抽出する情報 *Contents from reviewed papers*

質的統合の対象となった文献から以下の情報を抽出した。

- 論文の基本情報：タイトル、著者、雑誌名、巻号、ページ、DOI
- 研究デザイン：ケースシリーズ、横断研究、症例対照研究、後ろ向きコホート研究、コホート研究
- 研究対象の種類：一般住民、妊婦、病院受診者
- 対象者選出方法：無作為抽出など
- 全対象者数
- 対象者の男女比
- 対象者の平均年齢±標準偏差
- HCV感染の定義：HCV RNA陽性、HCV抗体陽性
- 検討された「リスク要因」：
  - 「リスク要因」を持っている対象者数と感染者数（感染率）
  - 「リスク要因」を持っていない対象者数と感染者数（感染率）
- リスク指標の種類：オッズ比、ハザード比
- 「リスク要因」に関する粗オッズ比、95%信頼区間、P値
- 「リスク要因」に関する調整オッズ比、95%信頼区間、P値、調整因子
- その研究において考えられるバイアス（選択バイアス、情報バイアス）

##### 5) メタアナリシスの方法 *Method for meta-analysis*

リスク要因（輸血、手術、透析）を有する集団における HCV 有病率について時代別に逆分散法によるメタアナリシスを行った。また、時期に分けてサブ解析を行った。

また、対照群を置いている研究が 2 つ以上ある場合は、Fixed effect model および Random effects model によるオッズ比のメタアナリシスを行った。なお、HCV 感染の定義を、HCV 抗体としている文献、HCV RNA としている文献ごとにサブ解析を行った。

## 2. 文献抽出、文献レビューとメタアナリシスの結果 *Study result of paper selection, reviewing and meta-analysis*

### 1) 文献スクリーニングのプロセス *Process of paper screening*

医中誌および厚生省非 A 非 B 肝炎研究班報告書からの文献レビューの結果を図 1 に示した。

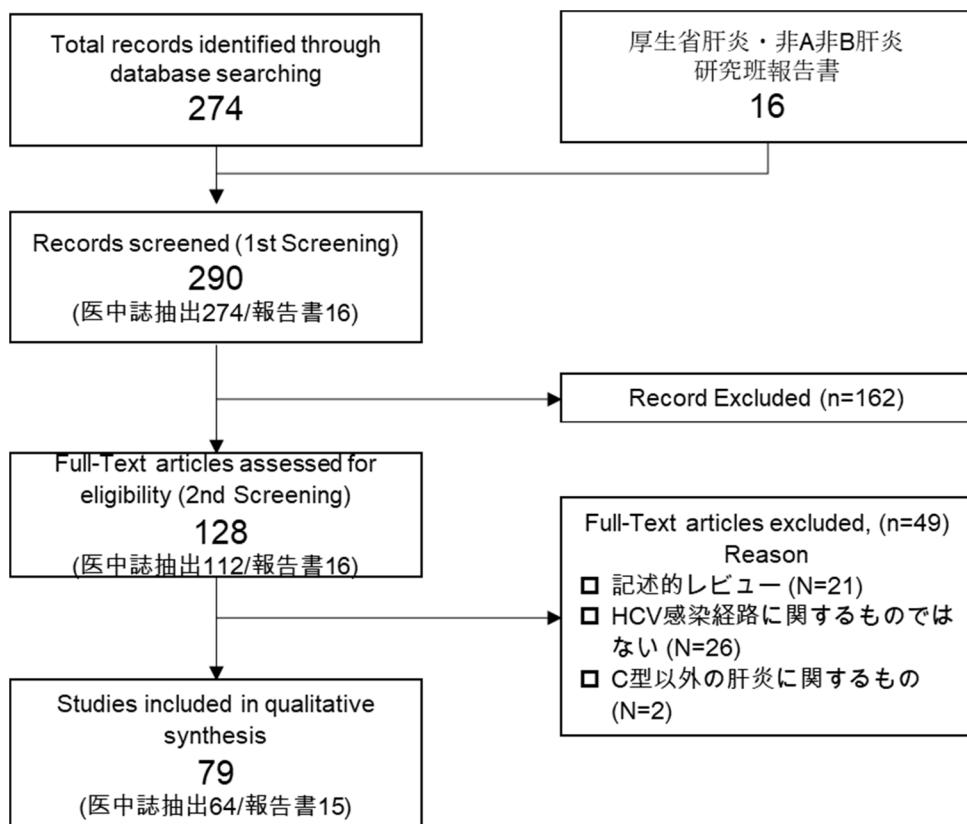


図 1. 日本における HCV の感染経路に関する文献検索のフローチャート【医中誌】

医中誌によるキーワード検索（表 2）では 274 文献がヒットした（表 3）。また、厚生省肝炎研究連絡協議会 研究報告（昭和 57 年～63 年）、厚生省非 A 非 B 肝炎研究 研究報告書（平成元年～平成 9 年）、非 A 非 B 肝炎の予防、疫学に関する研究（平成 10 年～13 年）より 16 の研究を追加した。その後、タイトルとアブストラクトのレビューにより抽出された 182 文献がフルテキストレビューの対象となった。フルテキストレビューの結果、79 文献がシステムティックレビューに採用された。

PubMed からの文献レビューの結果を図 2 に示した。

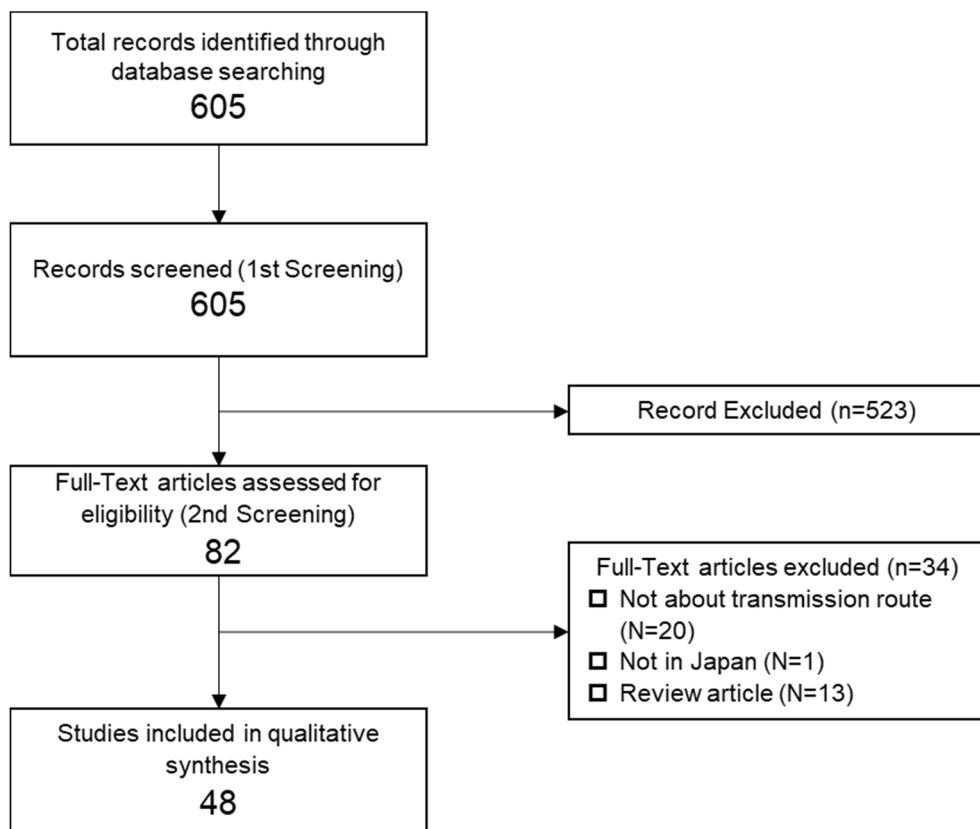


図2. 日本におけるHCVの感染経路に関する文献検索のフローチャート【PubMed】

PubMedによるキーワード検索では605文献がヒットし、タイトルとアブストラクトのレビューにより抽出された82文献がフルテキストレビューの対象となった。フルテキストレビューの結果、46文献がシステムティックレビューに採用された。

PubMedと医中誌を合わせた127文献のうち、HCV有病率のメタアナリシスには対象者数とHCV陽性者数が明記されている輸血24文献、手術8文献、透析12文献が採用され、40対照群を設置している40文献がオッズ比のメタアナリシスに採用された。

2) 要因別 HCV 有病率および要因オッズに関するメタアナリシスで検討する文献数  
*Number of papers for meta-analysis of prevalence of HCV and infectious route*

表4に各要因別にみたシステムティックレビューに採用された文献数、メタアナリシスに採用された文献数について示した。

表4. 要因別にみたシステムティックレビューとメタアナリシスの採用文献 Summary of included articles by factor

Risk factor	Systematic review			Meta-analysis	
	Number of articles	ID of articles		Number of articles	ID of articles
Acupuncture therapy	Pubmed 4	PM-J037	IC-J025	Pubmed 1 Ichusi 1 Government report 1 <b>Total 3</b>	PM-J037 IC-J025 GR-J015
	Ichusi 5	PM-J047	IC-J079		
	Government report 1	PM-J061	IC-J082		
	<b>Total 10</b>	PM-J080	IC-J084		
Blood Transfusion	Pubmed 15 Ichusi 5 Government report 1 <b>Total 41</b>	PM-J008	PM-J080	Pubmed 11 Ichusi 5 Government report 3 <b>Total 19</b>	PM-J080 IC-J022
		PM-J013	IC-J004		PM-J008 IC-J025
		PM-J034	IC-J010		PM-J013 IC-J069
		PM-J035	IC-J022		PM-J034 IC-J070
		PM-J037	IC-J025		PM-J037 IC-J094
		PM-J042	IC-J033		PM-J042 IC-J081
		PM-J047	IC-J069		PM-J049 IC-J103
		PM-J049	IC-J070		PM-J057 IC-J110
		PM-J057	IC-J073		PM-J063 GR-J003
		PM-J061	IC-J074		PM-J071 GR-J008
		PM-J063	IC-J078		PM-J076 GR-J013
		PM-J071	IC-J079		GR-J015
		PM-J076	IC-J081		
		PM-J079	IC-J082		
Breastfeeding	Pubmed 3 <b>Total 3</b>	PM-J005 PM-J029		Pubmed <b>Total 2</b>	PM-J005 PM-J054

		PM-J054				
Hemodialysis	Pubmed 5 Ichusi 6 Government report 3 <b>Total 14</b>	PM-J009 PM-J013 PM-J018 PM-J038 PM-J063	IC-J019 IC-J022 IC-J069 IC-J070 IC-J081	IC-J110 GR-J003 GR-J006 GR-J011	Pubmed 4 Ichusi 5 Government report 3 <b>Total 12</b>	PM-J009 GR-J011 PM-J018 IC-J022 PM-J038 IC-J069 <b>PM-J063</b> IC-J070 GR-J003 IC-J081 GR-J006 IC-J110
Household Contact	Pubmed 4 Ichusi 6 <b>Total 10</b>	PM-J044 PM-J060 PM-J061 PM-J066	IC-J004 IC-J019 IC-J023 IC-J029	IC-J039 IC-J082 IC-J091		
Injecting Drug User	Pubmed 5 Ichusi 9 Government report 2 <b>Total 16</b>	PM-J017 PM-J034 PM-J053 PM-J057 PM-J079 IC-J004	IC-J032 IC-J046 IC-J059 IC-J078 IC-J080	IC-J082 IC-J084 IC-J103 GR-J007 GR-J014		
MTCT	Pubmed 9 Ichusi 29 Government report 5 <b>Total 43</b>	PM-J015 PM-J023 PM-J029 PM-J031 PM-J039	IC-J016 IC-J017 IC-J020 IC-J026 IC-J027	IC-J068 IC-J073 IC-J074 IC-J076 IC-J085		

		PM-J048 PM-J051 PM-J054 PM-J059 IC-J005 IC-J006 IC-J012 IC-J013 IC-J014 IC-J015	IC-J028 IC-J041 IC-J042 IC-J043 IC-J051 IC-J060 IC-J061 IC-J063 IC-J066	IC-J088 IC-J089 IC-J092 IC-J111 GR-J001 GR-J005 GR-J009 GR-J010 GR-J016		
Needlestick injury	Pubmed 3 Ichusi 3 <b>Total 6</b>	PM-J061 PM-J062	PM-J064 IC-J075	IC-J082 IC-J094	Pubmed 1 Ichusi 1 <b>Total 2</b>	<b>PM-J064</b> IC-J094
Nosocomial Transmission	Pubmed 3 Ichusi 2 Government report 1 <b>Total 6</b>	PM-J032 PM-J045	PM-J047 IC-J019	IC-J048 GR-J002		
Razor Sharing	Pubmed 1 <b>Total 1</b>	PM-J034				
Sexual	Ichusi 9 Pubmed 5 Government report 1 <b>Total 15</b>	PM-J001 PM-J007 PM-J020 PM-J022	PM-J046 PM-J056 PM-J058 PM-J061	IC-J037 IC-J044 IC-J047 IC-J072	Pubmed 1 Ichusi 1 <b>Total 2</b>	<b>PM-J046</b> IC-J072

		PM-J044	IC-J019	GR-J004		
Surgery	Pubmed 9 Ihusi 7 Government report 1 <b>Total 17</b>	PM-J034 PM-J037 PM-J042 PM-J047 PM-J052 PM-J053	PM-J057 PM-J061 PM-J080 IC-J004 IC-J010 IC-J079	IC-J084 IC-J087 IC-J103 IC-J112 GR-J014	Pubmed 6 <b>Total 6</b>	PM-J034 PM-J037 PM-J042 PM-J057 PM-J053 PM-J080 IC-J103
Tattooing	Pubmed 5 Ihusi 5 Government report 1 <b>Total 11</b>	PM-J034 PM-J053 PM-J057 PM-J079	PM-J080 IC-J004 IC-J019 IC-J078	IC-J079 IC-J084 GR-J014	Pubmed 2 <b>Total 2</b>	PM-J053 PM-J057
Upper gastrointestinal endoscopy	Pubmed 1 <b>Total 1</b>		PM-J010			
Blood products	Ihusi 2 <b>Total 2</b>		IC-J004 IC-J019			

3) 調査時期別にみた、輸血・手術・透析歴を有する集団における HCV 有病率のメタアナリシス *Meta-analysis for prevalence of HCV among exposed group by study period*

(1) 輸血歴を有する集団における HCV 感染率 (HCV 抗体陽性率) *Prevalence of anti-HCV positive rate among subjects with transfusion recording*

調査年別にみた輸血歴を有する集団における HCV 抗体陽性率の推移を図 3 に示した。研究開始年が 1979 年以前の文献はなく、1980-89 年は 5 文献（統合有病率 5.1%）、1990-99 年は 12 文献（統合有病率 15.9%）、2000-09 年は 1 文献（有病率 18.2%）、2010 年以降の文献はなく、研究年不明 6 文献であり、全 24 文献の統合有病率は 15.2% であった。

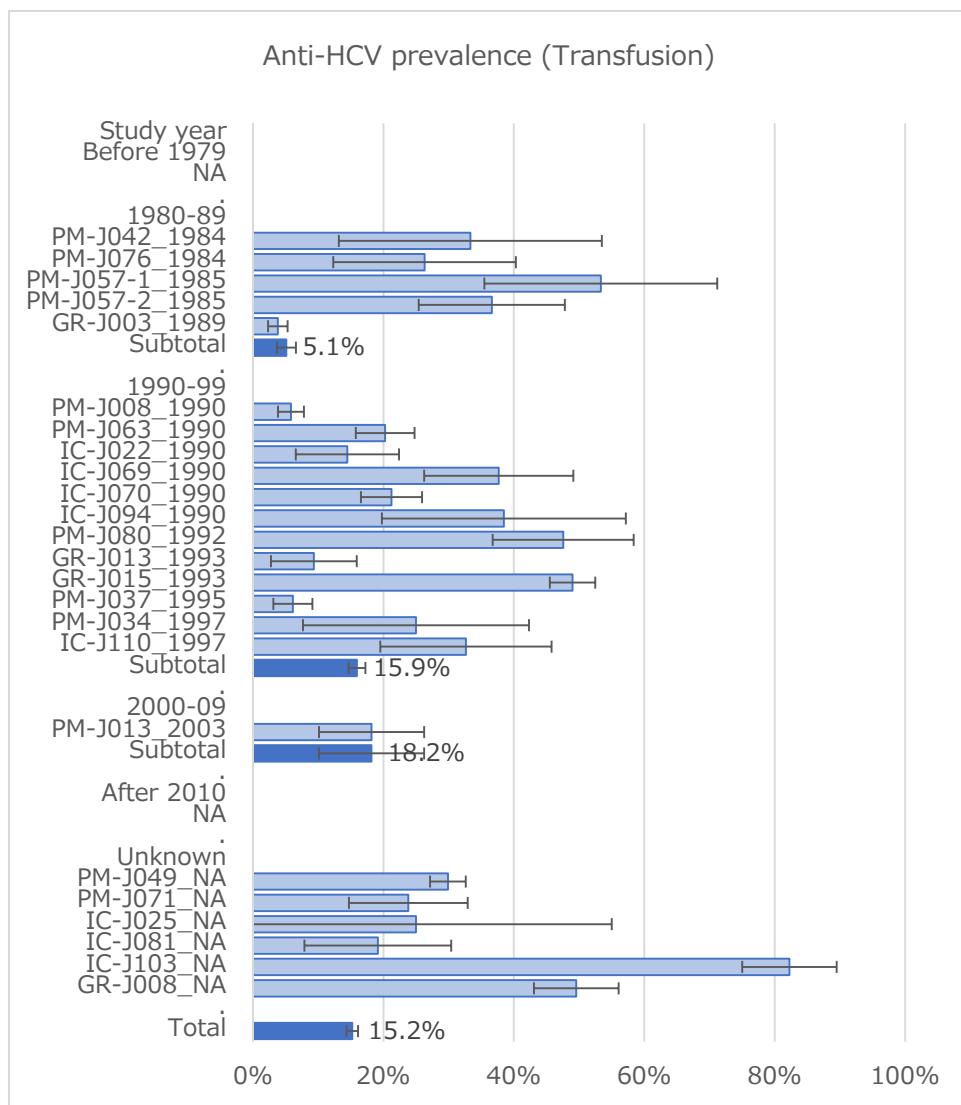


図 3. 時代別にみた日本の HCV 有病率メタアナリシス【リスク要因：輸血歴あり】

(2) 手術歴を有する集団における HCV 感染率 (HCV 抗体陽性率) *Prevalence of anti-HCV positive rate among subjects with surgery recording*

時期別にみた手術歴を有する集団における HCV 抗体陽性率の推移を図 4 に示した。研究開始年が 1979 年以前の文献はなく、1980-89 年は 3 文献（統合有病率 14.3%）、1990-99 年は 4 文献（統合有病率 4.6%）、2000-09 年・2010 年以降の文献はなく、調査年不明が 1 文献であり、全 8 文献の統合有病率は 6.9% であった。

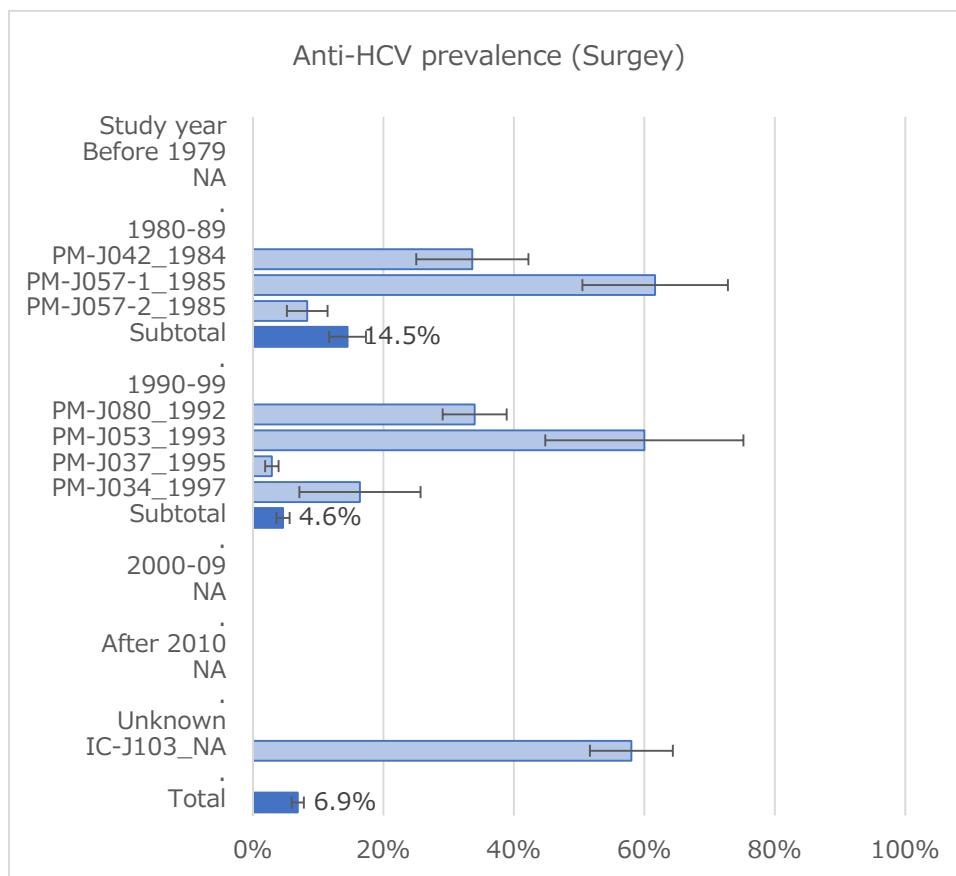


図 4. 時代別にみた日本の HCV 有病率メタアナリシス【リスク要因：手術歴あり】

(3) 透析歴を有する集団における HCV 感染率 (HCV 抗体陽性率) *Prevalence of anti-HCV positive rate among subjects with hemodialysis recording*

時期別にみた透析歴を有する集団における HCV 抗体陽性率の推移を図 5 に示した。研究開始年が 1979 年以前の文献はなく、1980-89 年は 1 文献 (有病率 20.6%)、1990-99 年は 8 文献 (統合著効率 1.9%)、2000-09 年は 1 文献 (有病率 11.0%)、2010 年以降の文献はなく、調査年不明が 2 文献であり、全体 10 文献の統合有病率は 2.6% であった。

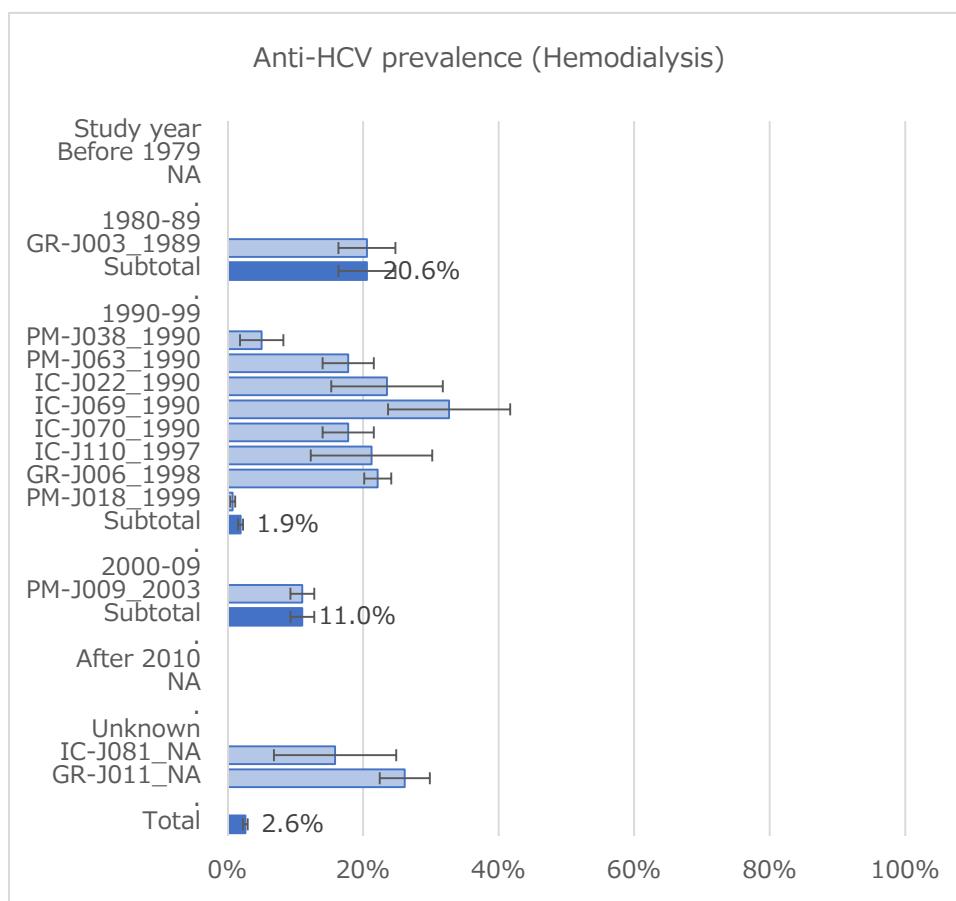


図 5. 時代別にみた日本の HCV 有病率メタアナリシス【リスク要因：透析あり】

4) 日本における HCV 感染リスク要因オッズ比に関するメタアナリシス *Meta-analysis for odds ratio of HCV infection risk by exposure of each factor*

(1) 鍼治療による HCV 感染オッズ比 *Odds ratio of HCV infection by Acupuncture*

図 6 に鍼治療と HCV 感染の関連に関するメタアナリシスの結果を示した。3 つの研究を統合した結果、統合オッズ比は 1.49 (95CI: 1.26-1.77) であり、HCV 感染との有意な関連が認められた。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

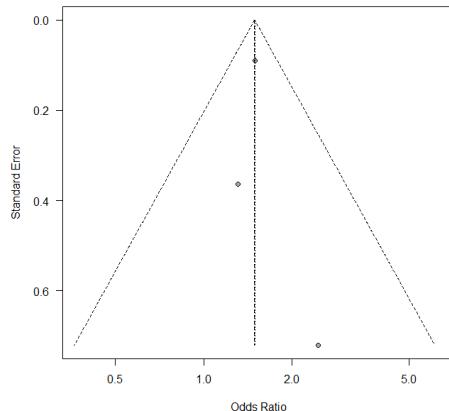
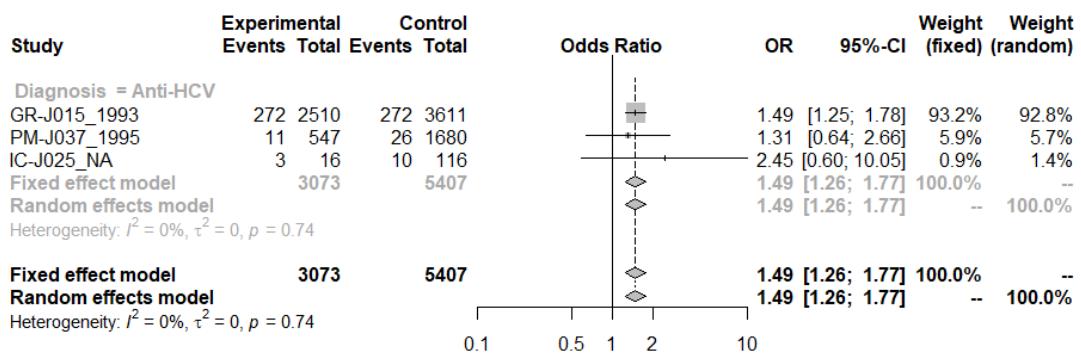


図 6. 日本における針治療による HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

(2)輸血による HCV 感染オッズ比 *Odds ratio of HCV infection by Blood transfusion*

図7に輸血とHCV感染の関連に関するメタアナリシスの結果を示した。18の研究を統合した結果、統合オッズ比は4.93 (95CI: 2.71-8.95)であり、HCV感染との有意な関連性が認められた。

漏斗プロットでは左右の外れ値がともに同程度存在し、公表バイアスの影響が弱いと判断できる。

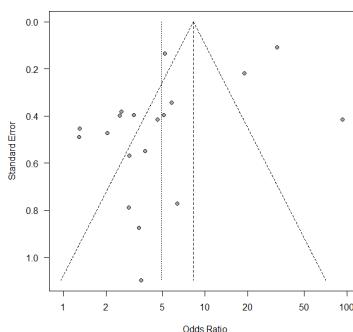
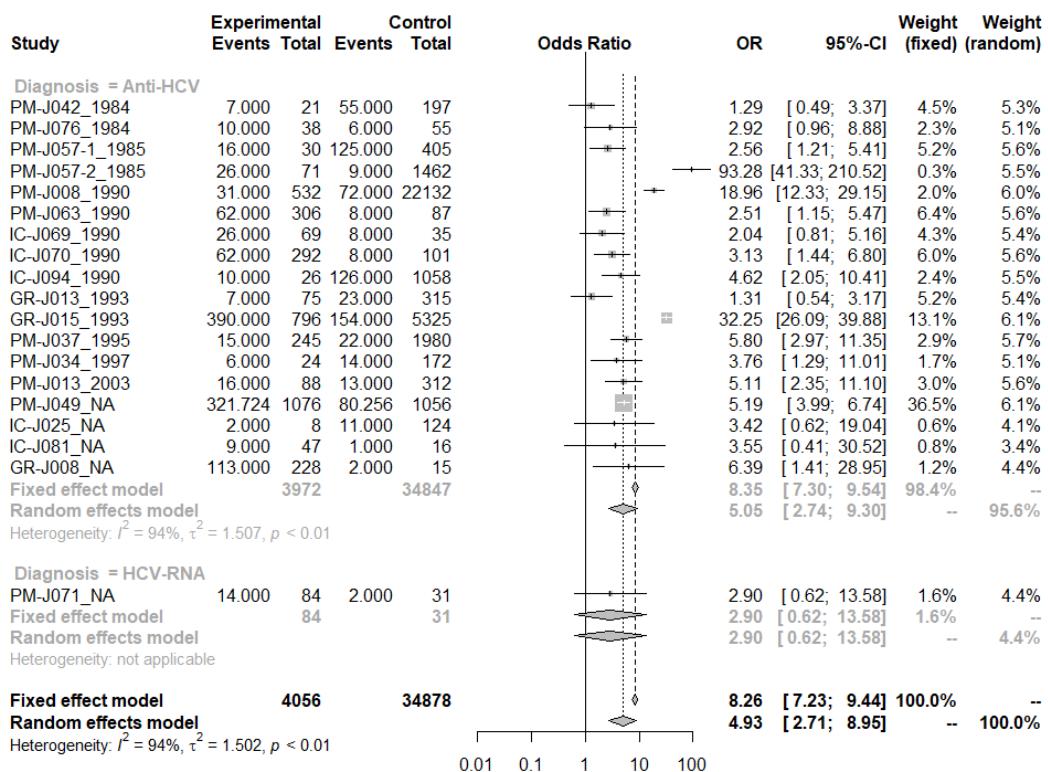


図7. 日本における輸血によるHCV感染リスクに関するメタアナリシス  
(Forest plotとFunnel plot)

(3)母乳による HCV 感染オッズ比 *Odds ratio of HCV infection by Breast feeding*

図8に母乳とHCV感染の関連に関するメタアナリシスの結果を示した。2つの研究を統合した結果、統合オッズ比は0.87(95CI: 0.23-3.36)であり、HCV感染との有意な関連性は認められなかった。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

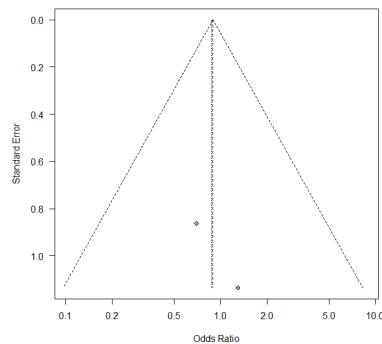
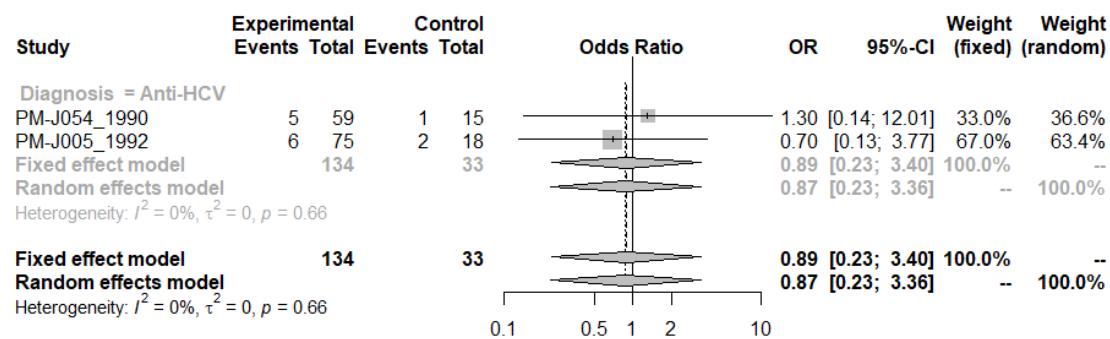


図8. 日本における母乳によるHCV感染リスクに関するメタアナリシス  
(Forest plotとFunnel plot)

(4)透析による HCV 感染オッズ比 *Odds ratio of HCV infection by Hemodialysis*

図9に透析とHCV感染の関連に関するメタアナリシスの結果を示した。2つの研究を統合した結果、統合オッズ比は11.38(95CI: 4.49-28.90)であり、HCV感染との有意な関連性が認められた。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

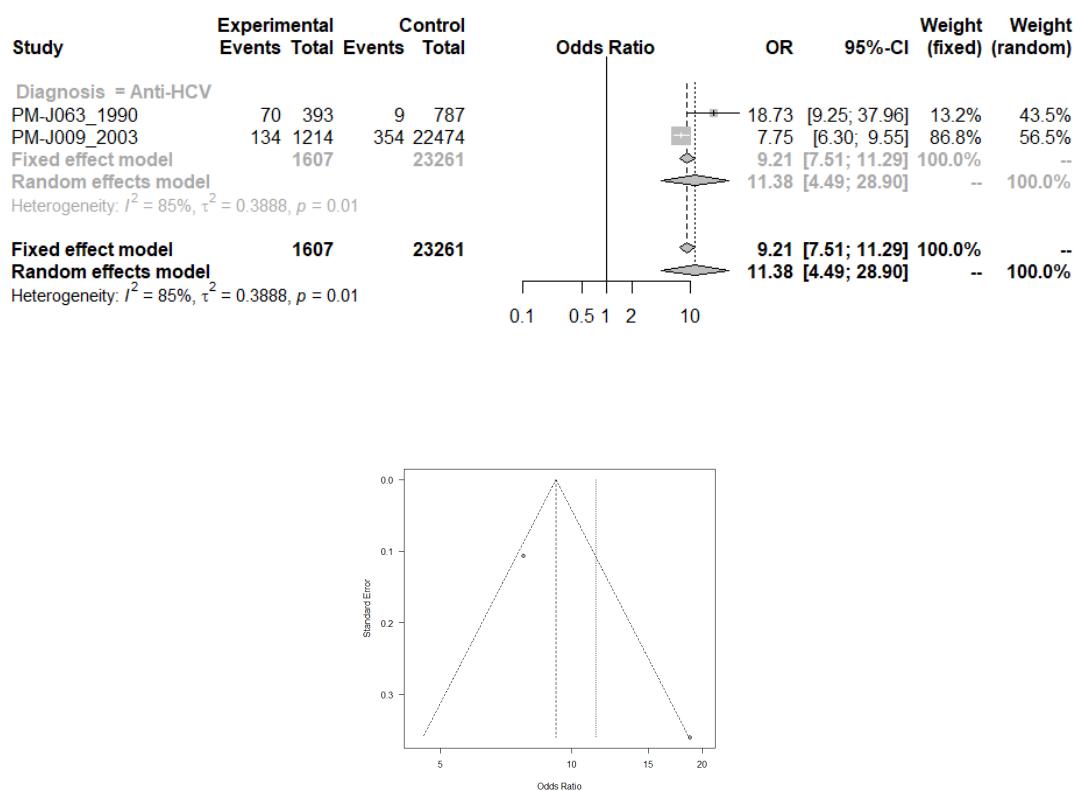


図9. 日本における透析によるHCV感染リスクに関するメタアナリシス  
(Forest plotとFunnel plot)

(5)針刺しによる HCV 感染オッズ比 *Odds ratio of HCV infection by puncture*

図 10 に針刺しと HCV 感染の関連に関するメタアナリシスの結果を示した。2 つの研究を統合した結果、統合オッズ比は 8.49 (95CI: 4.27-16.88) であり、HCV 感染との有意な関連性が認められた。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

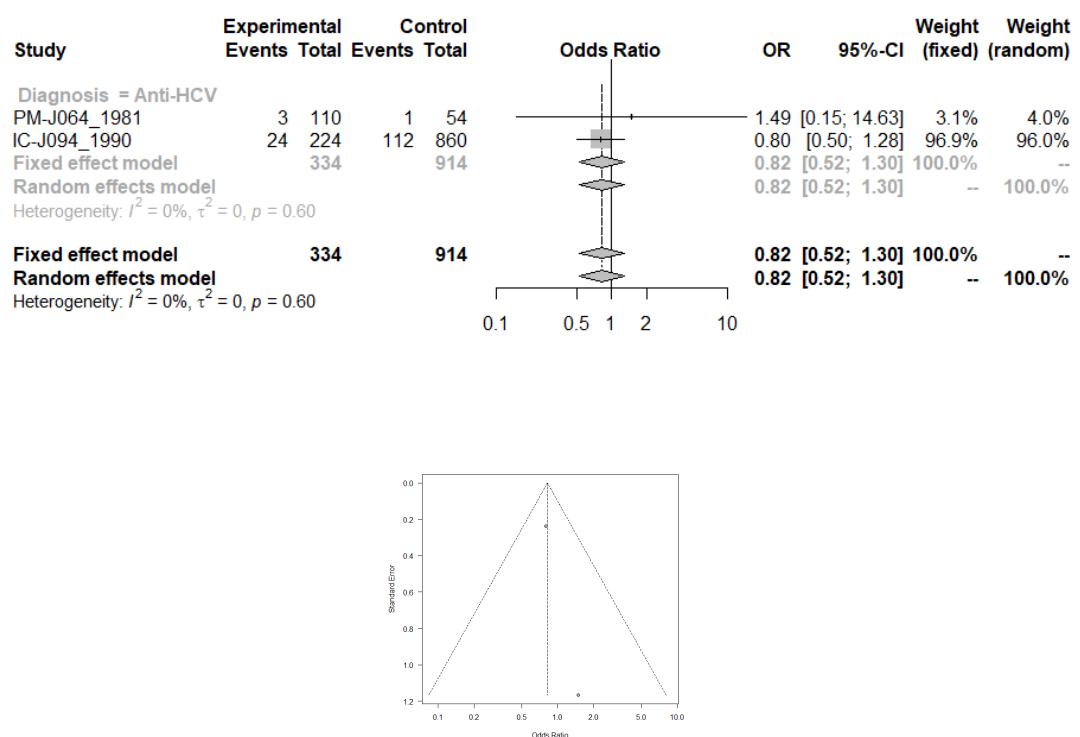


図 10. 日本におけるドラッグユーザーによる HCV 感染リスクに関するメタアナリシス (Forest plot と Funnel plot)

(6)性交渉による HCV 感染オッズ比 *Odds ratio of HCV infection by sexual*

図 11 に性交渉と HCV 感染の関連に関するメタアナリシスの結果を示した。2 つの研究を統合した結果、統合オッズ比は 11.84 (95CI: 5.53-25.36) であり、HCV 感染との有意な関連が認められた。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

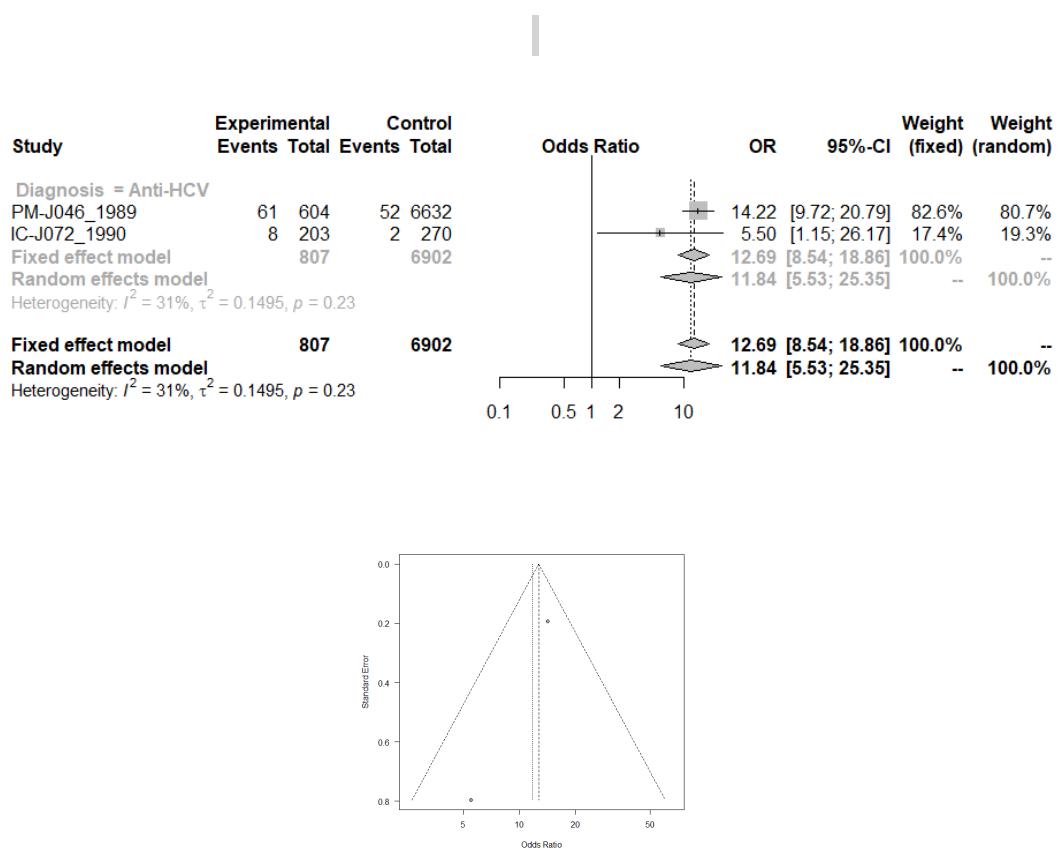


図 11. 日本における母子感染による HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

(7)手術による HCV 感染オッズ比 *Odds ratio of HCV infection by Surgery*

図 12 に手術と HCV 感染の関連に関するメタアナリシスの結果を示した。6 つの研究を統合した結果、統合オッズ比は 3.42(95CI: 1.92-6.07)であり、HCV 感染との有意な関連性が認められた。

漏斗プロットにより 1 例のオッズ比が高値（外れ値）であったため、公表バイアスの影響が強いと判断できる。

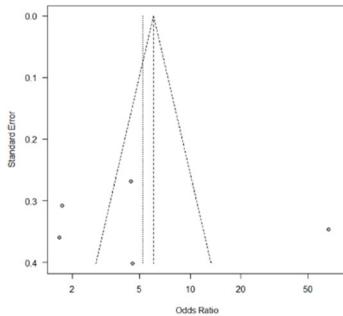
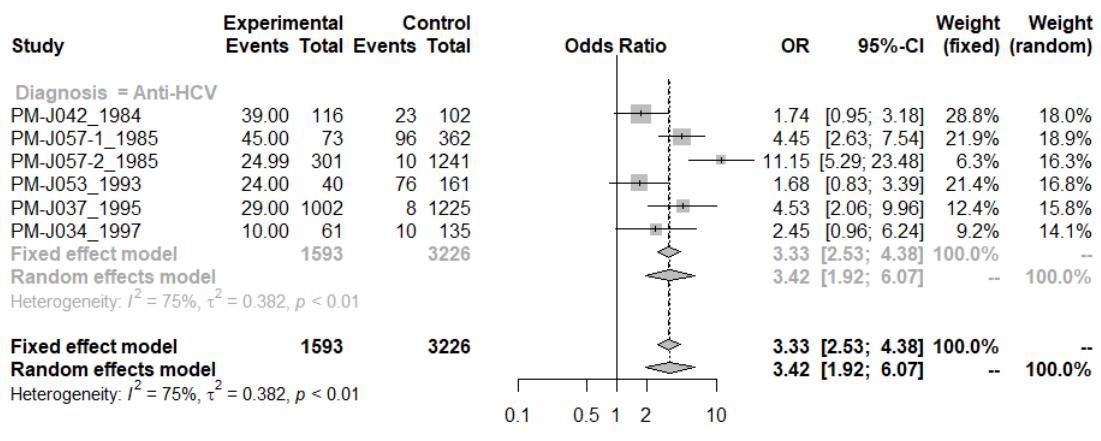


図 12. 日本における手術による HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

## C. アメリカにおける HCV の感染経路 *HCV infectious route in USA*

### 1. 文献抽出、文献レビューとメタアナリシスの方法 *Method for paper selection, reviewing and meta-analysis*

#### 1) データベースと検索方法 *Database and searching strategy*

文献の検索は PubMed を使用した。検索は 2019 年 10 月 24 日より行った。PubMed および医中誌のキーワードを表 5, 6 に示す。

HCV 感染経路・感染リスク要因の経時的な傾向を把握するために、研究の対象期間は文献データベースに登録されている期間の全ての期間とした。

表 5. HCV の感染経路に関するデータベースおよび検索者

CQ	<b>Systematic review and meta-analysis of infectious route of HCV infection in USA</b>
データベース	To understand the trend of infectious route by hepatitis C (including non-A non-B, before 1989)
日付	PubMed
検索者	EB,OS,RA,UM,TS

表 6. HCV の感染経路に関する検索の検索式および検索数

#	Search Query	Number
1	“hepatitis” AND risk AND (transmission OR route OR cause) AND (US OR USA OR America) AND (1900:1989[DP])	167
2	“hepatitis C” AND risk AND (transmission OR route OR cause) AND (US OR USA OR America) AND (1990:1999[DP])	303
3	“hepatitis C” AND risk AND (transmission OR route OR cause) AND (US OR USA OR America) AND (2000:2019[DP])	1856
Total	#1 AND #2 AND #3	2326

#### 2) 文献の選択基準と除外基準 *Include and exclude criteria*

1) のキーワードで抽出された文献のアブストラクトおよびフルテキストを選別するための選択基準・除外基準は以下の通り設定した。

選択基準・除外基準は以下のとおりである。なお、1989 年以前は C 型肝炎ウイルスが発見されていないため、基準 1)-b)を設けている。

【選択基準 *Include criteria*】

(1) 以下 a), b)のどちらかをみたす Article which fall under any of the following a) or b)

a) 1990 年以降に実施された研究で、かつ C 型肝炎ウイルスの感染経路・感染リスク要因についての記載がある Study which is started after 1990 and article with description about HCV infectious route and/or HCV infectious risk

b) 1989 年以前に実施された研究で、かつ肝炎のリスク要因に関する記載があるもの Study which is started before 1989 and article which description about risk of hepatitis

(2) 対象者がアメリカ人またはアメリカに住んでいる Study subjects is American and/or people who live in USA

【除外基準 Exclude criteria】

(1) 総説 Review article

(2) A 型肝炎・B 型肝炎・D 型肝炎・E 型肝炎のみを対象としたことが明らかである文献  
The study only targeted HAV, HBV, HDV and HEV.

3) アブストラクトレビューおよびフルテキストレビューの方法 *Method for abstract review and full-text review*

PubMed により抽出された文献のアブストラクトに対し、それぞれ 2 名の研究者が独立にアブストラクトレビューを行った（各文献につき 5 名の研究者 EB, OS, RA, UM, TS から 2 名が担当した）。2) の選択基準・除外基準に従い、フルテキストレビューの対象であるか除外であるかを評価した。2 名の判定が異なった場合は、第 3 者（T.A.または M.O.）が独立に評価し、3 者の話し合いにより最終判定とした。

フルテキストレビューの対象となった文献は、それぞれ 2 名の研究者が独立にアブストラクトレビューを行った（各文献につき 5 名の研究者 EB, OS, RA, UM, TS から 2 名が担当した）。2) の選択基準・除外基準に従い、質的統合の文献であるか、除外であるかを評価した。

また、対象者数、オッズ比など HCV 有病率・感染リスクのメタアナリシスに必要な情報が掲載されているか否かの評価も行った。

なお、質的統合の過程で、研究の質（バイアス等）を記載しているが、システムティックレビューやメタアナリシスの除外条件には用いていない。

4) 質的統合の対象となった文献から抽出する情報 *Contents from reviewed papers*

質的統合の対象となった文献から以下の情報を抽出した。

- 論文の基本情報：タイトル、著者、雑誌名、巻号、ページ、DOI
- 研究デザイン：ケースシリーズ、横断研究、症例対照研究、後ろ向きコホート研究、コホート研究
- 研究対象の種類：一般住民、妊婦、病院受診者
- 対象者選出方法：無作為抽出など

- 全対象者数
- 対象者の男女比
- 対象者の平均年齢±標準偏差
- HCV 感染の定義：HCV RNA 陽性、HCV 抗体陽性
- 検討された「リスク要因」：
  - 「リスク要因」を持っている対象者数と感染者数（感染率）
  - 「リスク要因」を持っていない対象者数と感染者数（感染率）
  - リスク指標の種類：オッズ比、ハザード比
  - 「リスク要因」に関する粗オッズ比、95%信頼区間、P 値
  - 「リスク要因」に関する調整オッズ比、95%信頼区間、P 値、調整因子
  - その研究において考えられるバイアス

##### 5) メタアナリシスの方法 *Method for meta-analysis*

リスク要因（輸血、手術、透析）を有する集団における HCV 有病率について時代別に逆分散法によるメタアナリシスを行った。また、時期に分けてサブ解析を行った。

また、対照群を置いている研究が 2 つ以上ある場合は、Fixed effect model および Random effects model によるオッズ比のメタアナリシスを行った。なお、HCV 感染の定義を、HCV 抗体としている文献、HCV RNA としている文献ごとにサブ解析を行った。

## 2. 文献抽出、文献レビューとメタアナリシスの結果 *Study result of paper selection, reviewing and meta-analysis*

### 1) 文献スクリーニングのプロセス *Process of paper screening*

PubMed により抽出された文献のレビューの過程を図 13 に示した。

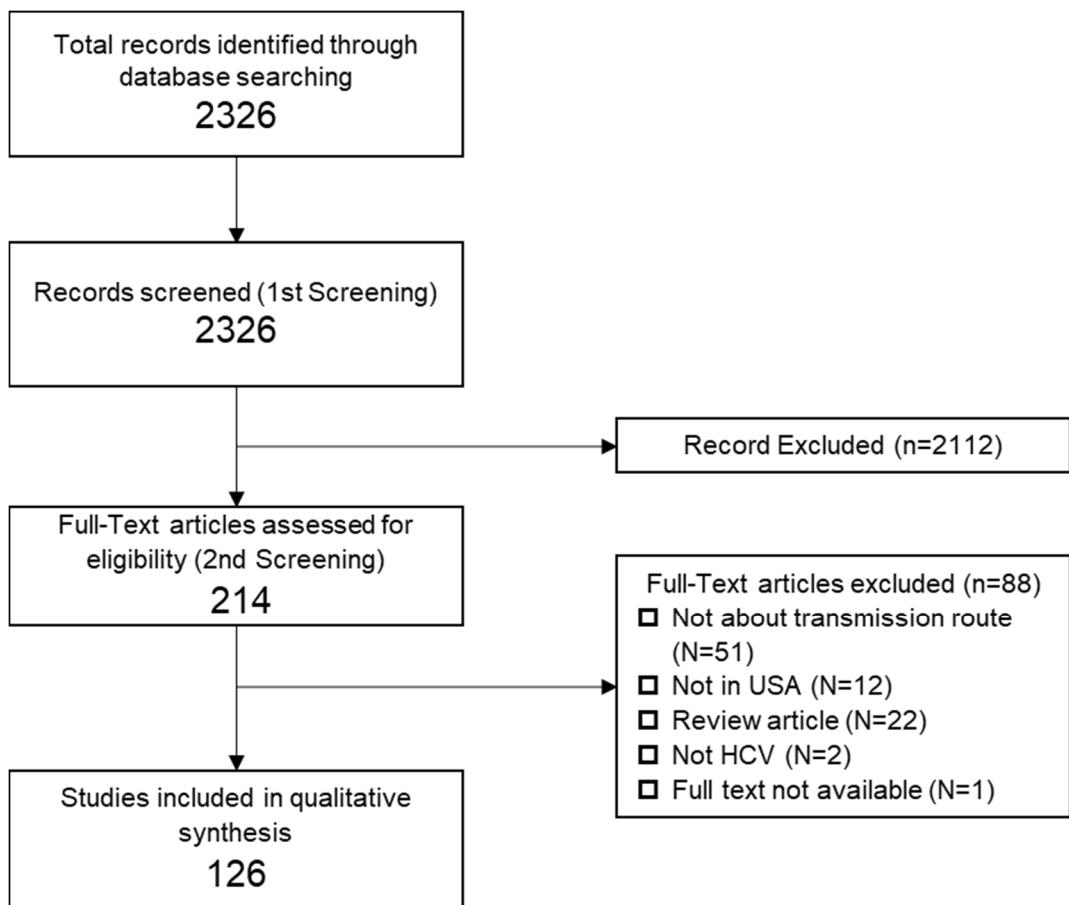


図 13. アメリカにおける HCV の感染経路に関する文献検索のフローチャート【PubMed】

PubMed によるキーワード検索では 2315 文献がヒットし、タイトルとアブストラクトのレビューにより抽出された 214 文献がフルテキストレビューの対象となった。フルテキストレビューの結果、126 文献がシステムティックレビューに採用された。また、そのうちの HCV 有病率のメタアナリシスには輸血 22 文献、手術 3 文献、透析 7 文献が採用され、59 文献がオッズ比のメタアナリシスに採用された。

2) 要因別 HCV 有病率および要因オッズに関するメタアナリシスで検討する文献数  
*Number of papers for meta-analysis of prevalence of HCV and infectious route*

表 7 に各要因別にみたシステムティックレビューに採用された文献数、メタアナリシスに採用された文献数について示した。

表 7. 要因別にみたシステムティックレビューとメタアナリシスの採用文献 Summary of included articles by factor

	Systematic review				Meta-analysis			
Risk factor	Number of articles	ID of articles			Number of articles	ID of articles		
Accidental puncture	8	PM-U014 PM-U041 PM-U054 PM-U074 PM-U019 PM-U052 PM-U063 PM-U088			3	PM-U014 PM-U041 PM-U088		
Acupuncture	3	PM-U029 PM-U063 PM-U088			2	PM-U029 PM-U088		
Blood transfusion	34	PM-U001 PM-U021 PM-U058 PM-U102 PM-U002 PM-U022 PM-U062 PM-U104 PM-U004 PM-U029 PM-U063 PM-U106 PM-U006 PM-U035 PM-U065 PM-U118 PM-U008 PM-U037 PM-U067 PM-U128 PM-U009 PM-U039 PM-U075 PM-U133 PM-U010 PM-U040 PM-U078 PM-U158 PM-U012 PM-U046 PM-U088 PM-U161 PM-U014 PM-U050			22	PM-U001 PM-U014 PM-U046 PM-U002 PM-U022 PM-U075 PM-U006 PM-U029 PM-U078 PM-U008 PM-U035 PM-U088 PM-U009 PM-U039 PM-U102 PM-U012 PM-U040 PM-U104		
Hemodialysis	8	PM-U005 PM-U058 PM-U132 PM-U193 PM-U034 PM-U077 PM-U156 PM-U194			7	PM-U005 PM-U077 PM-U156 PM-U034 PM-U132 PM-U193		

Household contact	1	PM-U014					
Iatrogenic	9	PM-U080 PM-U103 PM-U123 PM-U155 PM-U093 PM-U111 PM-U124 PM-U163 PM-U095					
Intravenous drug use	60	PM-U004	PM-U058	PM-U084	PM-U129	12	PM-U013 PM-U029 PM-U046 PM-U072 PM-U075 PM-U078 PM-U083 PM-U092 PM-U109 PM-U133 PM-U142 PM-U210
		PM-U006	PM-U062	PM-U084	PM-U133		
		PM-U007	PM-U063	PM-U087	PM-U142		
		PM-U009	PM-U065	PM-U092	PM-U147		
		PM-U010	PM-U066	PM-U094	PM-U157		
		PM-U013	PM-U070	PM-U097	PM-U158		
		PM-U023	PM-U071	PM-U107	PM-U161		
		PM-U027	PM-U072	PM-U108	PM-U169		
		PM-U029	PM-U073	PM-U109	PM-U178		
		PM-U037	PM-U074	PM-U110	PM-U180		
		PM-U042	PM-U075	PM-U111	PM-U190		
		PM-U046	PM-U078	PM-U117	PM-U201		
		PM-U048	PM-U079	PM-U125	PM-U209		
		PM-U050	PM-U082	PM-U126	PM-U210		
		PM-U053	PM-U083	PM-U127	PM-U213		
Mother to child	6	PM-U047 PM-U049	PM-U099 PM-U120	PM-U192	PM-U208		

Needle sharing	5	PM-U053 PM-U073	PM-U079	PM-U085	PM-U213	2	PM-U073 PM-U213
Organ transplantatio n	8	PM-U076 PM-U077	PM-U078 PM-U152	PM-U187 PM-U191	PM-U197 PM-U198		
Piercing	8	PM-U029 PM-U050	PM-U065 PM-U074	PM-U088 PM-U109	PM-U142 PM-U161	4	PM-U029 PM-U088 PM-U109 PM-U142
Raw shellfish ingestion	1		PM-U004				
Razor sharing	2		PM-U063 PM-U065				
Sexual	35	PM-U004 PM-U009 PM-U011 PM-U016 PM-U022 PM-U023 PM-U024 PM-U025 PM-U027	PM-U031 PM-U032 PM-U037 PM-U050 PM-U057 PM-U058 PM-U061 PM-U062 PM-U065	PM-U066 PM-U074 PM-U078 PM-U081 PM-U088 PM-U094 PM-U107 PM-U113 PM-U114	PM-U133 PM-U142 PM-U149 PM-U157 PM-U161 PM-U172 PM-U181 PM-U213	9	PM-U022 PM-U031 PM-U078 PM-U081 PM-U088 PM-U113 PM-U133 PM-U142 PM-U172

Surgery	7	PM-U004 PM-U014	PM-U029 PM-U058	PM-U060 PM-U063	PM-U067	3	PM-U014 PM-U029 PM-U060
Tattooing	19	PM-U027 PM-U029 PM-U050 PM-U054 PM-U059	PM-U062 PM-U065 PM-U067 PM-U068 PM-U074	PM-U075 PM-U081 PM-U087 PM-U088 PM-U101	PM-U102 PM-U109 PM-U133 PM-U142	9	PM-U029 PM-U059 PM-U075 PM-U081 PM-U088 PM-U102 PM-U109 PM-U133 PM-U142

3) 調査時期別にみた、輸血・手術・透析歴を有する集団における HCV 有病率のメタアナリシス *Meta-analysis for prevalence of HCV among exposed group by study period*

(1) 輸血歴を有する集団における HCV 感染率 (HCV 抗体陽性率) *Prevalence of anti-HCV positive rate among subjects with transfusion recording*

調査年別にみた輸血歴を有する集団における HCV 抗体陽性率の推移を図 14 に示した。研究開始年が 1979 年以前は 3 文献（統合有病率 3.8%）、1980-89 年は 7 文献（統合有病率 5.4%）、1990-99 年は 8 文献（統合有病率 14.1%）、2000-09 年は 3 文献（統合有病率 15.1%）、2010 年以降の文献はなく、研究年不明 1 文献であり、全 22 文献の統合有病率は 4.5% であった。

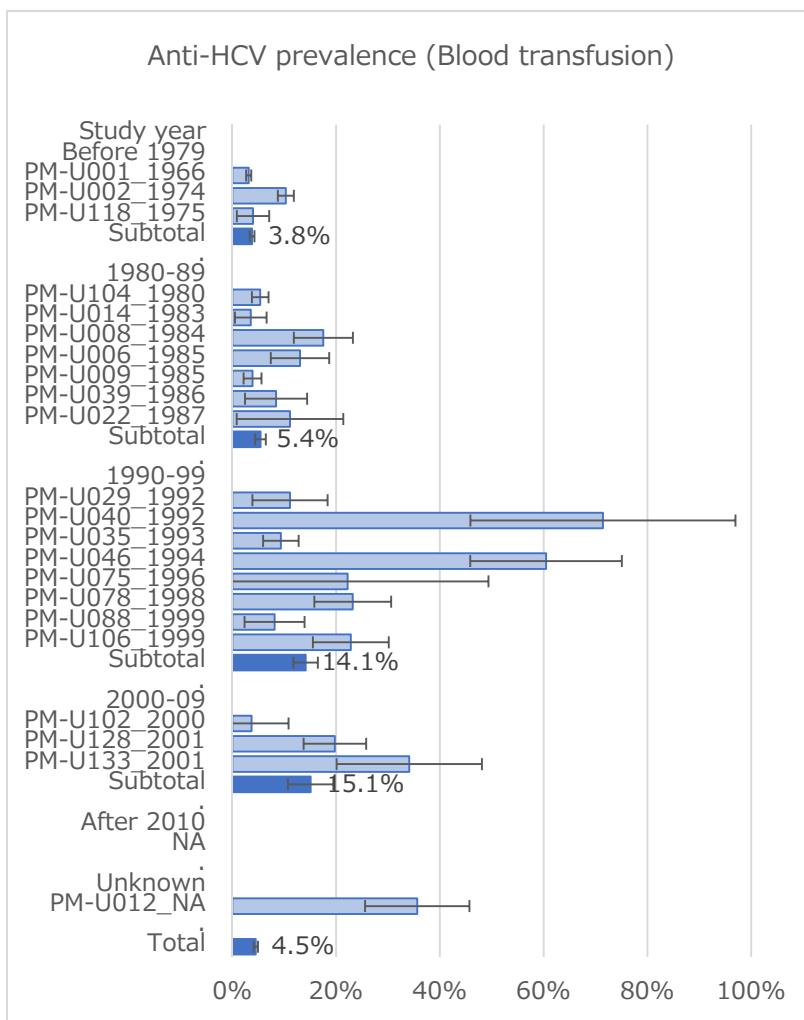


図 14. 時代別にみたアメリカの HCV 有病率メタアナリシス【リスク要因：輸血歴あり】

(2) 手術歴を有する集団における HCV 感染率 (HCV 抗体陽性率) *Prevalence of anti-HCV positive rate among subjects with surgery recording*

時期別にみた手術歴を有する集団における HCV 抗体陽性率の推移を図 15 に示した。

研究開始年が 1979 年以前の文献はなく、1980-89 年は 1 文献 (有病率 1.7%)、1990-99 年は 2 文献 (統合有病率 6.5%)、2000-09 年、2010 年以降の文献はなく、全 3 文献の統合有病率は 2.4% であった。

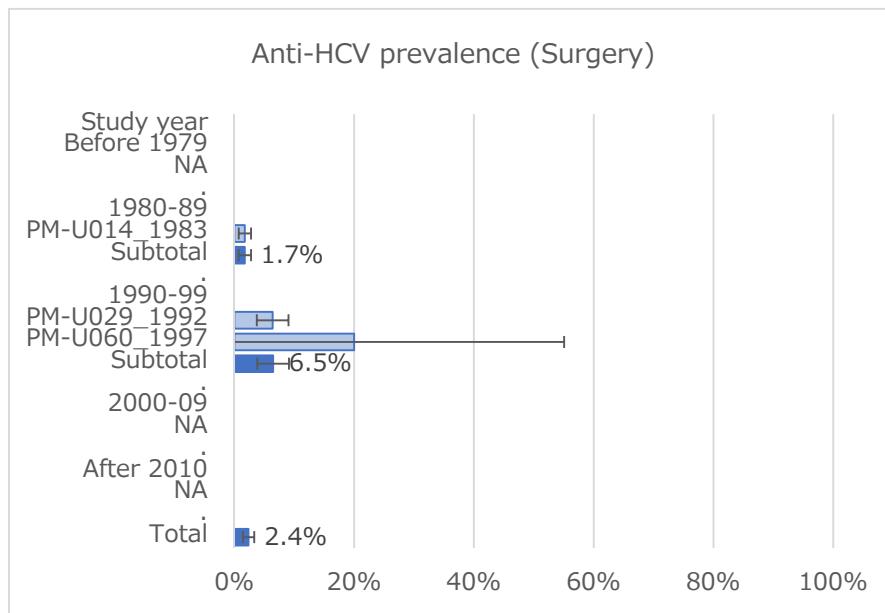


図 15. 時代別にみたアメリカの HCV 有病率メタアナリシス【リスク要因：手術歴あり】

(3) 透析歴を有する集団における HCV 感染率 (HCV 抗体陽性率) *Prevalence of anti-HCV positive rate among subjects with hemodialysis recording*

時期別にみた透析歴を有する集団における HCV 抗体陽性率の推移を図 16 に示した。研究開始年が 1979 年以前は 1 文献(有病率 14.1%)、1980-89 年は 1 文献(統合有病率 21.7%)、1990-99 年はなく、2000-09 年は 4 文献(統合有病率 10.3%)、2010 年以降の文献はなく、研究年不明 1 文献であり、全 7 文献の統合有病率は 10.7% であった。

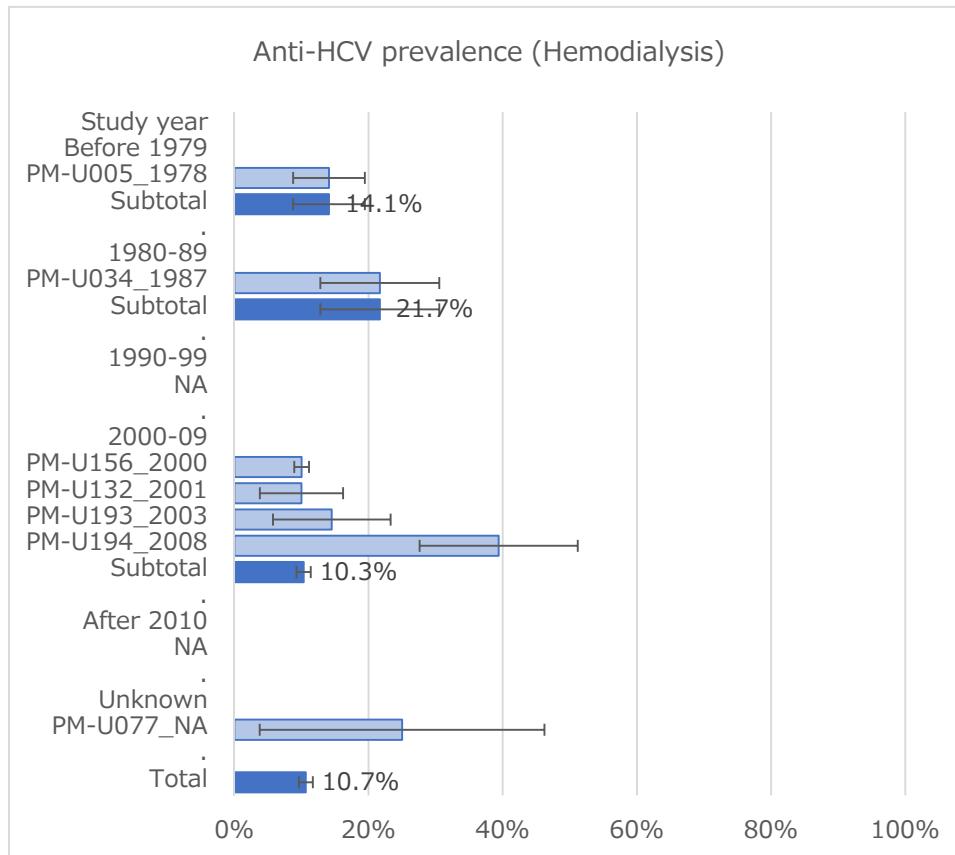


図 16. 時代別にみたアメリカの HCV 有病率メタアナリシス【リスク要因：透析あり】

4) HCV 感染リスク要因オッズ比に関するメタアナリシス *Meta-analysis for odds ratio of HCV infection risk by exposure of each factor*

(1) 針刺し事故による HCV 感染オッズ比 *Odds ratio of HCV infection by Accidental puncture*

図 17 に針刺し事故と HCV 感染の関連に関するメタアナリシスの結果を示した。3 つの研究を統合した結果、統合オッズ比は 1.77 (95CI: 0.43-7.25) であり、HCV 感染との有意な関連性は認められなかった。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

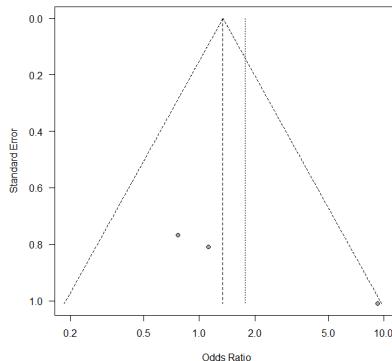
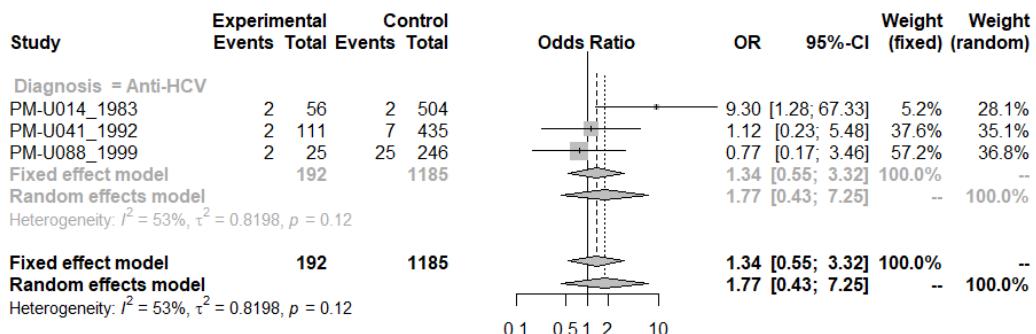


図 17. アメリカにおける針刺し事故による HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

(2) 鍼治療による HCV 感染オッズ比 *Odds ratio of HCV infection by Acupuncture*

図 18 に鍼治療と HCV 感染の関連に関するメタアナリシスの結果を示した。2 つの研究を統合した結果、統合オッズ比は 1.20(95CI: 0.18-8.20)であり、HCV 感染との有意な関連性は認められなかった。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

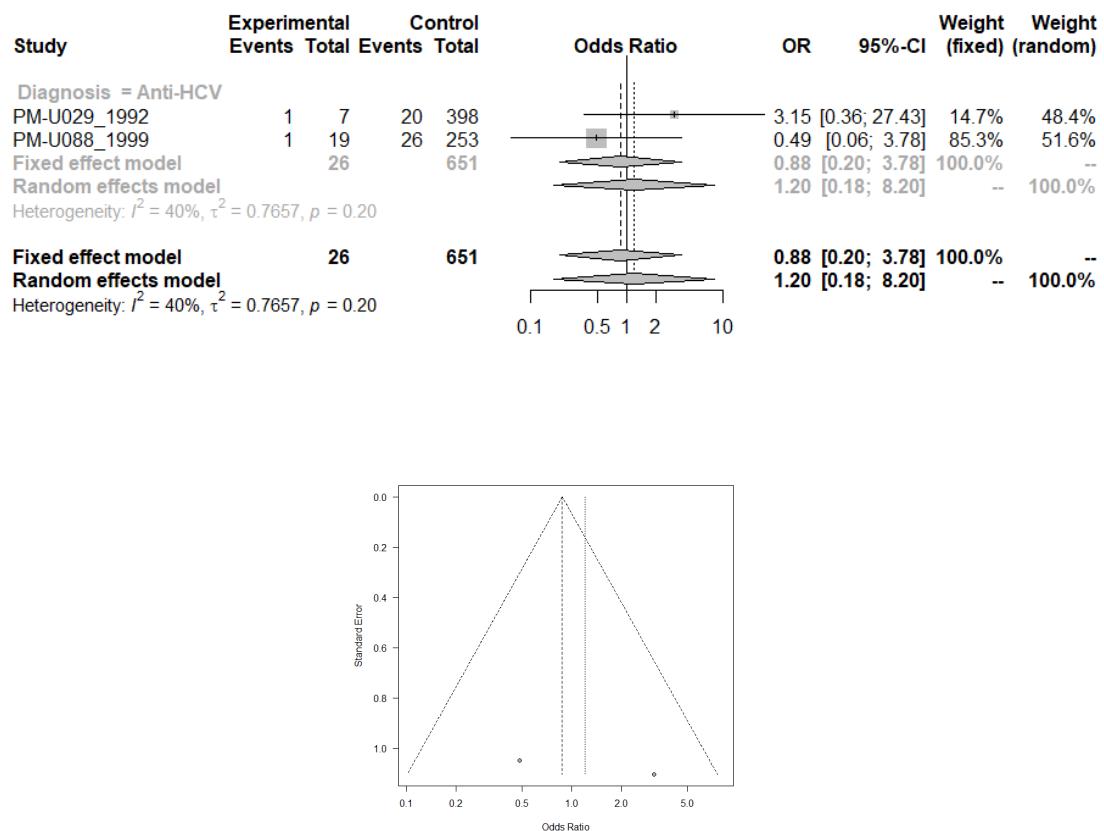


図 18. アメリカにおける鍼治療による HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

(3) 輸血による HCV 感染オッズ比 *Odds ratio of HCV infection by Blood transfusion*

図 19 に輸血と HCV 感染の関連に関するメタアナリシスの結果を示した。10 つの研究を統合した結果、統合オッズ比は 1.73(95CI: 1.13-2.64)であり、HCV 感染との有意な関連性は認められた。

漏斗プロットはほぼ左右対称に分布しており、メタアナリシスの結果は公表バイアスの影響は少ないと判断できる。

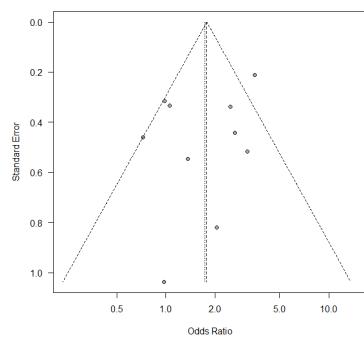
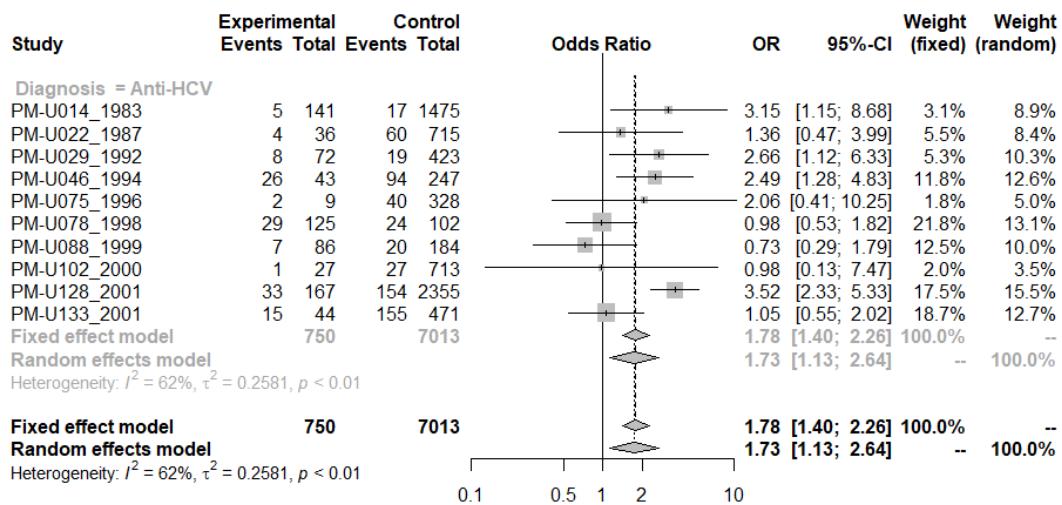


図 19. アメリカにおける輸血による HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

(4) ドラッグユーザーによる HCV 感染オッズ比 *Odds ratio of HCV infection by Intravenous drug use*

図 20 にドラッグユーザーと HCV 感染の関連に関するメタアナリシスの結果を示した。

12 つの研究を統合した結果、統合オッズ比は 15.0(95CI: 7.58-29.68)であり、HCV 感染との有意な関連性は認められた。

漏斗プロットはほぼ左右対称に分布しており、メタアナリシスの結果は公表バイアスの影響は少ないと判断できる。

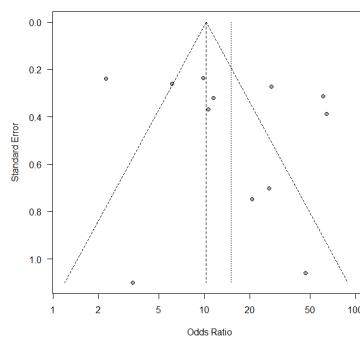
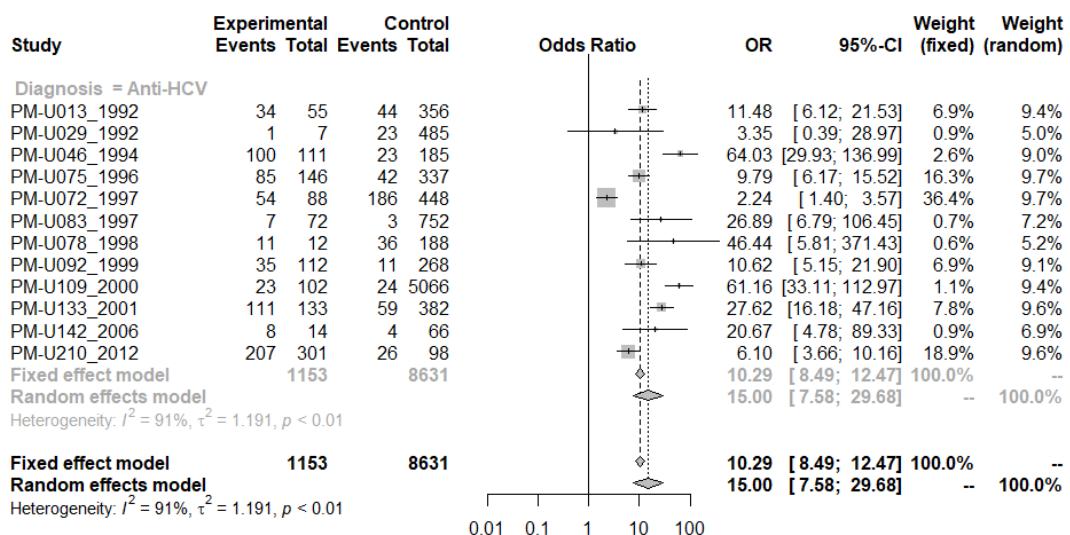


図 20. アメリカにおけるドラッグユーザーによる HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

(5) 鍼共有による HCV 感染オッズ比 *Odds ratio of HCV infection by Needle sharing*

図 21 に鍼共有と HCV 感染の関連に関するメタアナリシスの結果を示した。2 つの研究を統合した結果、統合オッズ比は 1.81(95CI: 1.02-3.22)であり、HCV 感染との有意な関連性は認められた。

また、研究数が少ないため、公表バイアスの影響については判断不能であった。

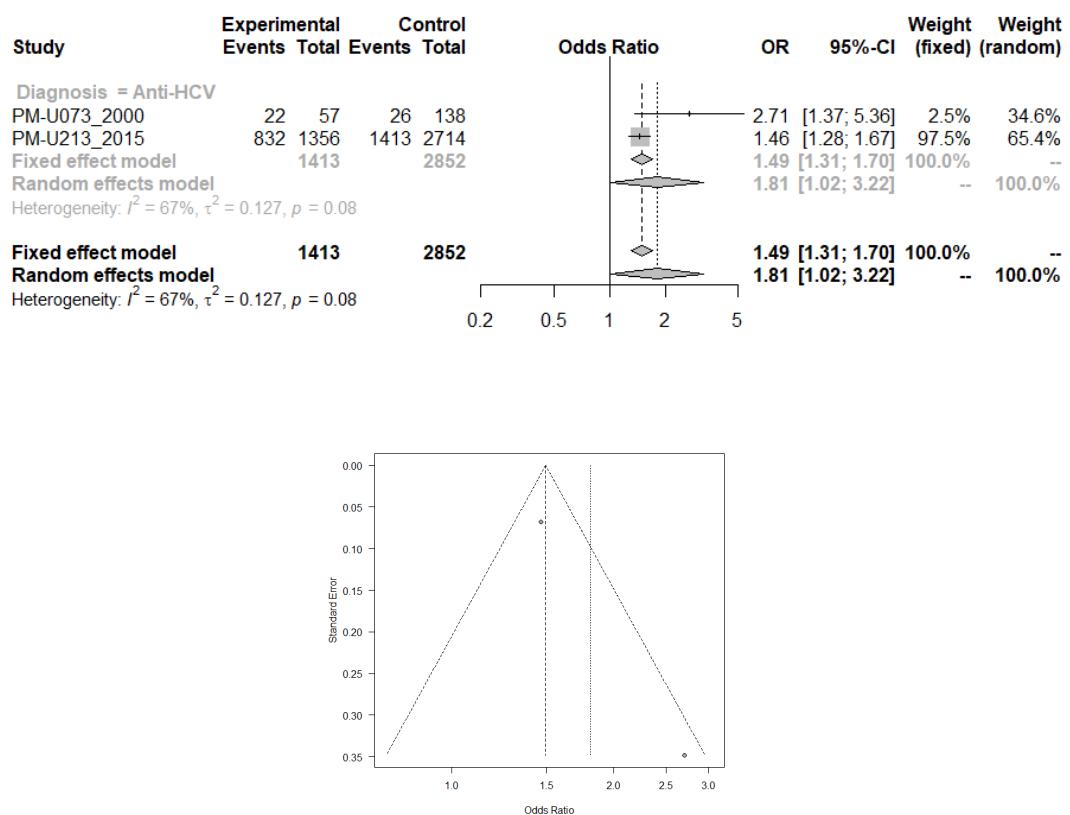


図 21. アメリカにおける鍼共有による HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

(6) ピアスによる HCV 感染オッズ比 *Odds ratio of HCV infection by Piercing*

図 22 にピアスと HCV 感染の関連に関するメタアナリシスの結果を示した。4 つの研究を統合した結果、統合オッズ比は 0.91(95CI: 0.42-1.97)であり、HCV 感染との有意な関連性は認められなかった。

漏斗プロットはほぼ左右対称に分布しており、メタアナリシスの結果は公表バイアスの影響は少ないと判断できる。

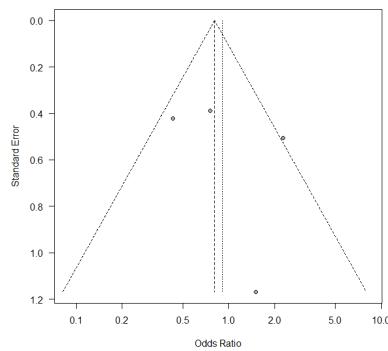
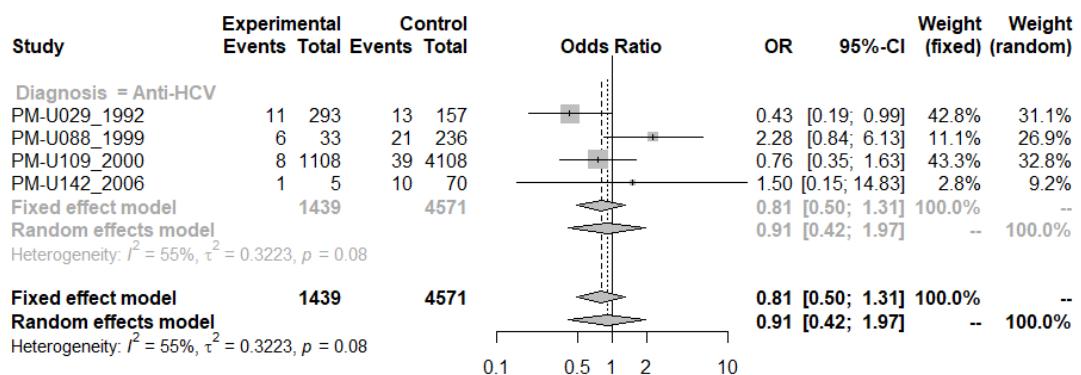


図 22. アメリカにおけるピアスによる HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

(7) 性交渉による HCV 感染オッズ比 *Odds ratio of HCV infection by Sexual*

図23に性交渉とHCV感染の関連に関するメタアナリシスの結果を示した。10つの研究を統合した結果、統合オッズ比は2.24(95CI: 1.07-4.68)であり、HCV感染との有意な関連性は認められた。

漏斗プロットにより1例のオッズ比が高値（外れ値）であったため、公表バイアスの影響が強いと判断できる。

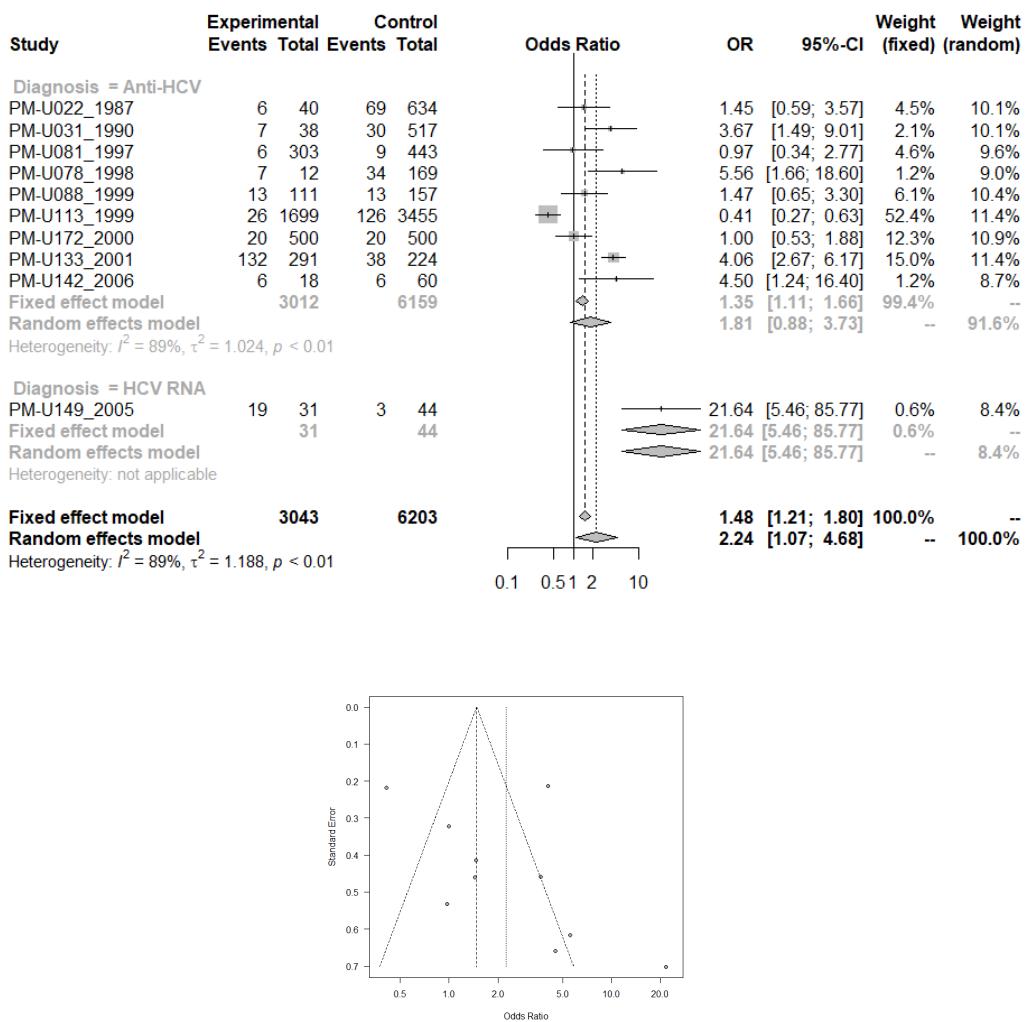


図23. アメリカにおける性交渉によるHCV感染リスクに関するメタアナリシス  
(Forest plotとFunnel plot)

(8) タトゥによる HCV 感染オッズ比 *Odds ratio of HCV infection by Tattooing*

図 24 にタトゥと HCV 感染の関連に関するメタアナリシスの結果を示した。9 つの研究を統合した結果、統合オッズ比は 2.33(95CI: 1.49-3.62)であり、HCV 感染との有意な関連性は認められた。

漏斗プロットはほぼ左右対称に分布しており、メタアナリシスの結果は公表バイアスの影響は少ないと判断できる。

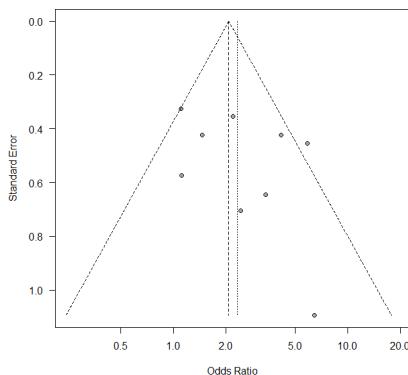
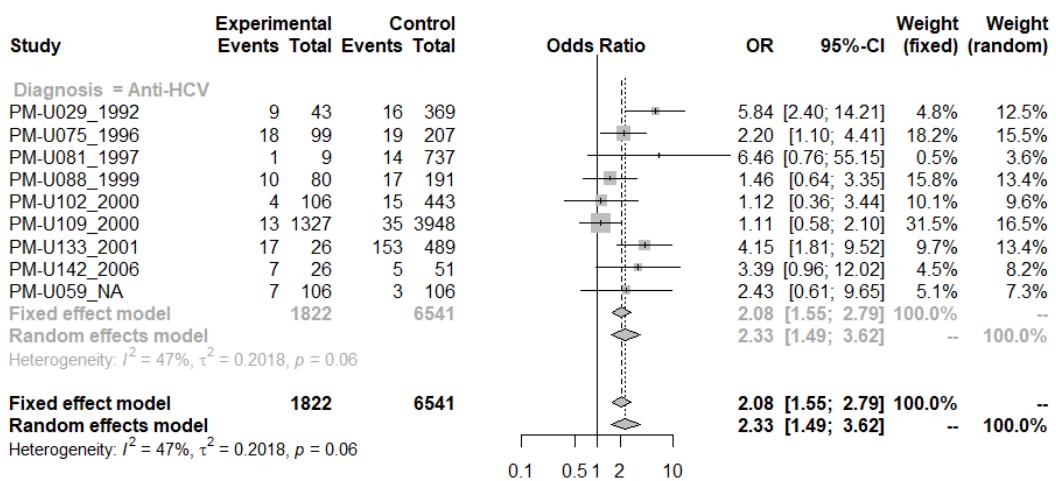


図 24. アメリカにおけるタトゥによる HCV 感染リスクに関するメタアナリシス  
(Forest plot と Funnel plot)



## D. 国内外におけるフィブリノゲン製剤によるHCV感染 *Fibrinogen and HCV*

### 1. 文献抽出、文献レビューとメタアナリシスの方法 *Method for paper selection, reviewing and meta-analysis*

#### 1) データベースと検索方法 *Database and searching strategy*

文献の検索は PubMed および医中誌を使用した。検索は 2019 年 11 月 6 日より行った。医中誌の検索については、2020 年 10 月 7 日に検索式を見直し（検索式 2）、再度検索を行った。PubMed および医中誌のキーワードを表 8～10 に示す。

フィブリノゲン製剤による薬害肝炎に関する厚労省報告書についても対象とした。

表 8. データベース検索結果

CQ	To estimate the relative risk of hepatitis C (including non-A non-B, before 1989) infection by fibrinogen preparations (Specially in Japan and USA)
データベース	PubMed 医中誌
日付	PubMed : 2019.11.06 医中誌 : 2019.11.06、2020.10.07
検索者	NY,EB,OS

表 9. 医中誌による検索の検索式および検索数

#	検査式 1 (2019.11.06)	
1	肝炎 AND フィブリノゲン 【絞り込み条件：原著論文のみ】	42
Total	#1	計 42

#	検査式 2 (2020.10.07)	
1	肝炎 AND (フィブリノゲン OR 血液凝固因子製剤) 【絞り込み条件：なし】※会議録含む	106
Total	#1	計 106

表 10. PubMed による検索の検索式および検索数

#	Search Query	Number
1	“hepatitis” AND fibrinogen	615
Total	#1	Total 615

2) 文献の選択基準と除外基準 *Include and exclude criteria*

1) のキーワードで抽出された文献のアブストラクトおよびフルテキストを選別するための選択基準・除外基準は以下の通り設定した。

選択基準・除外基準は以下のとおりである。なお、1989 年以前は C 型肝炎ウイルスが発見されていないため、基準 1)-b)を設けている。

【選択基準 *Include criteria*】

(1) 以下 a), b)のどちらかをみたす Article which fall under any of the following a) or b)

a) 1990 年以降に実施された研究で、かつ C 型肝炎ウイルスとフィブリノゲンについての記載がある Study which is started after 1990 and article with description about HCV infectious and fibrinogen

b) 1989 年以前に実施された研究で、かつ肝炎のリスク要因に関する記載があるもの Study which is started before 1989 and article which description about hepatitis and fibrinogen

【除外基準 *Exclude criteria*】

(1) 総説 *Review article*

(2) A 型肝炎・B 型肝炎・D 型肝炎・E 型肝炎のみを対象としたことが明らかである文献

The study only targeted HAV, HBV, HDV and HEV.

3) アブストラクトレビューおよびフルテキストレビューの方法 *Method for abstract review and full-text review*

PubMed、医中誌により抽出された文献のアブストラクトに対し、それぞれ 2 名の研究者が独立にアブストラクトレビューを行った (PubMed : E.B.・O.S、医中誌 : Y.N.・A.S.)。2) の選択基準・除外基準に従い、フルテキストレビューの対象であるか除外であるかを評価した。2 名の判定が異なった場合は、第 3 者 (T.A.または M.O.) が独立に評価し、3 者の話し合いにより最終判定とした。

フルテキストレビューの対象となった文献は、それぞれ 2 名の研究者が独立にアブストラクトレビューを行った (PubMed : E.B.・O.S、医中誌 : Y.N.・A.S.)。2) の選択基準・除外基準に従い、質的統合の文献であるか、除外であるかを評価した。

また、対象者数、オッズ比など HCV 有病率・感染リスクのメタアナリシスに必要な情報が掲載されているか否かの評価も行った。

なお、質的統合の過程で、研究の質 (バイアス等) を記載しているが、システムティックレビューやメタアナリシスの除外条件には用いていない。

4) 質的統合の対象となった文献から抽出する情報 *Contents from reviewed papers*

各文献から以下の情報を抽出した。

- 論文の基本情報：タイトル、著者、雑誌名、巻号、ページ、DOI

- 研究デザイン：ケースシリーズ、横断研究、症例対照研究、後ろ向きコホート研究、コホート研究
- 研究対象の種類：一般住民、妊婦、病院受診者
- 対象者選出方法：無作為抽出など
- 全対象者数
- 対象者の男女比
- 対象者の平均年齢±標準偏差
- HCV 感染の定義：HCV RNA 陽性、HCV 抗体陽性
- フィブリノゲン製剤投与対象者数と感染者数（感染率）
- フィブリノゲン製剤費投与対象者数と感染者数（感染率）
- リスク指標の種類：オッズ比、ハザード比
- フィブリノゲン製剤に関する粗オッズ比、95%信頼区間、P 値
- フィブリノゲン製剤に関する調整オッズ比、95%信頼区間、P 値、調整因子
- その研究において考えられるバイアス

#### 5) メタアナリシスの方法 *Method for meta-analysis*

フィブリノゲンを処方された集団における HCV 有病率について時代別に逆分散法によるメタアナリシスを行った。また、時期に分けてサブ解析を行った。

また、対照群を置いている研究について、Fixed effect model および Random effects model によるオッズ比のメタアナリシスを行った。なお、HCV 感染の定義を、HCV 抗体としている文献、HCV RNA としている文献ごとにサブ解析を行った。

#### 6) アメリカ FDA レポート調査 *FDA report review*

上記 1)～5) とは別に、FDA で公開されているフィブリノゲン製剤に関する情報を要約した。

## 2. 文献抽出、文献レビューとメタアナリシスの結果 *Study result of paper selection, reviewing and meta-analysis*

### 1) 文献スクリーニングのプロセス *Process of paper screening*

医中誌によるキーワード検索（検索式 1、2019.11.06、図 25 左側）では 42 文献がヒットし、フィブリノゲン製剤による薬害肝炎に関する厚労省報告書（日本語）から抽出された 7 文献を加えた 49 文献についてタイトルとアブストラクトのレビューを行った。その結果抽出された 9 文献がフルテキストレビューの対象となった。フルテキストレビューの結果、4 文献がシステムティックレビューに採用された。そのうち、1 文献が有病率のメタアナリシスに採用された。オッズ比のメタアナリシスに関する情報を有する文献は含まれなかった。

医中誌によるキーワード検索（検索式 2、2020.10.07、図 25 右側）では 106 文献がヒットし、タイトルとアブストラクトのレビューを行った。その結果抽出された 23 文献がフルテキストレビューの対象となった。フルテキストレビューの結果、10 文献がシステムティックレビューに採用された。オッズ比のメタアナリシスに関する情報を有する文献は含まれなかった。検索式 1 の結果との重複文献が 1 つあり、最終的に検索式 1、2 をあわせた 13 文献がシステムティックレビューに採用された。

Pubmed によるキーワード検索（図 26）では 615 文献がヒットし、フィブリノゲン製剤による薬害肝炎に関する厚労省報告書（英語）から抽出された 30 文献を加えた 645 文献から重複 1 文献を除く 644 文献についてタイトルとアブストラクトのレビューを行った。その結果抽出された 68 文献がフルテキストレビューの対象となった。フルテキストレビューの結果、25 文献がシステムティックレビューに採用された。また、そのうち、12 文献が有病率のメタアナリシスに採用され、3 文献がオッズ比のメタアナリシスに採用された。

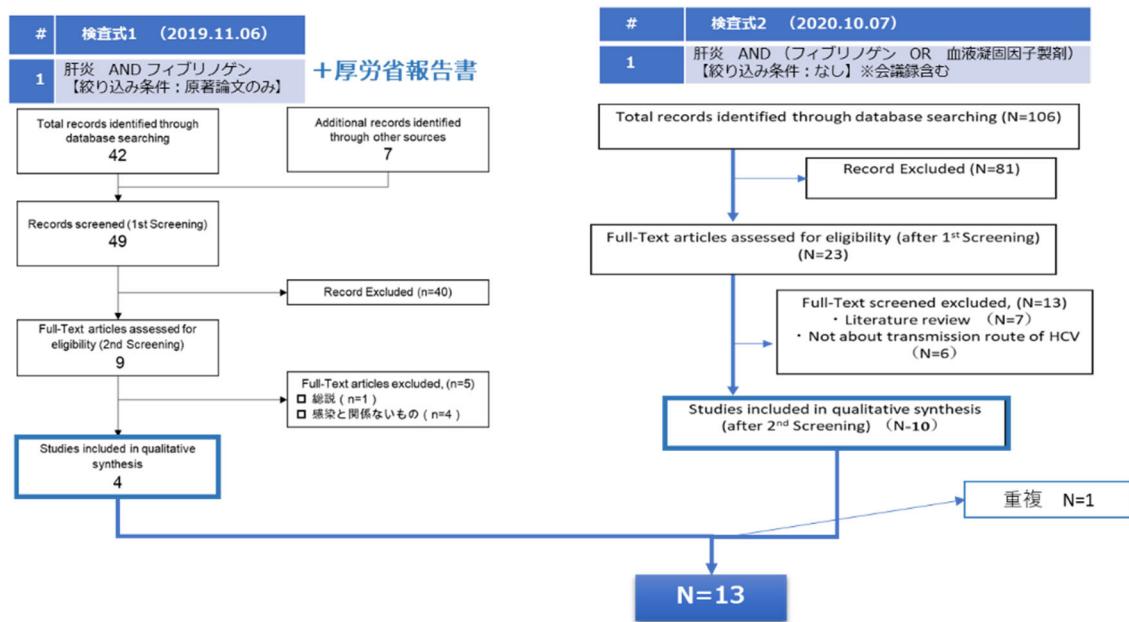


図 25. フィブリノゲン製剤による HCV 感染に関する文献検索のフローチャート  
【医中誌+厚労省報告書 (日本語)】

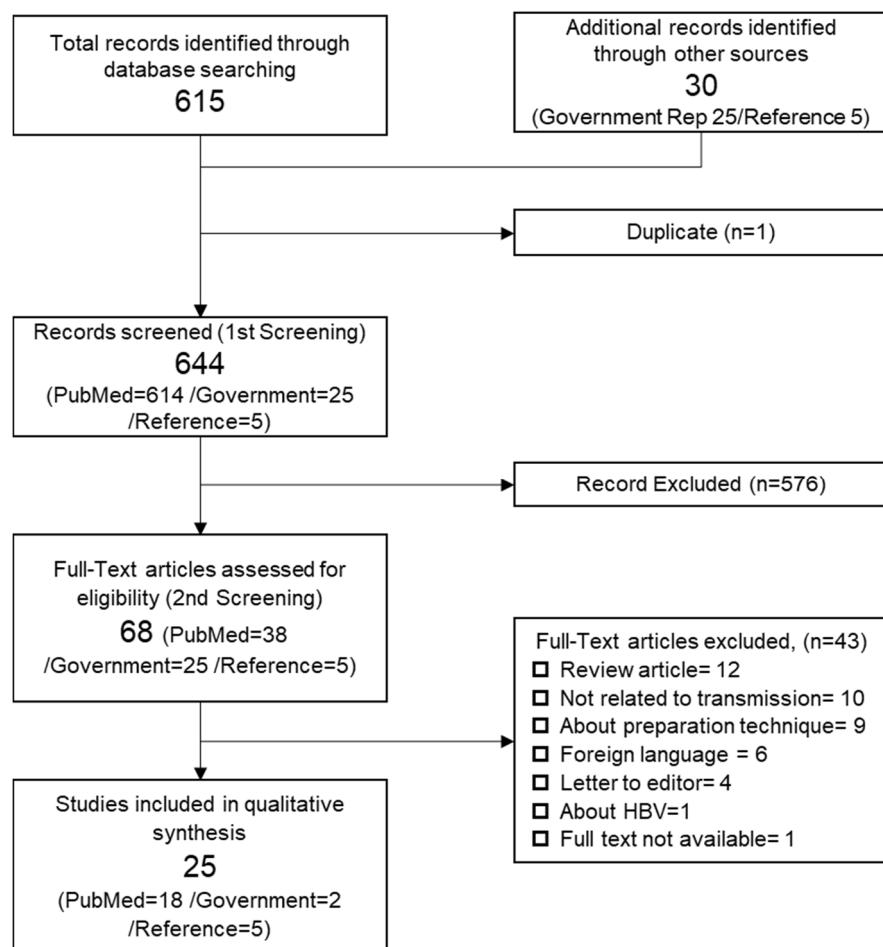


図 26. フィブリノゲン製剤による HCV 感染に関する文献検索のフローチャート  
【Pubmed + 厚労省報告書（英語）】

表 11 にシステムティックレビューに採用された文献数、メタアナリシスに採用された文献数について示した。

表 11. フィブリノゲンと肝炎の関連に関するシステムティックレビューとメタアナリシスの採用文献 Summary of included articles by factor

		Systematic review			Meta-analysis	
Risk factor	Number of articles	ID of articles			Number of articles	ID of articles
Fibrinogen concentrate	Pubmed 13	IC-F004	PM-F016	PM-F035	Pubmed 10	GR-J-F001
	Ichusi 1	GR-J-F001	PM-F017	PM-F036		PM-F014
	Government report 1	RF-J-F001	PM-F020	PM-F037		RF-F001
	Reference 6	RF-J-F002	PM-F025	RF-F001	Government report 1	<b>PM-F016</b>
	<b>Total 21</b>	PM-F002	PM-F030	RF-F002	Reference 2	RF-F002
		PM-F009	PM-F032	RF-F003	<b>Total 13</b>	PM-F002
		PM-F013	PM-F034	RF-F004		<b>PM-F030</b>
						PM-F008
						<b>PM-F009</b>
						PM-F032
						<b>PM-F037</b>
						PM-F012
Fibrin glue	Pubmed 3	PM-F008 PM-F012 PM-F014				
	<b>Total 3</b>					
Other clotting factors	Government report 2	GR-F012 GR-F020				
	<b>Total 2</b>					
Intravenous Immunoglobulin	Reference 1	RF-F005				
	<b>Total 1</b>					

3) 時代別にみたフィブリノゲン製剤投与例における HCV 有病率メタアナリシス *Meta-analysis for prevalence of HCV among fibrinogen-dosed group by study period*

時期別にみたフィブリノゲン製剤投与例における HCV 抗体陽性率の推移を図 27 に示した。研究開始年が 1979 年以前は 3 文献（統合有病率 29.8%）、1980-89 年は 6 文献（統合有病率 0.4%）、1990-99 年はなく、2000-09 年は 1 文献（有病率 3.2%）、2010 年以降の文献はなく、研究年不明 3 文献であり、全 13 文献の統合有病率は 2.8% であった。

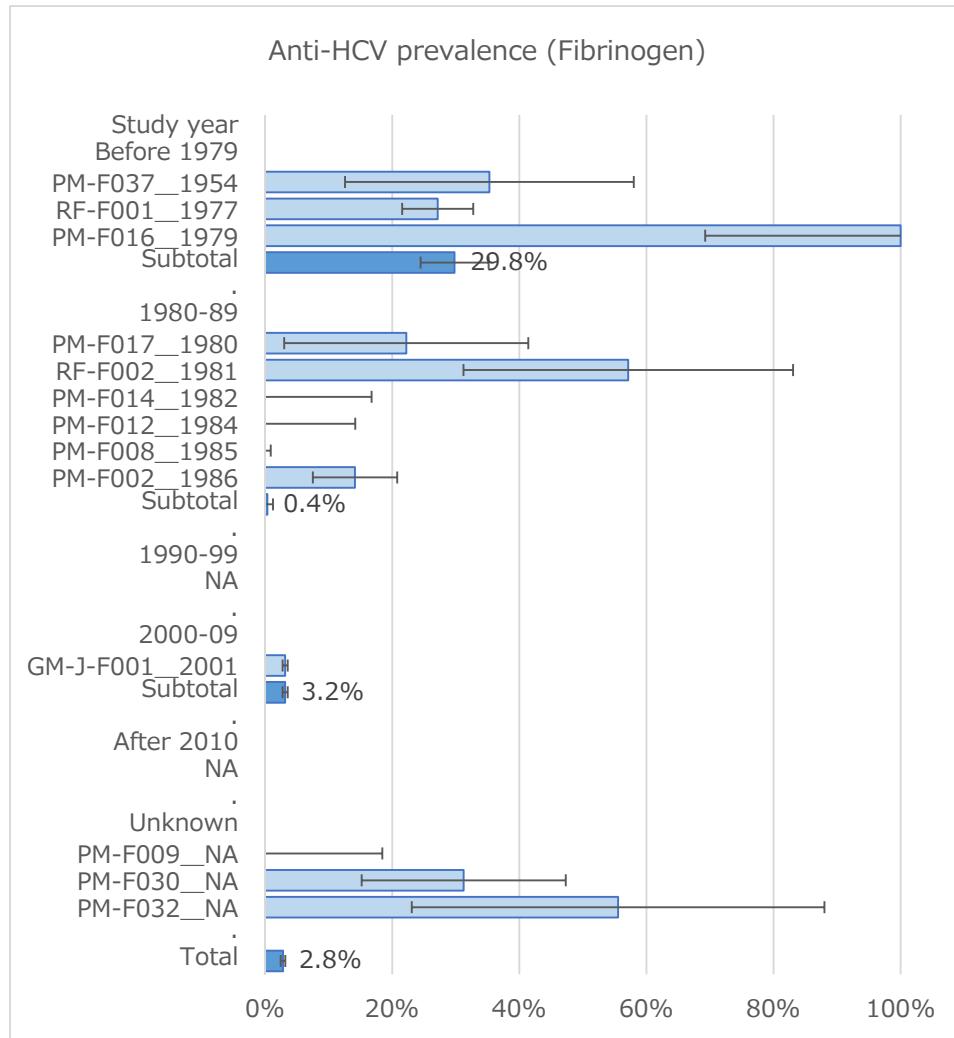


図 27. 時代別にみたフィブリノゲン製剤投与例における HCV 有病率メタアナリシス

4) フィブリノゲン製剤による HCV 感染リスクオッズ比メタアナリシス *Meta-analysis for odds ratio of HCV infection risk by fibrinogen-dose*

選択された文献のうち、フィブリノゲン製剤に関する文献のうち、非投与例を含むものは3文献であった。これらをメタアナリシスに用いた。図28にフィブリノゲンとHCV感染/肝炎の関連に関するメタアナリシスの結果を示した。3つの研究を統合した結果、統合オッズ比は332.27(95CI: 2.80-39471.23)であり、HCV感染/肝炎との有意な関連性が認められた。

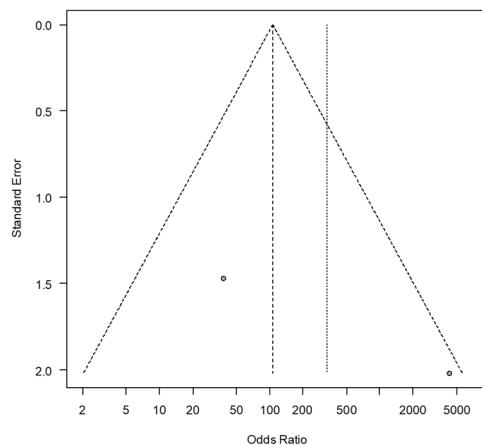
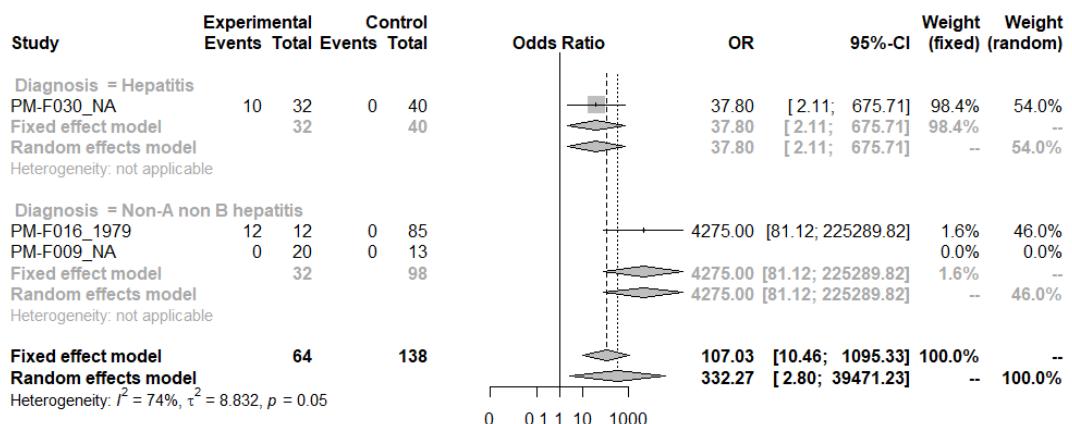


図28. フィブリノゲンによる肝炎リスクに関するメタアナリシス  
(Forest plot と Funnel plot)

4) アメリカ FDA のフィブリノゲン製剤に関する情報要約 *Summary of FDA report related to HCV infection risk of fibrinogen*

アメリカ FDA (Food and Drug Administration) は出血時あるいはフィブリノゲン低値に対する治療薬としてフィブリノゲン製剤を 1947 年に初めて承認した。その後、1977 年までに計 5 種類のフィブリノゲン製剤が承認されている。しかし 1977 年にフィブリノゲン製剤の治療効果が不確かであること、肝炎のリスクがあることを理由に承認を取り下げた。承認取り下げに関しては、Federal Register (vol43, No4, Jan6, 1978, p1131-1132) に以下のように記載されている(以下原文のまま)。

**FIBRINOGEN(HUMAN)**

**Revocation of Licenses**

Summary: This document announces that all licenses issued for the manufacture of the biological product fibrinogen (human) were revoked as of December 7, 1977, and the sale, barter, or exchange of fibrinogen(human) by any manufacturer was prohibited as of that date. This action was taken at the request of the licensed manufacturers because the effectiveness of fibrinogen(human) is questionable and other products that carry lower risks of transmitting hepatitis may be used in its place. The Commissioner further gives notice that fibrinogen(human) already sold and delivered by the manufacturer may not be resold after July 1, 1978.

*FEDERAL REGISTER, VOL.43, NO.4-FRIDAY, JANUARY 6, 1978*

その後 FDA は 2009 年に先天性フィブリノゲン欠損症の急性出血時への治療として新たにフィブリノゲン製剤 (RiaSTap™) を承認した。次いで 2017 年にはフィブリノゲン製剤 (FIBRYNA®) を承認した。

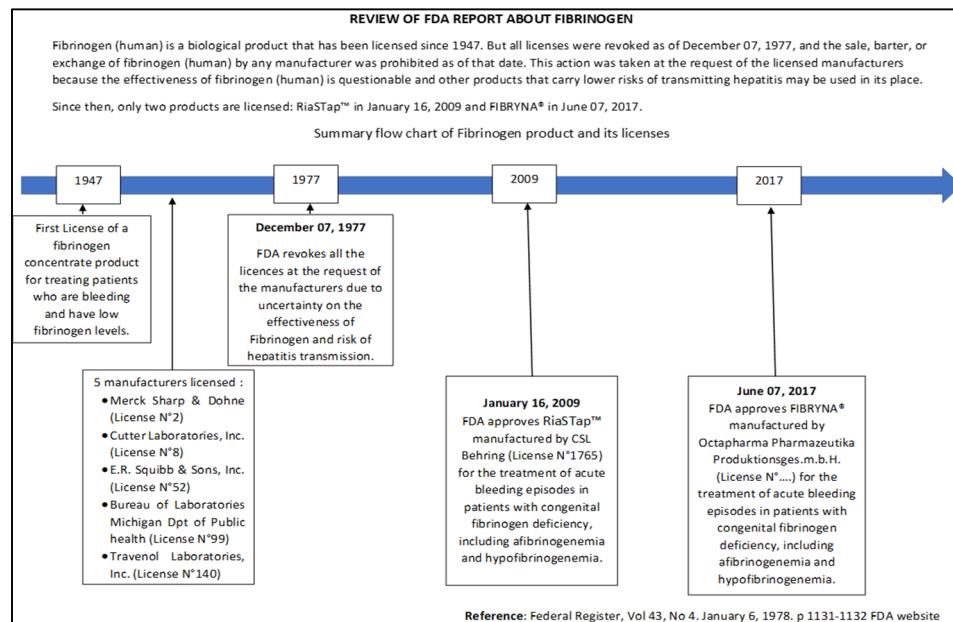


図 29. アメリカ FDA によるフィブリノゲン製剤の承認年表

-FDA の報告書 (Federal Register, vol43, No4, January 6, 1978) をもとに当研究班が作成-

## E. HCV 感染リスク要因のメタアナリシスのまとめ

HCV 感染リスク要因のメタアナリシスの結果要約を表 12 に示した。日本人を対象とした研究では、性交渉 (OR=11.84)、透析 (OR=11.38)、輸血 (OR=4.93)、手術 (OR=3.42)、鍼治療 (OR=1.49) の 5 要因が HCV 感染と有意に関連していた。アメリカ人を対象とした研究ではドラッグユーザー (OR=15.00)、タトゥ (OR=2.33)、性交渉 (OR=2.24)、針共有 (OR=1.81)、輸血 (OR=1.73) の 5 要因が HCV 感染と有意に関連していた。

また、フィブリノゲン製剤の使用は 3 文献のみであるが、非 A 非 B 肝炎または肝炎と有意に関連していた。

表 12. HCV 感染リスク要因のメタアナリシスの結果

	日本人			アメリカ人		
	統合した文献数	統合オッズ比	有意性※	統合した文献数	統合オッズ比	有意性※
針刺し事故	2	0.82	NS	3	1.77	NS
鍼治療	3	1.49	+	2	1.20	NS
輸血	18	4.93	+	10	1.73	+
母乳	2	0.87	NS	—		
透析	2	11.38	+	—		
ドラッグユーザー	—			12	15.00	+
針共有	—			2	1.81	+
ピアス	—			4	0.91	NS
性交渉	2	11.84	+	10	2.24	+
手術	6	3.42	+	—		
刺青・タトゥ	—			9	2.33	+

表 13. 非 A 非 B 肝炎または肝炎（1989 年以前の文献）リスク要因のメタアナリシスの結果

	全世界		
	統合した文献数	統合オッズ比	有意性※
フィブリノゲン	3	333.27	+

※：NS 有意な関連なし、+ 感染リスクが高いことと有意な関連あり



**F. 血液製剤による HCV 感染リスクに関する動物実験 *HCV transmission risk through blood products in animals.***

**1. 文献抽出、文献レビューとメタアナリシスの方法 *Method for paper selection, reviewing and meta-analysis***

**1) データベースと検索方法 *Database and searching strategy***

文献の検索は PubMed を使用した。検索は 2020 年 10 月 7 日により行った。PubMed のキーワードを表 14～15 に示す。

表 14. データベース検索結果

CQ	To estimate the risk of HCV transmission through blood products in animals.
データベース	PubMed
日付	2020.10.07
検索者	OS and BT

表 15. PubMed による検索の検索式および検索数

#	Date (Publication Year)	Search Query	Number
1	ALL	(Blood Coagulation Factor) AND (Chimpanzee OR mouse) AND hepatitis	218

**2) 文献の選択基準と除外基準 *Include and exclude criteria***

1) のキーワードで抽出された文献のアブストラクトおよびフルテキストを選別するための選択基準・除外基準は以下の通り設定した。

選択基準・除外基準は以下のとおりである。なお、1989 年以前は C 型肝炎ウイルスが発見されていないため、基準 1)-b)を設けている。

**【選択基準 Include criteria】**

(1) 以下 a), b)のどちらかをみたす Article which fall under any of the following a) or b)

a) 1990 年以降に実施された研究で、かつ C 型肝炎ウイルスの感染経路・感染リスク要因についての記載がある Study which is started after 1990 and article with description about HCV infectious route and/or HCV infectious risk

b) 1989 年以前に実施された研究で、かつ肝炎のリスク要因に関する記載があるもの

Study which is started before 1989 and article which description about risk of hepatitis.

【除外基準 Exclude criteria】

(1) 総説 Review article

(2) A 型肝炎・B 型肝炎・D 型肝炎・E 型肝炎のみを対象としたことが明らかである文献

The study only targeted HAV, HBV, HDV and HEV.

3) アブストラクトレビューおよびフルテキストレビューの方法 *Method for abstract review and full-text review*

PubMed により抽出された文献のアブストラクトに対し、2 名の研究者がアブストラクトレビューを行った。2) の選択基準・除外基準に従い、フルテキストレビューの対象であるか除外であるかを評価した。フルテキストレビューの対象となった文献は、2 名の研究者がアブストラクトレビューを行った。2) の選択基準・除外基準に従い、質的統合の文献であるか、除外であるかを評価した。

4) 質的統合の対象となった文献から抽出する情報 *Contents from reviewed papers*

各文献から以下の情報を抽出した。

- 論文の基本情報：タイトル、著者、雑誌名、巻号、ページ、DOI
- 研究デザイン：動物実験
- 研究対象の種類：動物（チンパンジー、マウス、他）
- 対象数
- 対象血液製剤
- 不活化方法
- HCV 感染結果
- その研究において考えられるバイアス

## 2. 文献抽出、文献レビューとメタアナリシスの結果 *Study result of paper selection, reviewing and meta-analysis*

1) 文献スクリーニングのプロセス *Process of paper screening*

Pubmed によるキーワード検索（図 30）では 218 文献がヒットし、タイトルと要約を確認し 206 文献となった。フルテキストスクリーニングを行い 12 文献が抽出されたが、うち 3 文献が除外の対象となり（1 文献は HCV の内容ではない。2 文献は動物が対象ではない）結果 9 文献となった。そのうちフィブリノゲン製剤に関する文献は 1 文献のみだった。

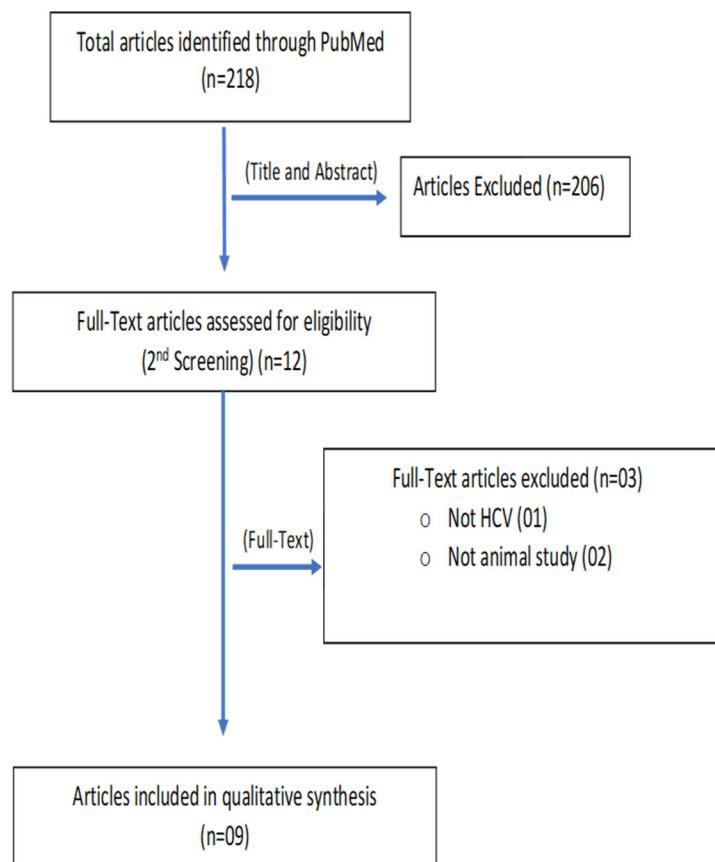


図 30. 血液製剤による HCV 感染リスクに関する動物実験についての文献検索のフローチャート  
【Pubmed (英語)】



## G. 考察

HCV キャリア率の年齢別分布は国によって異なっており、日本では第二次世界大戦直後 1940 年代後半から 1950 年代の前半に、アメリカではその 20 年後のベトナム戦争の時代に、ウクライナではさらにその 10 年後アフガニスタン紛争の時代においてそれぞれ高率である<sup>1</sup>ことが指摘されている（図 31）。

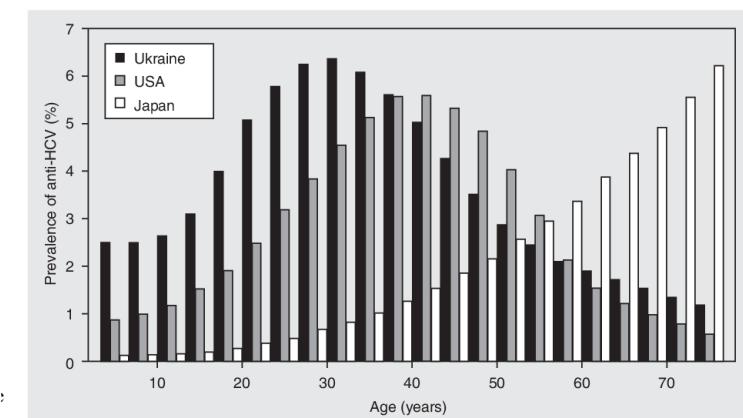


図 31. 日本、アメリカ、ウクライナの年齢別 HCV 抗体陽性率<sup>1</sup>

今回、本研究では日本およびアメリカにおける HCV の感染経路・感染リスク要因の経時的傾向を把握することを目的に、システムティックレビューを行った。また、HCV 感染経路のなかでもフィブリノゲン製剤による感染については、国内外の報告についてシステムティックレビューを行った。その結果、日本人を対象とした研究では、性交渉（OR=11.84）、透析（OR=11.38）、輸血（OR=4.93）、手術（OR=3.42）、鍼治療（OR=1.49）の 5 要因が HCV 感染と有意に関連していた。アメリカ人を対象とした研究ではドラッグユーザー（OR=15.00）、タトゥ（OR=2.33）、性交渉（OR=2.24）、針共有（OR=1.81）、輸血（OR=1.73）の 5 要因が HCV 感染と有意に関連していた。

また、フィブリノゲン製剤の使用は 3 文献のみであるが、非 A 非 B 肝炎または肝炎と有意に関連していた。

<sup>1</sup> H. Yoshizawa. Hepatocellular Carcinoma Associated with Hepatitis C Virus Infection in Japan: Projection to Other Countries in the Foreseeable Future. *Oncology* 2002;62(suppl 1):8-17



## H. 資料

### 1. フルテキストレビューの対象となった論文一覧表

- 1) 日本における HCV の感染経路に関する文献 【医中誌】 N=112
- 2) 日本における NANB 肝炎の感染経路に関する文献 【厚労科研報告書】 N=16
- 3) 日本における HCV の感染経路に関する文献 【Pubmed】 N=82
- 4) アメリカにおける HCV の感染経路に関する文献 【Pubmed】 N=214
- 5) フィブリノゲン製剤による HCV の感染に関する文献 【医中誌】 N=6
- 6) フィブリノゲン製剤による HCV の感染に関する文献 【厚労省資料】 N=3
- 7) フィブリノゲン製剤による HCV の感染に関する文献 【Pubmed】 N=68

### 2. システマティック・レビュー結果

- 1) 日本における HCV の感染経路に関する文献 【医中誌+厚労科研報告】 N=79
- 2) 日本における HCV の感染経路に関する文献 【Pubmed】 N=48
- 3) アメリカにおける HCV の感染経路に関する文献 【Pubmed】 N=126
- 4) フィブリノゲン製剤による HCV の感染に関する文献 【医中誌+厚労省報告】 N=4
- 5) フィブリノゲン製剤による HCV の感染に関する文献 【Pubmed】 N=25

### 3. FDA で承認されたフィブリノゲン製剤に関する報告資料

- 1) 2009 年に承認されたフィブリノゲン製剤 (RiaSTap™) に関する FDA の報告
- 2) 2017 年に承認されたフィブリノゲン製剤 (FIBRYNA®) に関する FDA の報告

### 4. フルテキストスクリーニングで除外された文献と除外理由



## 1. フルテキストレビューの対象となった論文一覧

新serial number	Language	Information of paper			Study design	Reserch year		Study subjects			subjects who has factor			
		Title	Description	Details		From	to	Subjects	Total N	Outcome	Factor	N	No.who was	Decision
IC-J001	J	〔非A非B型肝炎の臨床と予防〕非A非B型肝炎の感染経路と予防	飯野 四郎(東京大学 第1内科)	日本臨床(0047-1052)40巻12号 Page2729-2734(1998.04)-1052)40巻増刊 Page737-740(1998.02)	レビュー									exclusion
IC-J002	J	非A非B型肝炎の感染経路	志方 俊夫(日本大学 第1病理)	Okamoto Manabu(鳥取大学 医 小児科), Nagata Ikuo, Murakami Jun, Hino Shigeo, Shiraki Kazuo	Review									exclusion
IC-J003	J	HCV母子感染例におけるHCV粒子浮遊密度の変化(英語)		Pediatrics International(1328-8067)41巻4号 Page369-373(1999.08)	症例報告									exclusion
IC-J004	J	地域基幹病院歯科口腔外科受診患者のC型肝炎ウイルス感染について	下山 哲夫(埼玉医科大学総合医療センター), 堀江 憲夫, 小宮山 一雄, 茂呂 周	日本口腔科学会雑誌(0029-0297)47巻3号 Page385-391(1998.07)	横断研究	1994	1996	患者	525	HCV抗体	輸血			13 inclusion
IC-J004	J	地域基幹病院歯科口腔外科受診患者のC型肝炎ウイルス感染について	下山 哲夫(埼玉医科大学総合医療センター), 堀江 憲夫, 小宮山 一雄, 茂呂 周	日本口腔科学会雑誌(0029-0297)47巻3号 Page385-391(1998.07)	横断研究	1994	1996	患者	525	HCV抗体	手術			8 inclusion
IC-J004	J	地域基幹病院歯科口腔外科受診患者のC型肝炎ウイルス感染について	下山 哲夫(埼玉医科大学総合医療センター), 堀江 憲夫, 小宮山 一雄, 茂呂 周	日本口腔科学会雑誌(0029-0297)47巻3号 Page385-391(1998.07)	横断研究	1994	1996	患者	525	HCV抗体	血液製剤			1 inclusion
IC-J004	J	地域基幹病院歯科口腔外科受診患者のC型肝炎ウイルス感染について	下山 哲夫(埼玉医科大学総合医療センター), 堀江 憲夫, 小宮山 一雄, 茂呂 周	日本口腔科学会雑誌(0029-0297)47巻3号 Page385-391(1998.07)	横断研究	1994	1996	患者	525	HCV抗体	薬物			2 inclusion
IC-J004	J	地域基幹病院歯科口腔外科受診患者のC型肝炎ウイルス感染について	下山 哲夫(埼玉医科大学総合医療センター), 堀江 憲夫, 小宮山 一雄, 茂呂 周	日本口腔科学会雑誌(0029-0297)47巻3号 Page385-391(1998.07)	横断研究	1994	1996	患者	525	HCV抗体	刺青			2 inclusion
IC-J004	J	地域基幹病院歯科口腔外科受診患者のC型肝炎ウイルス感染について	下山 哲夫(埼玉医科大学総合医療センター), 堀江 憲夫, 小宮山 一雄, 茂呂 周	日本口腔科学会雑誌(0029-0297)47巻3号 Page385-391(1998.07)	横断研究	1994	1996	患者	525	HCV抗体	家族内感染			2 inclusion
IC-J005	E	C型肝炎ウイルスの垂直感染 リスク因子及び児の予後について(英語)	Xiong Shu Kang(獨協医科大学 産婦人科), Okajima Yuko, Ishikawa Kazuaki, 他	The Journal of Obstetrics and Gynaecology Research(1341-8076)24巻1号 Page57-61(1998.02)	横断研究	1990	1997	妊婦からの出生児	1941	HCV-RNA	母児感染	65		4 inclusion
IC-J006	J	一般妊婦におけるC型肝炎ウイルス母児感染に関する検討	今村 真哉(小高町立病院), 大戸 斎, 山口 富子, 他	産婦人科治療(0558-471X)75巻2号 Page212-216(1997.08)	横断研究	1990	1997	妊婦からの出生児	47	HCV-RNA	母児感染	29		2 inclusion
IC-J007	J	針事故を契機に発症をみたC型急性肝炎の1例	鈴木 憲治(東京慈恵会医科大学附属柏病院 総合内科), 石川 智久, 内藤 嘉彦, 他	肝臓(0451-4203)39巻1号 Page13-17(1998.01)	症例報告	1996	1996	看護師	1		1			inclusion
IC-J008	J	HCV母子感染例におけるNS5A領域の変異とIFN感受性に関する検討	田原 卓浩(国立大蔵病院), 向出 雅一, 山内 寿靖, 他	日本小児栄養消化器病学会雑誌11巻2号 Page157-160(1997.10)	症例報告						1			exclusion

IC-J009	J	B型,C型及び非B非C型の各種慢性肝疾患者におけるHGVの感染頻度と感染経路	小島 真樹(相川内科病院), 金澤 一也, 祇田 拓, 他	肝臓(0451-4203)38巻9号 Page535-540(1997.09)	横断研究												exclusion
IC-J010	J	非A非B型肝炎多発地域における血清疫学的調査	村田 一素(南勢町立病院), 国吉 幹夫, 白木 克哉, 他	肝臓(0451-4203)36巻8号 Page458-462(1995.08)	横断研究	1993	1993	一般集団	1895	HCV抗体	輸血				8	inclusion	
IC-J010	J	非A非B型肝炎多発地域における血清疫学的調査	村田 一素(南勢町立病院), 国吉 幹夫, 白木 克哉, 他	肝臓(0451-4203)36巻8号 Page458-462(1995.08)	横断研究	1993	1993	一般集団	1895	HCV抗体	手術				14	inclusion	
IC-J011	J	妊婦におけるHCV浮遊密度の検討	岡本 学(鳥取大学 小児科), 村上 潤, 細田 淑人, 他	肝臓(0451-4203)38巻2号 Page109-110(1997.02)	症例報告												exclusion
IC-J012	J	C型肝炎ウイルスの母子感染についての検討	野田 智恵子(大阪府立母子保健総合医療センター), 矢原 健, 宮野 章, 他	日本性感染症学会誌(0917-0324)7巻1号 Page126-130(1996.07)	横断研究	1994	1995	妊婦からの出生児	11	HCV-RNA	母児感染	11	2	inclusion			
IC-J013	J	HIVの同時感染を認める母親でのC型肝炎ウイルスの母児感染(英語)	Koseki Satoshi(横浜市立大学 医 産婦人科), Taga Michiyoshi, Aoyama Mika, 他	The Journal of Obstetrics and Gynaecology Research(1341-8076)22巻2号 Page139-142(1996.04)	症例報告			妊婦からの出生児	1	HCV-RNA	母児感染		1	inclusion			
IC-J014	J	C型肝炎ウイルスの母子感染に関する検討	稻葉 憲之(千葉大学 産婦人科), 清水 久美子, 池田 和則, 他	産婦人科治療(0558-471X)69巻1号 Page111(1994.07)	横断研究	1989	1994	妊婦からの出生児		HCV抗体	母児感染	59	5	inclusion			
IC-J015	J	C型肝炎ウイルスの垂直感染の頻度(英語)	Uehara Shigeki(東北大學 産婦人科), Abe Yuya, Saito Tsukuru, 他	The Tohoku Journal of Experimental Medicine(0040-8727)171巻3号 Page195-202(1993.11)	横断研究	1992	1992	妊婦からの出生児	2015	HCV-RNA	母児感染	7	3	inclusion			
IC-J016		新生児をめぐる最近の話題 C型肝炎と垂直感染	阿部 祐也(公立気仙沼総合病院), 岡村 州博, 上原 茂樹, 他	産婦人科治療(0558-471X)68巻1号 Page73-78(1994.01)	横断研究		N/A	妊婦からの出生児	2001	HCV-RNA	母児感染	8	3	inclusion			
IC-J017	J	HCV母子感染の検討	真田 光博(国立吳病院), 内藤 博之, 村上 順子, 他	医療(0021-1699)47巻6号 Page449-453(1993.06)	横断研究	1990	1991	医療センターを受信した妊婦からの出生児	278	HCV-RNA	母児感染	1	0	inclusion			
IC-J018	J	献血者由来のC型肝炎ウイルス(HCV)キャリアの分析 疫学的並びに臨床病理学的側面から	霜山 竜志(北海道赤十字血液センター), 木本 知子, 伊原 弘美, 他	日本輸血学会雑誌(0546-1448)40巻3号 Page454-459(1994.08)	横断研究			献血者								exclusion	
IC-J019	J	C型肝炎の感染経路について 疫学調査よりの考察	柏木 征三郎(九州大学病院 総合診療), 林 純, 中島 孝哉, 他	日本医事新報(0385-9215)3613号 Page43-46(1993.07)	横断研究		N/A		418	HCV抗体	透析			127	inclusion		
IC-J019	J	C型肝炎の感染経路について 疫学調査よりの考察	柏木 征三郎(九州大学病院 総合診療), 林 純, 中島 孝哉, 他	日本医事新報(0385-9215)3613号 Page43-46(1993.07)	横断研究		N/A		43	HCV抗体	血液製剤			39	inclusion		
IC-J019	J	C型肝炎の感染経路について 疫学調査よりの考察	柏木 征三郎(九州大学病院 総合診療), 林 純, 中島 孝哉, 他	日本医事新報(0385-9215)3613号 Page43-46(1993.07)	横断研究		N/A		604	HCV抗体	性感染			61	inclusion		

IC-J019	J	C型肝炎の感染経路について 疫学調査よりの考察	柏木 征三郎(九州大学病院総合診療), 林 純, 中島 孝哉, 他	日本医事新報(0385-9215)3613号 Page43-46(1993.07)	横断研究		N/A		25	HCV抗体	刺青		20	inclusion
IC-J019	J	C型肝炎の感染経路について 疫学調査よりの考察	柏木 征三郎(九州大学病院総合診療), 林 純, 中島 孝哉, 他	日本医事新報(0385-9215)3613号 Page43-46(1993.07)	横断研究		N/A		1097	HCV抗体	院内感染		11	inclusion
IC-J019	J	C型肝炎の感染経路について 疫学調査よりの考察	柏木 征三郎(九州大学病院総合診療), 林 純, 中島 孝哉, 他	日本医事新報(0385-9215)3613号 Page43-46(1993.07)	横断研究		N/A		203	HCV抗体	家族内感染		18	inclusion
IC-J020	J	C型肝炎の母児感染に関する検討	安達 公美子(福島県立医科大学 産婦人科), 鈴木 りか, 荒木 壮, 他	日本産婦人科・新生児血液学会誌(0916-8796)2巻2号 Page138-139(1992.05)	横断研究	1990	1992	妊娠から の出生児	3193	HCV-RNA	母児感染	12	1	inclusion
IC-J021	J	PCR法による血清及び唾液中のHCV RNAの検出頻度の比較	小松 文夫(東京医科歯科大学 輸血), 刈谷 由子	日本輸血学会雑誌(0546-1448)39巻4号 Page760-765(1993.08)	症例報告									exclusion
IC-J022	J	血液透析患者のHCV感染 Retrospective studyによる感染経路の検討を中心に	大森 浩之(重井医学研究所附属病院), 有元 克彦, 荒木 俊江, 他	日本透析療法学会雑誌(0911-5889)24巻9号 Page1253-1258(1991.09)	横断研究	1990	1990	透析患者	102	HCV抗体	透析	102	24	inclusion
IC-J022	J	血液透析患者のHCV感染 Retrospective studyによる感染経路の検討を中心に	大森 浩之(重井医学研究所附属病院), 有元 克彦, 荒木 俊江, 他	日本透析療法学会雑誌(0911-5889)24巻9号 Page1253-1258(1991.09)	横断研究	1990	1990	透析患者	102	HCV抗体	輸血	76	11	inclusion
IC-J023	J	身近なウイルス感染症 母子水平感染が疑われたC型肝炎の1例	村上 良子(兵庫県立西宮病院), 羽場 敏文, 安部 治郎, 他	小児科臨床(0021-518X)46巻6号 Page1318-1320(1993.06)	症例報告		N/A	妊娠から の出生児	1	HCV抗体	家族内感染		1	inclusion
IC-J024	J	肝がん対策としての肝炎ウイルス対策 B型肝炎ウイルス母子感染の予防と輸血後非A非B型肝炎の予防	吉沢 浩司(広島大学 衛生)	癌の臨床(0021-4949)39巻4号 Page415-421(1993.03)										exclusion
IC-J025	J	C型肝炎ウイルス感染の実態に関する調査研究	道堯 浩二郎(愛媛大学 第3内科), 堀池 典生, 太田 康幸	臨床病理(0047-1860)39巻6号 Page586-591(1991.06)	横断研究		N/A	家族内に HBs抗原 陽性者の いる家 族	132	HCV抗体	輸血	8	2	inclusion
IC-J025	J	C型肝炎ウイルス感染の実態に関する調査研究	道堯 浩二郎(愛媛大学 第3内科), 堀池 典生, 太田 康幸	臨床病理(0047-1860)39巻6号 Page586-591(1991.06)	横断研究		N/A	家族内に HBs抗原 陽性者の いる家 族	132	HCV抗体	鍼治療	16	3	inclusion

IC-J026	E	C型肝炎の母子感染の危険因子 母の高ウイルス価と胎児の産道での感染危険性(Risk factors for mother-to-child transmission of hepatitis C virus: Maternal high viral load and fetal exposure in the birth canal)(英語)	Murakami Jun(Division of Pediatrics and Perinatology, Tottori University), Nagata Ikuo, Iitsuka Toshiyuki, Okamoto Manabu, Kaji Shunsaku, Hoshika Tadataka, Matsuda Ryu, Kanzaki Susumu, Shiraki Kazuo, Suyama Akihiko, Hino Shigeo	Hepatology Research(1386-6346)42巻7号 Page648-657(2012.07)	横断研究			妊婦からの出生児	126	HCV抗体	母児感染	126	11	duplicate
IC-J026	E	C型肝炎の母子感染の危険因子 母の高ウイルス価と胎児の産道での感染危険性(Risk factors for mother-to-child transmission of hepatitis C virus: Maternal high viral load and fetal exposure in the birth canal)(英語)	Murakami Jun(Division of Pediatrics and Perinatology, Tottori University), Nagata Ikuo, Iitsuka Toshiyuki, Okamoto Manabu, Kaji Shunsaku, Hoshika Tadataka, Matsuda Ryu, Kanzaki Susumu, Shiraki Kazuo, Suyama Akihiko, Hino Shigeo	Hepatology Research(1386-6346)42巻7号 Page648-657(2012.07)	横断研究			妊婦からの出生児	126	HCV抗体	母乳	75	6	duplicate
IC-J027	E	小児における第2世代空肝炎ワイルス(HCV)抗体陽性率 輸血の病歴がない小児におけるC型肝炎ウイルス感染経路の研究(英語)Second generation hepatitis C virus antibody-positive rate in children: investigation of the route of hepatitis C virus infection in children with no history of transfusion	Maniwa Hiroko(名古屋市立大学 医 小児科), Miyake Yoshishige, Oda Takaya, 他	Acta Paediatrica Japonica(0374-5600)39巻5号 Page550-555(1997.10)	横断研究	1992	1995	輸血病歴のない0～15歳の小児	1864	HCV-RNA	母児感染		2	inclusion
IC-J028	J	HCV抗体陽性妊婦からみたC型肝炎ウイルスの感染経路に関する研究	小島 俊行(東京大学医学部附属病院分院 産婦人科), 山中 竜宏	日本産科婦人科学会雑誌(0300-9165)46巻7号 Page573-580(1994.07)	横断研究	1990	1995			HCV抗体	母児感染	56	4	inclusion
IC-J029	J	母子間の水平感染によると考えられたC型肝炎の1例	夏山 真理子(済生会京都府病院), 河瀬 昌司, 岡野 創造, 他	小児科臨床(0021-518X)45巻2号 Page301-304(1992.02)	症例報告		N/A	輸血歴のない4歳女児		HCV抗体	家族内感染		1	inclusion
IC-J030	J	C型肝炎の感染経路	矢野 右人(国立長崎中央病院), 猪口 薫	医学のあゆみ(0039-2359)161巻5号 Page321-324(1992.05)										exclusion
IC-J031	J	島根県八束町におけるHCV抗体の疫学調査	周防 武昭(鳥取大学 第2内科), 生田 裕次郎, 長谷川 真弓, 他	日本消化器病学会雑誌(0446-6586)89巻4号 Page1173-1178(1992.04)	横断研究									exclusion
IC-J032	J	肝機能障害が認められた覚せい剤乱用者とHCV抗体	斎藤 悅(横浜市立総合保健医療センター), 奥平 謙一, 飯塚 博史, 他	アルコール依存とアディクション(0916-8257)9巻3号 Page235-241(1992.09)	横断研究	1991	1991	ドラッグ使用者	20	HCV抗体	薬物	20	14	inclusion
IC-J033	J	C型慢性肝炎の感染経路と患者体液からのC型肝炎ウイルスRNAの検出(原著論文)	寺田 総一郎(香川医科大学中央検査), 河西 浩一	いづみ (0021-339X)39巻9号 Page22-23(1992.11)	横断研究		N/A			HCV抗体	輸血		4	inclusion
IC-J034	J	C型肝炎の輸血外感染経路	田中 栄司(信州大学 第2内科), 古田 精市	日本臨床(0047-1852)49巻2号 Page351-356(1991.02)	レビュー									exclusion







IC-J063	J	HCV母児感染のprospective StudyでHCV感染した症例の臨床的背景の検討	寺澤 総介(岐北総合病院(厚生連)), 加藤 善一郎, 福富 梢, 近藤 直実	日本小児栄養消化器病学会雑誌12巻2号 Page143-148(1998.10)	症例報告		N/A	妊婦からの出生児	64	HCV-RNA	母児感染	64	7	inclusion	
IC-J064	J	HCV母子感染 HCV-RNA自然陰性化群と持続陽性群の臨床的比較	大和 靖彦(久留米大学 小児科), 木村 昭彦, 中嶋 英輔, 前田 公史, 熊谷 優美, 松石 豊次郎	日本小児栄養消化器肝臓学会雑誌(1346-9037)18巻1号 Page11-14(2004.06)	症例報告									exclusion	
IC-J065	J	C型急性肝炎に対するインターフェロン治療の検討	小西 一郎(愛媛大学 第二内科), 堀池 典生, 河相 恵子, 熊木 天児, 道堀 浩二郎, 田中 美和, 加藤 壽一, 恩地 森	肝臓(0451-4203)44巻3号 Page103-108(2003.03)	症例報告									exclusion	
IC-J066	J	C型肝炎ウイルス感染の家族内集積,特に母児間垂直感染についての検討	高瀬 修二郎(金沢医科大学 消化器内科), 佐藤 育子, 沢田 信, 他	肝臓(0451-4203)34巻8号 Page683-684(1993.08)	横断研究		N/A		4	HCV抗体	母児感染	4	4	inclusion	
IC-J067	J	【ノイズヘルペス肝炎 症例・臨床的検討】C型肝炎ウイルス(HCV) 感染経路と予防対策 医療機関におけるHCV感染 血友病患者におけるHCV感染 HIV重複感染の影響	瀬戸 良文(兵庫医科大学 総合内科), 日笠 聰, 中村 秀次, 波田 壽一	日本臨床(0047-1852)62巻増刊7 ウィルス性肝炎(上) Page323-325(2004.07)	横断研究									exclusion	
IC-J068	J	C型肝炎ウイルスの垂直感染に関する検討	小島 俊行(焼津市立総合病院), 仁科 秀則, 五十嵐 敏雄, 他	日本産婦人科・新生児血液学会誌(0916-8796)2巻2号 Page136-137(1992.05)	横断研究	1990	1992	妊婦からの出生児	24	HCV-RNA	母児感染	10	0	inclusion	
IC-J069	J	血液透析症例におけるHCV陽性者の看護	本吉 美代子(堺温心会病院), 下野 あき子, 甲斐 鈴香, 他	大阪透析研究会会誌(0912-6937)9巻2号 Page263-267(1991.09)	横断研究	1990	1990	透析患者		HCV抗体	透析	104	34	inclusion	
IC-J069	J	血液透析症例におけるHCV陽性者の看護	本吉 美代子(堺温心会病院), 下野 あき子, 甲斐 鈴香, 他	大阪透析研究会会誌(0912-6937)9巻2号 Page263-267(1991.09)	横断研究	1990	1990	透析患者		HCV抗体	輸血	69	26	inclusion	
IC-J070	J	血液透析患者とHCV感染	甲田 徹三(国立吳病院), 田村 健久夫, 市村 宏, 他	感染症学叢書(0507-5911)66巻1号 Page66-69(1993.01)	横断研究	1990	1990	透析患者		HCV抗体	透析	393	70	inclusion	
IC-J070	J	血液透析患者とHCV感染	甲田 徹三(国立吳病院), 田村 健久夫, 市村 宏, 他	感染症学叢書(0507-5911)66巻1号 Page66-69(1993.01)	横断研究	1990	1990	透析患者		HCV抗体	輸血	292	62	inclusion	
IC-J071	J	若年者に発生した覚醒剤乱用が原因と考えられるC型肝炎	権藤 和久(福岡県立柳川病院 内科), 神代 龍吉, 江森 啓悟, 松山 幸弘, 古賀 研志, 今村 賢一郎, 佐田 通夫	日本消化器病学会雑誌(0446-6586)99巻10号 Page1240-1242(2002.10)	症例報告	2000	2001								inclusion
IC-J072	J	C型肝炎ウイルスの感染経路に関する研究 sexually transmitted diseases/ハイリスク集団の調査から	飯島 敏彦(順天堂大学医学部附属浦安病院 内科), 金子 和弘, 小町谷 恒平, 他	肝臓(0451-4203)34巻4号 Page345-346(1993.04)	横断研究	1990	1991	STDハイリスク集団	473	HCV抗体	性感染	203	8	inclusion	
IC-J073	E	Epidemiological survey of Japanese children infected with hepatitis B and C viruses	Toshiyuki Iitsuka, Jun Murakami, Ikuo Nagata, Susumu Kanzaki and Kazuo Shiraki	Hepatology Research2010;40:878-886doi: 10.1111/j.1872-034X.2010.00694.x	Cross-sectional	2007	2007	Children under 20 years of age infected with HCV	114	Anti-HCV and HCV RNA	Mother to child transmission			inclusion	

IC-J073	E	Epidemiological survey of Japanese children infected with hepatitis B and C viruses	Toshiyuki Itsuka, Jun Murakami, Ikuo Nagata, Susumu Kanzaki and Kazuo Shiraki	<a href="#">Hepatology Research2010;40:878-886doi: 10.1111/j.1872-034X.2010.00694.x</a>	Cross-sectional	2007	2007	Children under 20 years of age infected with HCV	114	Anti-HCV and HCV RNA	Intra-familial			inclusion
IC-J073	E	Epidemiological survey of Japanese children infected with hepatitis B and C viruses	Toshiyuki Itsuka, Jun Murakami, Ikuo Nagata, Susumu Kanzaki and Kazuo Shiraki	<a href="#">Hepatology Research2010;40:878-886doi: 10.1111/j.1872-034X.2010.00694.x</a>	Cross-sectional	2007	2007	Children under 20 years of age infected with HCV	114	Anti-HCV and HCV RNA	Blood transfusion			inclusion
IC-J074	E	Epidemiologic features of 348 children with hepatitis C virus infection over a 30-year period: a nationwide survey in Japan.	Mizuuchi T, Takano T, Yanagi T, Ushijima K, Suzuki M, Miyoshi Y, Ito Y, Inui A, Tajiri H	<a href="#">J Gastroenterol. 2018 Mar;53(3):419-426. doi: 10.1007/s00535-017-1351-0. Epub 2017 May 31.</a>	Cross-sectional	1986	2015	Children born from 1986 to 2015 infected with HCV	348	HCV-RNA	Mother to child transmission	Total: 314 1986-1995: 30 1996-2005: 161 2005-2015: 122		inclusion
IC-J074	E	Epidemiologic features of 348 children with hepatitis C virus infection over a 30-year period: a nationwide survey in Japan.	Mizuuchi T, Takano T, Yanagi T, Ushijima K, Suzuki M, Miyoshi Y, Ito Y, Inui A, Tajiri H	<a href="#">J Gastroenterol. 2018 Mar;53(3):419-426. doi: 10.1007/s00535-017-1351-0. Epub 2017 May 31.</a>	Cross-sectional	1986	2015	Children born from 1986 to 2015 infected with HCV	348	HCV-RNA	Mother to child transmission	Total: 2 1986-1995: 0 1996-2005: 2 2005-2015: 0		inclusion

IC-J074	E	Epidemiologic features of 348 children with hepatitis C virus infection over a 30-year period: a nationwide survey in Japan.	Mizuochi T, Takano T, Yanagi T, Ushijima K, Suzuki M, Miyoshi Y, Ito Y, Inui A, Tajiri H  <a href="#">J Gastroenterol. 2018 Mar;53(3):419-426. doi: 10.1007/s00535-017-1351-0. Epub 2017 May 31.</a>	Cross-sectional  <a href="#">J Gastroenterol. 2018 Mar;53(3):419-426. doi: 10.1007/s00535-017-1351-0. Epub 2017 May 31.</a>	1986	2015	Children born from 1986 to 2015 infected with HCV  <a href="#">J Gastroenterol. 2018 Mar;53(3):419-426. doi: 10.1007/s00535-017-1351-0. Epub 2017 May 31.</a>	348	HCV-RNA  <a href="#">J Gastroenterol. 2018 Mar;53(3):419-426. doi: 10.1007/s00535-017-1351-0. Epub 2017 May 31.</a>	Blood transfusion  <a href="#">J Gastroenterol. 2018 Mar;53(3):419-426. doi: 10.1007/s00535-017-1351-0. Epub 2017 May 31.</a>		Total: 17 1986-1995: 17 1996-2005: 0 2005-2015: 0	inclusion
IC-J075	J	妊娠中にHCV針事故後発症したC型急性肝炎の1症例	梶原 英二(新日本製鐵八幡製鐵所病院), 牧野 百合子, 東 晃一, 他	肝臓(0451-4203)36巻10号 Page584-588(1995.10)	症例報告	1993	1993	看護師	1	HCV-RNA	針刺し事故		1 inclusion
IC-J076	J	C型肝炎ウイルス母児垂直感染に関するプロスペクティブ検討(英語)	稲葉 憲之(千葉大学 産婦人科), 清水 久美子, 清水 文七, 他	千葉医学雑誌(0303-5476)69巻2号 Page67-72(1993.04)	横断研究	1990	1992	妊娠から の出生児	12	HCV抗体	母児感染	12	8 inclusion
IC-J077	J	Reverse transcription-nested PCR法 genotypingによりC型肝炎ウイルス(HCV)・遺伝子型が同定された母子例についての考察	横田 俊平(横浜市立大学 小児科), 馬衛, 清水 広子, 他	日本小児科学会雑誌(0001-6543)98巻6号 Page1186-1192(1994.06)	症例報告								exclusion
IC-J078	J	[Transmission of hepatitis C virus (HCV) by tattooing and acupuncture].	Aikawa, Tatsuya and Kojima, Maki	Nihon rinsho. Japanese journal of clinical medicine	横断研究	1995	2003	病院受診者	18856	HCV抗体	輸血		303 duplicate
IC-J078	J	[Transmission of hepatitis C virus (HCV) by tattooing and acupuncture].	Aikawa, Tatsuya and Kojima, Maki	Nihon rinsho. Japanese journal of clinical medicine	横断研究	1995	2003	病院受診者	18856	HCV抗体	薬物		106 duplicate
IC-J078	J	[Transmission of hepatitis C virus (HCV) by tattooing and acupuncture].	Aikawa, Tatsuya and Kojima, Maki	Nihon rinsho. Japanese journal of clinical medicine	横断研究	1995	2003	病院受診者	18856	HCV抗体	刺青		66 duplicate
IC-J079	J	[Rou+D185:G185tes of transmission of hepatitis C virus in hyperendemic areas, and molecular epidemiologic study of hepatitis C virus infection].	Tanaka, Kazuo and Ide, Tatsuya and Sata, Michio	Nihon rinsho. Japanese journal of clinical medicine	横断研究	1992	1992	住民検診 受診者	857	HCV抗体	輸血	82	39 duplicate
IC-J079	J	[Rou+D185:G185tes of transmission of hepatitis C virus in hyperendemic areas, and molecular epidemiologic study of hepatitis C virus infection].	Tanaka, Kazuo and Ide, Tatsuya and Sata, Michio	Nihon rinsho. Japanese journal of clinical medicine	横断研究	1992	1992	住民検診 受診者	857	HCV抗体	手術	359	122 duplicate
IC-J079	J	[Rou+D185:G185tes of transmission of hepatitis C virus in hyperendemic areas, and molecular epidemiologic study of hepatitis C virus infection].	Tanaka, Kazuo and Ide, Tatsuya and Sata, Michio	Nihon rinsho. Japanese journal of clinical medicine	横断研究	1992	1992	住民検診 受診者	857	HCV抗体	鍼治療	303	100 duplicate

IC-J079	J	[Rou+D185:G185tes of transmission of hepatitis C virus in hyperendemic areas, and molecular epidemiologic study of hepatitis C virus infection].	Tanaka, Kazuo and Ide, Tatsuya and Sata, Michio	Nihon rinsho. Japanese journal of clinical medicine	横断研究	1992	1992	住民検診受診者	857	HCV抗体	刺青	7	4	duplicate	
IC-J080	J	覚せい剤乱用者とHCV抗体	斎藤 悅(横浜市立総合保健医療センター), 奥平 謙一, 飯塚 博史, 他	神奈川県精神医学会誌(0288-9617)42号 Page61-65(1992.12)	横断研究	1990	1992	覚醒剤乱用者	47	HCV抗体	薬物	47	33	inclusion	
IC-J081	J	透析患者におけるHCV抗体の検討	吉江 崇宏(諏訪赤十字病院), 田村 泰夫, 山村 伸吉, 他	長野県人工透析研究会誌(0910-2329)14巻1号 Page22-25(1991.07)	横断研究		N/A	透析患者	63	HCV抗体	透析	63	10	inclusion	
IC-J081	J	透析患者におけるHCV抗体の検討	吉江 崇宏(諏訪赤十字病院), 田村 泰夫, 山村 伸吉, 他	長野県人工透析研究会誌(0910-2329)14巻1号 Page22-25(1991.07)	横断研究		N/A	透析患者	63	HCV抗体	輸血	47	9	inclusion	
IC-J082	J	C型肝炎に関する臨床的検討 当院における現況とその感染経路	千住 雅博(伊万里市立市民病院), 高尾 雅己, 下口 和矩, 他	長崎医学会雑誌(0369-3228)67巻4号 Page261-266(1992.12)	横断研究	1990	1992	C型肝炎患者	73	HCV抗体	輸血		38	inclusion	
IC-J082	J	C型肝炎に関する臨床的検討 当院における現況とその感染経路	千住 雅博(伊万里市立市民病院), 高尾 雅己, 下口 和矩, 他	長崎医学会雑誌(0369-3228)67巻4号 Page261-266(1992.12)	横断研究	1990	1992	C型肝炎患者	73	HCV抗体	刺青・薬物乱用		4	inclusion	
IC-J082	J	C型肝炎に関する臨床的検討 当院における現況とその感染経路	千住 雅博(伊万里市立市民病院), 高尾 雅己, 下口 和矩, 他	長崎医学会雑誌(0369-3228)67巻4号 Page261-266(1992.12)	横断研究	1990	1992	C型肝炎患者	73	HCV抗体	家族内感染		3	inclusion	
IC-J082	J	C型肝炎に関する臨床的検討 当院における現況とその感染経路	千住 雅博(伊万里市立市民病院), 高尾 雅己, 下口 和矩, 他	長崎医学会雑誌(0369-3228)67巻4号 Page261-266(1992.12)	横断研究	1990	1992	C型肝炎患者	73	HCV抗体	針刺し事故		2	inclusion	
IC-J082	J	C型肝炎に関する臨床的検討 当院における現況とその感染経路	千住 雅博(伊万里市立市民病院), 高尾 雅己, 下口 和矩, 他	長崎医学会雑誌(0369-3228)67巻4号 Page261-266(1992.12)	横断研究	1990	1992	C型肝炎患者	73	HCV抗体	鍼治療		1	inclusion	
IC-J083	J	当院におけるアルコール性肝障害について特にHCV抗体との関連について	林 純一(広島市民病院(社保)), 井上 純一, 中浜 一, 他	社会保険広島市民病院医誌(0911-1077)8巻1号 Page28-33(1992.10)	横断研究										exclusion
IC-J084	J	肝疾患症例およびその配偶者, 医療従事者, 心身障害者施設入所者でのC型肝炎ウイルスの感染経路の検討と抗HCV-core抗体の意義	杉谷 武彦(相川内科病院), 相川 達也, 千葉 俊也	つくばシンポジウム(0912-5795)9巻 Page15-21(1993.12)	横断研究	1992	1992	抗HCV陽性の肝疾患患者	160	HCV抗体	輸血		78	inclusion	
IC-J084	J	肝疾患症例およびその配偶者, 医療従事者, 心身障害者施設入所者でのC型肝炎ウイルスの感染経路の検討と抗HCV-core抗体の意義	杉谷 武彦(相川内科病院), 相川 達也, 千葉 俊也	つくばシンポジウム(0912-5795)9巻 Page15-21(1993.12)	横断研究	1992	1992	抗HCV陽性の肝疾患患者	160	HCV抗体	手術		81	inclusion	
IC-J084	J	肝疾患症例およびその配偶者, 医療従事者, 心身障害者施設入所者でのC型肝炎ウイルスの感染経路の検討と抗HCV-core抗体の意義	杉谷 武彦(相川内科病院), 相川 達也, 千葉 俊也	つくばシンポジウム(0912-5795)9巻 Page15-21(1993.12)	横断研究	1992	1992	抗HCV陽性の肝疾患患者	160	HCV抗体	刺青		8	inclusion	
IC-J084	J	肝疾患症例およびその配偶者, 医療従事者, 心身障害者施設入所者でのC型肝炎ウイルスの感染経路の検討と抗HCV-core抗体の意義	杉谷 武彦(相川内科病院), 相川 達也, 千葉 俊也	つくばシンポジウム(0912-5795)9巻 Page15-21(1993.12)	横断研究	1992	1992	抗HCV陽性の肝疾患患者	160	HCV抗体	薬物		15	inclusion	

IC-J084	J	肝疾患症例およびその配偶者、医療従事者、心身障害者施設入所者でのC型肝炎ウイルスの感染経路の検討と抗HCV-core抗体の意義	杉谷 武彦(相川内科病院), 相川 達也, 千葉 俊也	つくばシンポジウム(0912-5795)9巻 Page15-21(1993.12)	横断研究	1992	1992	抗HCV陽性の肝疾患患者	160	HCV抗体	鍼治療		38	inclusion
IC-J085	J	【OB/GYNウイルス感染症 外来診療マニュアル2003】C型肝炎ウイルス 母子感染としてのHCV	稻葉 憲之(獨協医科大学 産婦人科学教室), 大島 教子, 西川 正能, 庄田 亜紀子	産婦人科の実際(0558-4728)52巻7号 Page901-906(2003.07)	コホート研究	N/A		キャリア妊娠から生まれた出生児	82	HCV-RNA	母児感染	82	6	inclusion
IC-J086	J	インターフェロン併用集学的治療を行ったC型急性肝炎の2例	岩下 英之(福岡大学 医学部 消化器内科), 釈迦堂 敏, 西澤 新也, 久能 志津香, 松本 照雄, 國本 英雄, 四本 かおる, 福永 篤志, 櫻井 邦俊, 平野 玄竜, 上田 秀一, 横山 圭二, 森原 大輔, 坂本 雅晴, 阿南 章, 竹山 康章, 入江 真, 岩田 郁, 大田 和弘, 早田 哲郎, 井上 和明, 与芝 真彰, 向坂 彰太郎	肝臓(0451-4203)53巻2号 Page101-108(2012.02)	症例報告									exclusion
IC-J087	J	平成17年度基本健康診査における肝炎ウイルス検査の年度集計	野口 有三(横浜市衛生研究所 検査研究課), 宇宿 秀三, 折井 まさ江, 佐々木 一也	横浜市衛生研究所年報(0912-2826)45号 Page79-82(2006.12)	横断研究	2005	2005	健康診断受診者で発見したHCV陽性者	35	HCV抗体	輸血		14	inclusion
IC-J087	J	平成17年度基本健康診査における肝炎ウイルス検査の年度集計	野口 有三(横浜市衛生研究所 検査研究課), 宇宿 秀三, 折井 まさ江, 佐々木 一也	横浜市衛生研究所年報(0912-2826)45号 Page79-82(2006.12)	横断研究	2005	2005	健康診断受診者で発見したHCV陽性者	35	HCV抗体	手術		10	inclusion
IC-J088	J	小児C型慢性肝炎におけるC型肝炎ウイルス関連抗体の臨床的意義 特にnonstructural 5について	田尻 仁(大阪大学 医小児科), 澤田 敦, 古座岩 宏輔, 他	日本小児科学会雑誌(0001-6543)99巻10号 Page1751-1755(1995.10)	横断研究	1988	1994	C型肝炎患者	45	HCV抗体	輸血		40	inclusion
IC-J088	J	小児C型慢性肝炎におけるC型肝炎ウイルス関連抗体の臨床的意義 特にnonstructural 5について	田尻 仁(大阪大学 医小児科), 澤田 敦, 古座岩 宏輔, 他	日本小児科学会雑誌(0001-6543)99巻10号 Page1751-1755(1995.10)	横断研究	1988	1994	C型肝炎患者	45	HCV抗体	母児感染		2	inclusion
IC-J089	J	C型肝炎ウイルス抗体陽性の母親から生まれた児における母児感染の検討	杉山 幸八郎(名古屋市立大学 小児科), 三宅 能成, 小田 高也, 他	日本小児科学会雑誌(0001-6543)99巻4号 Page871-872(1995.04)	コホート研究	N/A		HCV抗体陽性の母親からの出生児	21	HCV-RNA	母児感染	21	5	inclusion
IC-J090	J	重症心身障害児・者のC型肝炎ウイルス感染	竹谷 俊樹(国立療養所晴嵐荘病院), 青木 健, 須磨崎 亮, 他	重症心身障害研究会誌(0389-8296)19巻1号 Page32-34(1994.02)	横断研究	N/A		重症心身障害者	114	HCV抗体	輸血		4	inclusion

IC-J091	E	本邦におけるC型肝炎ウイルス(HCV)の家族内伝播(英語)	Michitaka Kojiro(愛媛大学医 第3内科), Onji Morikazu, Horiike Norio, 他	Gastroenterologia Japonica(0435-1339)26巻5号 Page619-622(1991.10)	横断研究		N/A	陽性慢性肝疾患患者の家族	36	HCV抗体	家族内感染	35	4	inclusion
IC-J092	J	C型肝炎母児感染についての調査(第1報)	板倉 敬乃(埼玉医科大学総合医療センター), 小俣 真, 小川 雄之亮, 上里 忠之	埼玉県医学会雑誌(0389-0899)33巻3号 Page377-379(1999.01)	横断研究	1996	1997	HCV抗体陽性の母親からの出生児	16	HCV-RNA	母児感染	16	1	inclusion
IC-J093	J	C型肝炎ウイルスの母児感染(原著論文)	白木 和夫(鳥取大学 小児科), 長田 郁夫, 原田 友一郎, 他	犬山シンポジウム 17回 Page65-69(1992.06)	レビュー									exclusion
IC-J094	J	医療職員におけるB型肝炎ウイルスおよびC型肝炎ウイルス感染の実態調査 特に抗HCV-core抗体の測定を中心として	相川 達也(相川内科医院), 平山 牧彦, 石渡 千恵子, 他	日本医師会雑誌(0021-4493)107巻4号 Page679-687(1992.02)	横断研究	1990	1990	医療機関の職員・健常献血者・健常妊婦	2168	HCV抗体	針刺し事故	224	24	inclusion
IC-J094	J	医療職員におけるB型肝炎ウイルスおよびC型肝炎ウイルス感染の実態調査 特に抗HCV-core抗体の測定を中心として	相川 達也(相川内科医院), 平山 牧彦, 石渡 千恵子, 他	日本医師会雑誌(0021-4493)107巻4号 Page679-687(1992.02)	横断研究	1990	1990	医療機関の職員・健常献血者・健常妊婦	2168	HCV抗体	輸血	26	10	inclusion
IC-J095	J	OB-GYNウイルス感染 C型肝炎ウイルスの感染経路 母子感染を中心として(原著論文)	小島 俊行(焼津市立総合病院), 菊池 昭彦, 板倉 称, 他	産婦人科の実際 (0558-4728)42巻5号 Page717-725(1993.05)	レビュー									exclusion
IC-J096	J	C型肝炎の対策と新しい展望 C型肝炎の経路をめぐるアプローチ 性行為感染(原著論文)	溝上 雅史(名古屋市立大学 医 第2内科)	INFECTION CONTROL (0919-1011)4巻2号 Page170-173(1995.04)	レビュー									exclusion
IC-J097	J	C型肝炎の対策と新しい展望 C型肝炎の経路をめぐるアプローチ 腎透析による感染(原著論文)	三井 健宏(増子記念病院), 増子 和郎	INFECTION CONTROL (0919-1011)4巻2号 Page154-158(1995.04)	レビュー									exclusion
IC-J098	J	C型肝炎ウイルスの感染経路とその予防戦略(原著論文)	田中 栄司(信州大学 第2内科)	看護技術 (0449-752X)39巻8号 Page784-788(1993.06)	レビュー									exclusion
IC-J099	J	C型肝炎ウイルスの感染経路 小児期を中心とした(原著論文)	長田 郁夫(鳥取大学 小児科), 岡本 学, 梶 俊策, 他	肝・胆・膵 (0389-4991)30巻5号 Page815-823(1995.05)	レビュー									exclusion



IC-J107	J	小児期におけるB・C型肝炎研究の現状 C型肝炎ウイルスの家族内感染(原著論文)	守屋 尚(広島大学衛生), 中西 敏夫, 大野 尚文, 他	小児内科 (0385-6305)27巻4号 Page545-548(1995.04)	レビュー												exclusion
IC-J108	J	[Hepatitis C virus infection as a sexually transmitted disease].	Kato, Hideaki and Mizokami, Masashi	Nihon rinsho. Japanese journal of clinical medicine	レビュー												exclusion
IC-J109	J	[HCV infection among narcotics/methamphetamine abusers].	Wada, Kiyoshi	Nihon rinsho. Japanese journal of clinical medicine	レビュー												exclusion
IC-J110	J	当院血液透析患者におけるC型肝炎ウイルス抗体についての検討	荒井 啓次(山形市立病院済生館), 川田 元司, 大江 雅宏, 他	山形市立病院済生館医学雑誌(0385-1184)17巻1号 Page95-102(1992.08)	横断研究	1997	1991	透析患者	80	HCV抗体	輸血	49	16	inclusion			
IC-J110	J	当院血液透析患者におけるC型肝炎ウイルス抗体についての検討	荒井 啓次(山形市立病院済生館), 川田 元司, 大江 雅宏, 他	山形市立病院済生館医学雑誌(0385-1184)17巻1号 Page95-102(1992.08)	横断研究	1997	1991	透析患者	80	HCV抗体	透析	80	17	inclusion			
IC-J111	J	C型肝炎ウイルスの母子間感染に関する研究	森田 修行(富山県衛生研究所), 中山 喬, 佐竹 伸一郎, 他	富山県衛生研究所年報(0917-0707)19号 Page97-101(1996.10)	症例報告	1994	1994	HCV抗体陽性の母親からの出生児	16	HCV-RNA	母児感染	12	0	inclusion			
IC-J112	J	奈良保健所管内東部山間住民のHCV抗体保有状況	市川 啓子(奈良県衛生研究所), 福岡 裕恭, 谷 直人, 他	奈良県衛生研究所年報(0911-1670)28号 Page111-112(1994.12)	横断研究	1993	1993	検診受診者	1024	HCV抗体	手術			6	inclusion		
IC-J112	J	奈良保健所管内東部山間住民のHCV抗体保有状況	市川 啓子(奈良県衛生研究所), 福岡 裕恭, 谷 直人, 他	奈良県衛生研究所年報(0911-1670)28号 Page111-112(1994.12)	横断研究	1993	1993	検診受診者	1024	HCV抗体	輸血			2	inclusion		

Serial ID	la	Information of paper			Study design	Research		Study subjects			subjects who has			
		Title	Description	Details		From	to	Subjects	Total N	Outcome	Factor	N	No.who was infected	Decision
GR-J001	J	非A非B型肝炎患者家族のHCV抗体の測定	吉田精市, 清沢研道, 田中栄司, 袖山健, 清水恥	厚生省非A非B型肝炎研究 平成元年度 研究報告書 p38-40	横断研究		N/A	妊娠からの出生児		HCV抗体	母児感染	20	0	inclusion
GR-J002	J	医療機関内における抗HCV抗体陽性率についての検討	清水勝, 高本滋, 田中彗, 高梨美乃子, 高橋純生	厚生省非A非B型肝炎研究 平成元年度 研究報告書 p40-42	横断研究	1980	1988	医療従事者	692	HCV抗体	医療従事者	692	2	inclusion
GR-J003	J	供血者のリスク別HCV抗体陽性率	吉澤浩司, 三井健宏, 野尻徳行, 青山憲一, 金光公浩	厚生省非A非B型肝炎研究 平成元年度 研究報告書 p47-50	横断研究	1989	1990	供血者(愛知・東京)	34432	HCV抗体	輸血	628	24	inclusion
GR-J003	J	供血者のリスク別HCV抗体陽性率	吉澤浩司, 三井健宏, 野尻徳行, 青山憲一, 金光公浩	厚生省非A非B型肝炎研究 平成元年度 研究報告書 p47-50	横断研究	1989	1990	透析患者(愛知)	355	HCV抗体	透析	355	73	inclusion
GR-J004	J	特殊浴場従業女性のHCV抗体保有状況	南谷幹夫	厚生省非A非B型肝炎研究 平成元年度 研究報告書 p50-52	横断研究	1987	1988	特殊浴場従業女性	290	HCV抗体	性感染	290	21	inclusion
GR-J005	J	Anti-HCVによる非A非B型肝炎母児垂直感染の検討	白木和夫, 長田郁夫, 岡田隆好, 谷本要	厚生省非A非B型肝炎研究 平成元年度 研究報告書 p52-55	横断研究		N/A	妊娠からの出生児		肝機能障害	母児感染	7	7	inclusion
GR-J006	J	慢性血液透析医療機関におけるC型肝炎ウイルス感染の実態調査	守屋尚, 小宮裕, 熊谷純子, 片山恵子, 田中純子, 賴岡徳在	非A非B型肝炎の予防、疫学に関する研究 平成11年度報告書 p69-73	横断研究	1998	1999	透析患者		HCV抗体	透析	1665	369	inclusion
GR-J007	J	薬物依存者-特に覚醒剤依存者および注射による薬物依存者-の血清疫学調査:HBV, HCV暴露率に関する全国調査	和田清, 分島徹, 黒木規巨, 中村亮介, 石橋正彦, 伊波真理雄, 前岡邦彦, 岡島和夫, 津久江一郎, 飯田信夫,	非A非B型肝炎の予防、疫学に関する研究 平成10年度報告書 p50-56	横断研究		N/A	精神科医療施設入院者		HCV抗体	薬物依存者・精神病患者	334	177	inclusion

GR-J007	J	薬物依存者-特に覚醒剤依存者および注射による薬物依存者-の血清疫学調査：HBV, HCV暴露率に関する全国調査	和田清, 分島徹, 黒木規巨, 中村亮介, 石橋正彦, 伊波真理雄, 前岡邦彦, 岡島和夫, 津久江一郎, 飯田信夫,	非A非B型肝炎の予防、疫学に関する研究 平成10年度報告書 p50-56	横断研究		N/A	医療機関を受診していない薬物依存者		HCV抗体	薬物依存者	35	9	inclusion
GR-J008	J	輸血歴をもつ肺結核後遺症患者群におけるHCV感染	大林明, 上司裕史, 矢倉道泰, 原田英治, 木村泰, 和田照子, 清水弘	厚生省非A非B型肝炎研究 平成6年度 研究報告書 p30-36	横断研究		N/A	肺結核後遺症患者	243	HCV抗体	輸血	228	113	inclusion
GR-J009	J	HCV母子感染に関する研究	白木和夫, 長田郁夫, 飯塚俊之, 梶俊策	厚生省非A非B型肝炎研究 平成6年度 研究報告書 p37-40	コホート研究	1992	1994	妊娠からの出生児		HCV-RNA	母児感染	37	3	inclusion
GR-J010	J	HCVの母子感染成立頻度および感染成立の要因に関する調査・研究	吉澤浩司, 守屋尚, 田中純子, 佐々木富美子, 水井正明, 毛利久夫, 大野尚文	厚生省非A非B型肝炎研究 平成6年度 研究報告書 p41-42	横断研究	1990	1993	妊娠からの出生児	16714	HCV-RNA	母児感染	88	2	inclusion
GR-J011	J	透析患者におけるC型肝炎ウイルス感染の実態と特徴	真弓忠	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p22-23	横断研究		N/A	透析患者	543	HCV抗体	透析	543	142	inclusion
GR-J012	J	輸血歴のある供血者を対象としてのHCV抗体陽性者の解析	大林明, 木村泰, 清水弘, 小林仁, 野尻徳行	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p31-33	横断研究	1992	1993	輸血歴のある供血者						exclusion
GR-J013	J	循環器外科手術症例における輸血後肝炎追跡調査	清水勝, 長田広司	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p36-39	横断研究	1993	1993	輸血実施手術症例	390	HCV抗体	輸血	75	7	inclusion
GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究		N/A	肝炎多発地域住民	435	HCV抗体	輸血	28	15	inclusion
GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究		N/A	肝炎多発地域住民	435	HCV抗体	手術	73	45	inclusion

GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究	N/A	肝炎多発地域住民	435	HCV抗体	薬物依存者		1	inclusion
GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究	N/A	肝炎多発地域住民	435	HCV抗体	刺青		1	inclusion
GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究	N/A	肝炎多発地域住民	435	HCV抗体	民間療法	162	86	inclusion
GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究	N/A	肝炎非多発地域	1542	HCV抗体	輸血	71	26	inclusion
GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究	N/A	肝炎非多発地域住民	435	HCV抗体	手術	301	25	inclusion
GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究	N/A	肝炎非多発地域	1542	HCV抗体	薬物依存者		1	inclusion
GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究	N/A	肝炎非多発地域	1542	HCV抗体	刺青		1	inclusion
GR-J014	J	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-	清澤研道, 田中栄司, 袖山健	厚生省非A非B型肝炎研究 平成5年度 研究報告書 p82-85	横断研究	N/A	肝炎非多発地域	1542	HCV抗体	民間療法	255	7	inclusion

GR-J015	En	Prevalence of anti-hepatitis C virus antibody and chronic liver disease among atomic bomb survivor	Fujiwara S, Kusumi S, Cologne J, Akahoshi M, Kodama K, Yoshizawa H.	Radiat Res. 2000 Jul;154(1):12-9.	1993	1995	Paticipants in the adult health study of atomic bomb survivors in Hiroshima and Nagasaki	6121	HCV抗体	Transfusion	796	390	inclusion
GR-J015	En	Prevalence of anti-hepatitis C virus antibody and chronic liver disease among atomic bomb survivor	Fujiwara S, Kusumi S, Cologne J, Akahoshi M, Kodama K, Yoshizawa H.	Radiat Res. 2000 Jul;154(1):12-9.	1993	1995	Paticipants in the adult health study of atomic bomb survivors in Hiroshima and Nagasaki	6121	HCV抗体	Acupuncture	2510	272	inclusion
GR-J016	En	Mother-to-infant transmission occurs more frequently with GB virus C than hepatitis C virus.	Hino K, Moriya T, Ohno N, Takahashi K, Hoshino H, Ishiyama N, Katayama K, Yoshizawa H, Mishiro S	Arch Virol (1998) 143: 65-72		N/A	infants born to these HCV=GBV-C co-infected mothers	107	HCV-RNA	Mother to Child	11	1	inclusion

ID Serial number	Language	Information of paper			Study design	From	To	Study subjects			jects who has fact			
		Title	Description	Details				Subjects	Total N	Outcome	Factor	N	No.who was infected	Decision
PM-J001	E	Molecular epidemiology of acute HCV infection in HIV-positive patients from Hong Kong, Taipei, Tokyo.	Sun, Hsin-Yun and Uemura, Haruka and Wong, Ngai-Sze and Chan, Denise P-C and Wong, Bonnie C-K and Lin, Pi-Han and Su, Li-Hsin and Hung, Chien-Ching and Oka, Shinichi and Chang, Sui-Yuan and Lee, Shui-Shan	<a href="#">Liver Int. 2019 Jun;39(6):1044-1051. doi: 10.1111/liv.14073. Epub 2019 Mar 13.</a>	Cross-sectional	2010	2016	HIV-HCV patients in one hospital (Tokyo)	38	Anti-HCV	Sexual		38	Inclusion
PM-J002	E	Characteristics of patients with chronic infection due to hepatitis C virus of mixed subtype: prevalence, viral RNA concentrations, and response to interferon therapy.	Ishida, Yuki and Hayashida, Tsunefusa and Sugiyama, Masaya and Tsuchiya, Kiyoto and Kikuchi, Yoshimi and Mizokami, Masashi and Oka, Shinichi and Gatanaga, Hiroyuki	<a href="#">J Acquir Immune Defic Syndr. 2019 Mar 1;80(3):350-357. doi: 10.1097/QAI.0000000000001919.</a>										Exclusion
PM-J003	E	A consensus for occupational health management of healthcare workers infected with human immunodeficiency virus, hepatitis B virus, and / or hepatitis C virus.	Ishimaru, Tomohiro and Wada, Koji and Smith, Derek R	<a href="#">J Occup Health. 2017 May 25;59(3):304-308. doi: 10.1539/joh.16-0275-OP. Epub 2017 Apr 5.</a>										Exclusion
PM-J004	E	Transmission of hepatitis C virus: self-limiting hepatitis or chronic hepatitis?	Saito, Takafumi and Ueno, Yoshiyuki	<a href="#">World J Gastroenterol. 2013 Nov 7;19(41):6957-61. doi: 10.3748/wjg.v19.i41.6957.</a>										Exclusion
PM-J005	E	Risk factors for mother-to-child transmission of hepatitis C virus: Maternal high viral load and fetal exposure in the birth canal.	Murakami, Jun and Nagata, Ikuo and Itsuka, Toshiyuki and Okamoto, Manabu and Kaji, Shunsaku and Hoshika, Tadataka and Matsuda, Ryu and Kanzaki, Susumu and Shiraki, Kazuo and Suyama, Akihiko and Hino, Shigeo	<a href="#">Hepatol Res. 2012 Jul;42(7):648-57. doi: 10.1111/j.1872-034X.2012.00968.x. Epub 2012 Mar 8.</a>	Cross-sectional	1992	2006	Children born to HCV positive mothers	106	Anti-HCV	Breastfeeding	75	6	Inclusion
PM-J005	E	Risk factors for mother-to-child transmission of hepatitis C virus: Maternal high viral load and fetal exposure in the birth canal.	Murakami, Jun and Nagata, Ikuo and Itsuka, Toshiyuki and Okamoto, Manabu and Kaji, Shunsaku and Hoshika, Tadataka and Matsuda, Ryu and Kanzaki, Susumu and Shiraki, Kazuo and Suyama, Akihiko and Hino, Shigeo	<a href="#">Hepatol Res. 2012 Jul;42(7):648-57. doi: 10.1111/j.1872-034X.2012.00968.x. Epub 2012 Mar 8.</a>	Cross-sectional	1992	2006	Children born to HCV positive mothers	126	Anti-HCV	MTCT	126	11	Inclusion
PM-J006	E	Significant background rates of HBV and HCV infections in patients and risks of blood transfusion from donors with low anti-HBc titres or high anti-HBc titres with high anti-HBs titres in Japan: a prospective, individual NAT study of transfusion-transmitted HBV, HCV and HIV infections.	Tani, Y and Aso, H and Matsukura, H and Tadokoro, K and Tamori, A and Nishiguchi, S and Yoshizawa, H and Shibata, H and JRC NAT Screening Research Group, [Collective Name]	<a href="#">Vox Sang. 2012 May;102(4):285-93. doi: 10.1111/j.1423-0410.2011.01561.x. Epub 2011 Nov 14.</a>										Exclusion
PM-J007	E	A case of acute hepatitis C caused by interspousal transmission after 30 years of marriage.	Nishimura, Naoyuki and Isoda, Norio and Higashizawa, Toshihiko and Otake, Toshiya and Tsukui, Mamiko and Nagashima, Shigeo and Takahashi, Masaharu and Okamoto, Hiroaki and Sugano, Kentaro	<a href="#">Clin J Gastroenterol. 2010 Feb;3(1):50-6. doi: 10.1007/s12328-009-0127-3. Epub 2009 Nov 26.</a>	Case report	2009	2009	Spouse of HCV positive subject	1	HCV RNA	Sexual		1	Inclusion
PM-J008	E	Declining hepatitis C virus (HCV) prevalence in pregnant women: impact of anti-HCV screening of donated blood.	Ohto, Hitoshi and Ishii, Tsutomu and Kitazawa, Junichi and Sugiyama, Seiji and Ujiiie, Niro and Fujimori, Keiya and Ariga, Hiromichi and Satoh, Tomoko and Nollet, Kenneth E and Okamoto, Hiroaki and Hoshi, Tanji	<a href="#">Transfusion. 2010 Mar;50(3):693-700. doi: 10.1111/j.1537-2995.2009.02487.x. Epub 2009 Nov 13.</a>	Prospective cohort	1990	2004	Pregnant woman in 15 clinics in Fukushima Prefecture	22664	Anti-HCV	Blood Transfusion	532	31	Inclusion

PM-J009	E	Standardized prevalence ratios for chronic hepatitis C virus infection among adult Japanese hemodialysis patients.	Ohsawa, Masaki and Kato, Karen and Itai, Kazuyoshi and Tanno, Kozo and Fujishima, Yosuke and Konda, Ryuichiro and Okayama, Akira and Abe, Koichi and Suzuki, Kazuyuki and Nakamura, Motoyuki and Onoda, Toshiyuki and Kawamura, Kazuko and Sakata, Kiyomi and Akiba, Takashi and Fujioka, Tomoaki	<a href="#">J Epidemiol. 2010;20(1):30-9. Epub 2009 Oct 31.</a>	Prospective cohort	2003	2004	Men and women in Iwate prefecture	23688	Anti-HCV	Hemodialysis	1214	134	Inclusion
PM-J010	E	No evidence for patient-to-patient transmission of hepatitis C virus during upper gastrointestinal endoscopy: molecular studies on three acute hepatitis C patients.	Toda, Takayuki and Mitsui, Takehiro and Tsukamoto, Yukie and Ebara, Takeshi and Masuko, Kazuo and Takahashi, Masaharu and Okamoto, Hiroaki	<a href="#">Dig Endosc. 2009 Jul;21(3):147-53. doi: 10.1111/j.1443-1661.2009.00876.x.</a>	Case report	1997	2007	Patients underwent UGIE	3	Anti-HCV	Upper gastrointestinal endoscopy	3	0	Inclusion
PM-J011	E	Risk factors for HCV infection. Focus on ethnic and cultural characteristics.	Pellicano, R and De Angelis, C and De Luca, L and Smedile, A and Berrutti, M and Asteigano, M and Rizzetto, M	<a href="#">Minerva Gastroenterol Dietol. 2009 Jun;55(2):159-62.</a>										Exclusion
PM-J012	E	Incidence rates of hepatitis B and C virus infections among blood donors in Hiroshima, Japan, during 10 years from 1994 to 2004.	Tanaka, Junko and Mizui, Masaaki and Nagakami, Hideki and Katayama, Keiko and Tabuchi, Ayako and Komiya, Yutaka and Miyakawa, Yuzo and Yoshizawa, Hiroshi	<a href="#">Intervirology. 2008;51(1):33-41. doi: 10.1159/000118794. Epub 2008 Feb 29.</a>										Exclusion
PM-J013	E	Patterns in the prevalence of hepatitis C virus infection at the start of hemodialysis in Japan.	Iwasa, Yuko and Otsubo, Shigeru and Sugi, Oriie and Sato, Keitaro and Asamiya, Yukari and Eguchi, Aya and Iwasaki, Tomihito and Matsuda, Nami and Kikuchi, Kan and Ikebe, Norisato and Miwa, Naoko and Kimata, Naoki and	<a href="#">Clin Exp Nephrol. 2008 Feb;12(1):53-7. doi: 10.1007/s10157-007-0005-6. Epub 2008 Jan 5.</a>	Cross-sectional	2003	2007	Hemodialysis patients at Tokyo Women's medical University Hospital	400	Anti-HCV	Blood Transfusion	88	16	Inclusion
PM-J014	E	Risk of authoritarianism: fibrinogen-transmitted hepatitis C in Japan.	Yasunaga, Hideo	<a href="#">Lancet. 2007 Dec 15;370(9604):2063-7.</a>										Exclusion
PM-J015	E	Re-evaluation of the true rate of hepatitis C virus mother-to-child transmission and its novel risk factors based on our two prospective studies.	Hayashida, Ayako and Inaba, Noriyuki and Oshima, Kyoko and Nishikawa, Masayoshi and Shoda, Akiko and Hayashida, Shihou and Negishi, Masami and Inaba, Fujiyuki and Inaba, Michiyo and Fukasawa, Ichio and Watanabe, Hiroshi and Takamizawa, Hiroyoshi	<a href="#">J Obstet Gynaecol Res. 2007 Aug;33(4):417-22.</a>	Prospective cohort	1989	2004	Children born to HCV positive mothers in two obstetric institutes in the Kanto region (Chiba)	124	HCV RNA	MTCT	124	12	Inclusion
PM-J016	E	Hepatitis C virus infection in dialysis patients.	SuÅ,owicz, WÅ,adysÅ,aw and Radziszewski, Andrzej and Chowaniec, Eve	<a href="#">Hemodial Int. 2007 Jul;11(3):286-95.</a>										Exclusion
PM-J017	E	Identification and phylogenetic analysis of hepatitis C virus in forensic blood samples obtained from injecting drug users.	Kato, H and Maeno, Y and Seko-Nakamura, Y and Monma-Ohtaki, J and Sugiura, S and Takahashi, K and Zhe, L X and Matsumoto, T and Kurvanov, F and Mizokami, M and Nagao, M	<a href="#">Forensic Sci Int. 2007 May 3;168(1):27-33. Epub 2006 Jul 7.</a>	Cross-sectional	NA	NA	Cadavers of IDUs	12	HCV RNA	Injecting Drug User	12	2	Inclusion
PM-J018	E	Hepatitis C virus infection in 2,744 hemodialysis patients followed regularly at nine centers in Hiroshima during November 1999 through February 2003.	Kumagai, Junko and Komiya, Yutaka and Tanaka, Junko and Katayama, Keiko and Tatsukawa, Yorimitsu and Yorioka, Noriaki and Miyakawa, Yuzo and Yoshizawa, Hiroshi	<a href="#">J Med Virol. 2005 Aug;76(4):498-502.</a>	Prospective cohort	1999	2003	HD Patients in the nine center in Hiroshima	2114	Anti-HCV	Hemodialysis	2114	16	Inclusion

PM-J019	E	Infectious risks associated with the transfusion of blood components and pathogen inactivation in Japan.	Satake, Masahiro	<u>Int J Hematol. 2004 Nov;80(4):306-10.</u>											Exclusion		
PM-J020	E	Molecular investigation of interspousal transmission of hepatitis C virus in two Japanese patients who acquired acute hepatitis C after 40 or 42 years of	Nakayama, Haruo and Sugai, Yoshiaki and Ikeya, Shinichi and Inoue, Jun and Nishizawa, Tsutomu and Okamoto, Hiroaki	<u>J Med Virol. 2005 Feb;75(2):258-66.</u>	Case Report	1999	2000	Two acute hepatitis C patients	2	Anti-HCV	Sexual				2	Inclusion	
PM-J021	E	Risk of HCV transmission after needlestick injury, and the efficacy of short-duration interferon administration to prevent HCV transmission to medical personnel.	Chung, Hobyoung and Kudo, Masatoshi and Kumada, Takashi and Katsushima, Shinji and Okano, Akihiro and Nakamura, Takefumi and Osaki, Yukio and Kohigashi, Katsushi and Yamashita, Yukitaka and Komori, Hideshi and	<u>J Gastroenterol. 2003;38(9):877-9.</u>	Cross-sectional	2001	2001	Health workers	684	Anti-HCV	Needlestick injury	684			2	Inclusion	
PM-J022	E	The possible intraspousal transmission of HCV in terms of lichen planus.	Nagao, Y and Tomonari, R and Kage, M and Komai, K and Tsubone, K and Kamura, T and Sata, M	<u>Int J Mol Med. 2002 Nov;10(5):569-73.</u>	Cross-sectional	NA	2002	Women with OLP	24	Anti-HCV	Sexual		10		2	Inclusion	
PM-J023	E	Different outcomes of vertical transmission of hepatitis C virus in a twin pregnancy.	Inui, Ayano and Fujisawa, Tomoo and Sogo, Tsuyoshi and Komatsu, Haruki and Isozaki, Atsushi and Sekine, Isao	<u>J Gastroenterol Hepatol. 2002 May;17(5):617-9.</u>	Case report	NA	NA	Twins born to HCV positive mother (vaginal delivery)	2	HCV RNA	MTCT		2		1	Inclusion	
PM-J024	E	Hepatitis C virus infection: an overview.	Hwang, S J	<a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11825001/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11825001/</a>												Exclusion	
PM-J025	E	Association between SEN virus infection and hepatitis C in Japan.	Umemura, T and Alter, H J and Tanaka, E and Yeo, A E and Shih, J W and Orii, K and Matsumoto, A and Yoshizawa, K and Kiyosawa, K	<u>J Infect Dis. 2001 Nov 15;184(10):1246-51. Epub 2001 Oct 10.</u>												Exclusion	
PM-J026	E	Incidence of hepatitis virus infection and severe liver dysfunction in patients receiving chemotherapy for hematologic malignancies.	Kawatani, T and Suou, T and Tajima, F and Ishiga, K and Omura, H and Endo, A and Ohmura, H and Ikuta, Y and Idobe, Y and Kawasaki, H	<u>Eur J Haematol. 2001 Jul;67(1):45-50.</u>												Exclusion	
PM-J027	E	Effectiveness of manual cleaning and disinfection of gastroendoscopes with 3% glutaraldehyde for decreasing risk of transmission of hepatitis C virus.	Sakai, N and Tatsuta, M and Iishi, H and Yano, H and Osaka, S and Aoki, A	<u>Am J Gastroenterol. 2001 Jun;96(6):1803-6.</u>												Exclusion	
PM-J028	E	Phylogenetic investigation for the risk of hepatitis C virus transmission to surgical and dental patients.	Enomoto, A and Yoshino, S and Hasegawa, H and Komatsu, T and Sasahara, H and Takano, S and Esumi, M	<u>J Viral Hepat. 2001 Mar;8(2):148-53.</u>	Cross-sectional	1997	1999	Surgical Ward	83	Anti-HCV	Nosocomial Transmission	83		13		Inclusion	
PM-J028	E	Phylogenetic investigation for the risk of hepatitis C virus transmission to surgical and dental patients.	Enomoto, A and Yoshino, S and Hasegawa, H and Komatsu, T and Sasahara, H and Takano, S and Esumi, M	<u>J Viral Hepat. 2001 Mar;8(2):148-53.</u>	Cross-sectional	1997	1999	Dental Clinic A	57	Anti-HCV	Nosocomial Transmission	57		9		Inclusion	
PM-J028	E	Phylogenetic investigation for the risk of hepatitis C virus transmission to surgical and dental patients.	Enomoto, A and Yoshino, S and Hasegawa, H and Komatsu, T and Sasahara, H and Takano, S and Esumi, M	<u>J Viral Hepat. 2001 Mar;8(2):148-53.</u>	Cross-sectional	1997	1999	Dental Clinic B	54	Anti-HCV	Nosocomial Transmission	54		10		Inclusion	
PM-J029	E	Prospective study of mother-to-infant transmission of hepatitis C virus.	Tajiri, H and Miyoshi, Y and Funada, S and Etani, Y and Abe, J and Onodera, T and Goto, M and Funato, M and Iida, S and Noda, C and Nakayama, M and Okada, S	<u>Pediatr Infect Dis J. 2001 Jan;20(1):10-4.</u>	Prospective cohort	1993	1998	Babies born to HCV positive mothers in 7 hospitals in Osaka	141	HCV RNA	MTCT		114		9		Inclusion

PM-J030	E	Hepatitis C virus in blood and dialysate in hemodialysis.	Noiri, E and Nakao, A and Oya, A and Fujita, T and Kimura, S	<u>Am J Kidney Dis. 2001 Jan;37(1):38-42.</u>												Exclusion
PM-J031	E	Prospective reevaluation of risk factors in mother-to-child transmission of hepatitis C virus: high virus load, vaginal delivery, and negative anti-NS4 antibody.	Okamoto, M and Nagata, I and Murakami, J and Kaji, S and Itsuka, T and Hoshika, T and Matsuda, R and Tazawa, Y and Shiraki, K and Hino, S	<u>J Infect Dis. 2000 Nov;182(5):1511-4. Epub 2000 Oct 9.</u>	Prospective cohort	1992	1998	Babies born to anti HCV-positive mothers in 7 hospitals of Tottori	84	HCV RNA	MTCT		84	7	Inclusion	
PM-J032	E	Phylogenetic evidence, by multiple clone analysis of hypervariable region 1, for the transmission of hepatitis C virus to chronic haemodialysis patients.	Hosokawa, N and Esumi, M and Iwasaki, Y and Yanai, M and Enomoto, A and Kawano, K	<u>J Viral Hepat. 2000 Jul;7(4):276-82.</u>	Cross-sectional	1992	1997	Patients(HCV) in Hemodialysis	20	Anti-HCV	Nosocomial Transmission		20	5	Inclusion	
PM-J033	E	Intrafamilial transmission of hepatitis C virus: a systematic review.	Ackerman, Z and Ackerman, E and Paltiel, O	<u>J Viral Hepat. 2000 Mar;7(2):93-103.</u>												Exclusion
PM-J034	E	Hepatitis C virus infection in institutionalized psychiatric patients: possible role of transmission by razor sharing.	Sawayama, Y and Hayashi, J and Kakuda, K and Furusyo, N and Ariyama, I and Kawakami, Y and Kinukawa, N and Kashiwagi, S	<u>Dig Dis Sci. 2000 Feb;45(2):351-6.</u>	Cross-sectional	1997	1997	Inpatients at Psychiatric Institution in Fukuoka	196	Anti-HCV	Surgery		61	10	Inclusion	
PM-J034	E	Hepatitis C virus infection in institutionalized psychiatric patients: possible role of transmission by razor	Sawayama, Y and Hayashi, J and Kakuda, K and Furusyo, N and Ariyama, I and Kawakami, Y and Kinukawa, N and	<u>Dig Dis Sci. 2000 Feb;45(2):351-6.</u>	Cross-sectional	1997	1997	Inpatients at Psychiatric Institution in	196	Anti-HCV	Blood Transfusion		24	6	Inclusion	
PM-J034	E	Hepatitis C virus infection in institutionalized psychiatric patients: possible role of transmission by razor	Sawayama, Y and Hayashi, J and Kakuda, K and Furusyo, N and Ariyama, I and Kawakami, Y and Kinukawa, N and	<u>Dig Dis Sci. 2000 Feb;45(2):351-6.</u>	Cross-sectional	1997	1997	Inpatients at Psychiatric Institution in	196	Anti-HCV	Injecting Drug User		2	1	Inclusion	
PM-J034	E	Hepatitis C virus infection in institutionalized psychiatric patients: possible role of transmission by razor	Sawayama, Y and Hayashi, J and Kakuda, K and Furusyo, N and Ariyama, I and Kawakami, Y and Kinukawa, N and	<u>Dig Dis Sci. 2000 Feb;45(2):351-6.</u>	Cross-sectional	1997	1997	Inpatients at Psychiatric Institution in	196	Anti-HCV	Tattooing		3	2	Inclusion	
PM-J034	E	Hepatitis C virus infection in institutionalized psychiatric patients: possible role of transmission by razor	Sawayama, Y and Hayashi, J and Kakuda, K and Furusyo, N and Ariyama, I and Kawakami, Y and Kinukawa, N and	<u>Dig Dis Sci. 2000 Feb;45(2):351-6.</u>	Cross-sectional	1997	1997	Inpatients at Psychiatric Institution in	196	Anti-HCV	Razor Sharing		102	16	Inclusion	
PM-J035	E	Seroepidemiologic studies of hepatitis C virus infection in a population of Okayama Prefecture screened for liver disease.	Uesugi, S and Taketa, K and Rimal, N and Ikeda, S and Kariya, T and Suganuma, N and Yamamoto, H and Kira, S	<u>Acta Med Okayama. 1999 Feb;53(1):31-8.</u>	Cross-sectional	1992	1993	Inhabitants who underwent screening for liver disease in Okayama prefecture	1398	Anti-HCV	Blood Transfusion					Inclusion
PM-J036	E	The risk of hepatitis C virus infection among blood donors in Osaka, Japan.	Tanaka, H and Tsukuma, H and Hori, Y and Nakade, T and Yamano, H and Kinoshita, N and Oshima, A and Shibata,	<u>J Epidemiol. 1998 Dec;8(5):292-6.</u>												Exclusion
PM-J037	E	Prevalence of anti-hepatitis C antibodies in a rural community without high mortality from liver disease in Niigata prefecture.	Kayaba, K and Igarashi, M and Okamoto, H and Tsuda, F	<u>J Epidemiol. 1998 Oct;8(4):250-5.</u>	Cross-sectional	1995	1996	Population-based in Niigata prefecture (participants of the mass screening)	2231	Anti-HCV	Blood Transfusion		245	15	Inclusion	
PM-J037	E	Prevalence of anti-hepatitis C antibodies in a rural community without high mortality from liver disease in Niigata prefecture.	Kayaba, K and Igarashi, M and Okamoto, H and Tsuda, F	<u>J Epidemiol. 1998 Oct;8(4):250-5.</u>	Cross-sectional	1995	1996	Population-based in Niigata prefecture (participants of the mass screening)	2231	Anti-HCV	Surgery		1002	29	Inclusion	
PM-J037	E	Prevalence of anti-hepatitis C antibodies in a rural community without high mortality from liver disease in Niigata prefecture.	Kayaba, K and Igarashi, M and Okamoto, H and Tsuda, F	<u>J Epidemiol. 1998 Oct;8(4):250-5.</u>	Cross-sectional	1995	1996	Population-based in Niigata prefecture (participants of the mass screening)	2231	Anti-HCV	Acupuncture therapy		547	11	Inclusion	
PM-J038	E	Prospective follow-up study of hepatitis C virus infection in patients undergoing maintenance haemodialysis: comparison among haemodialysis units.	Kobayashi, M and Tanaka, E and Oguchi, H and Hora, K and Kiyosawa, K	<u>J Gastroenterol Hepatol. 1998 Jun;13(6):604-9.</u>	Prospective cohort	1990	1995	Patients(HCV) Undergoing Hemodialysis	179	Anti-HCV	Hemodialysis		179	9	Inclusion	

PM-J039	E	Vertical transmission of hepatitis C virus: risk factors and infantile prognosis.	Xiong, S K and Okajima, Y and Ishikawa, K and Watanabe, H and Inaba, N	<u>J Obstet Gynaecol Res. 1998 Feb;24(1):57-61.</u>	Prospective cohort	1990	1997	Babies born to anti HCV-positive mothers, Dokkyo	65	HCV RNA	MTCT	65	4	Inclusion
PM-J040	E	Characteristics of patients with chronic infection due to hepatitis C virus of mixed subtype: prevalence, viral RNA concentrations, and response to interferon therapy.	Toyoda, H and Fukuda, Y and Hayakawa, T and Takayama, T and Kumada, T and Nakano, S and Takamatsu, J and Saito, H	<u>Clin Infect Dis. 1998 Feb;26(2):440-5.</u>										Exclusion
PM-J041	E	A 20-year case study of a kidney transplant recipient with chronic active hepatitis C: clinical course and successful treatment for late acute rejection induced by interferon therapy.	Ichikawa, Y and Kyo, M and Hanafusa, T and Kohro, T and Kishikawa, H and Fukunishi, T and Nagano, S and Shinji, Y	<u>Transplantation. 1998 Jan 15;65(1):134-8.</u>										Exclusion
PM-J042	E	Heterosexual transmission of hepatitis C virus among married couples in southwestern Japan.	Tanaka, K and Stuver, S O and Ikematsu, H and Okayama, A and Tachibana, N and Hirohata, T and Kashiwagi, S and Tsubouchi, H and Mueller, N E	<u>Int J Cancer. 1997 Jul 3;72(1):50-5.</u>	Cross-sectional	1984	1995	subset participation from Miyazaki Cohort Study	218 spol	HCV RNA	Sexual	218	3	Inclusion
PM-J042	E	Heterosexual transmission of hepatitis C virus among married couples in southwestern Japan.	Tanaka, K and Stuver, S O and Ikematsu, H and Okayama, A and Tachibana, N and Hirohata, T and Kashiwagi, S and Tsubouchi, H and Mueller, N E	<u>Int J Cancer. 1997 Jul 3;72(1):50-5.</u>	Cross-sectional	1984	1995	subset participation from Miyazaki Cohort Study	218 spol	Anti-HCV	Blood Transfusion	21	7	Inclusion
PM-J042	E	Heterosexual transmission of hepatitis C virus	Tanaka, K and Stuver, S O and Ikematsu, H and Okayama, A and Tachibana, N and Hirohata, T and Kashiwagi, S and Tsubouchi, H and Mueller, N E	<u>Int J Cancer. 1997 Jul 3;72(1):50-5.</u>	Cross-sectional	1984	1995	subset participation	218 spol	Anti-HCV	Surgery	116	39	Inclusion
PM-J043	E	Role of screening for hepatitis C virus in children with malignant disease and who undergo bone marrow transplantation.	Tada, K and Tajiri, H and Koizawa, K and Sawada, A and Guo, W and Okada, S	<u>Transfusion. 1997 Jun;37(6):641-4.</u>										Exclusion
PM-J044	E	Routes of transmission of hepatitis C virus in an endemic rural area of Japan. Molecular epidemiologic study of hepatitis C virus infection.	Noguchi, S and Sata, M and Suzuki, H and Mizokami, M and Tanikawa, K	<u>Scand J Infect Dis. 1997;29(1):23-8.</u>	Cross-sectional	1992	1992	Adult in rural area of Japan	252	Anti-HCV	Sexual	75	11	Inclusion
PM-J044	E	Routes of transmission of hepatitis C virus in an endemic rural area of Japan. Molecular epidemiologic study of hepatitis C virus infection.	Noguchi, S and Sata, M and Suzuki, H and Mizokami, M and Tanikawa, K	<u>Scand J Infect Dis. 1997;29(1):23-8.</u>	Cross-sectional	1992	1992	Children born to infected mothers in rural area of Japan	252	Anti-HCV	MTCT	55	4	Inclusion
PM-J045	E	Hepatitis C virus subtype 3b infection in a hospital in Japan: epidemiological study.	Ikeda, K and Chayama, K and Saitoh, S and Koida, I and Suzuki, Y and Tsubota, A and Kobayashi, M and Arase, Y and Murashima, N and Kumada, H	<u>J Gastroenterol. 1996 Dec;31(6):801-5.</u>	Cross-sectional	1991	1994	HCV positive patients at Toranomon Hospital, Tokyo	1330	HCV RNA	Nosocomial Transmission		11	Inclusion
PM-J046	E	Prevalence of hepatitis C virus infection among female prostitutes in Fukuoka, Japan.	Nakashima, K and Kashiwagi, S and Hayashi, J and Urabe, K and Minami, K and Maeda, Y	<u>J Gastroenterol. 1996 Oct;31(5):664-8.</u>	Cross-sectional	1989	1992	Female prostitute in Fukuoka and Blood donors in Fukuoka	604 prostitutes+663 2 Blood donors	Anti-HCV	Sexual	604	61	Inclusion
PM-J047	E	Phylogenetic tree-based epidemiological analysis of hepatitis C virus transmission in a region of Japan with a high prevalence of infection.	Hara, T and Setoguchi, Y and Kajihara, S and Yamamoto, K and Sakai, T and Inoue, T and Ohba, K and Mizokami, M	<u>J Gastroenterol Hepatol. 1996 Jul;11(7):641-5.</u>	Cross-sectional	1993	1993	HCV positive in Saga prefecture	86	HCV RNA	Blood Transfusion		14	Inclusion
PM-J047	E	Phylogenetic tree-based epidemiological analysis of hepatitis C virus transmission in a region of Japan with a high prevalence of infection.	Hara, T and Setoguchi, Y and Kajihara, S and Yamamoto, K and Sakai, T and Inoue, T and Ohba, K and Mizokami, M	<u>J Gastroenterol Hepatol. 1996 Jul;11(7):641-5.</u>	Cross-sectional	1993	1993	HCV positive in Saga prefecture	86	HCV RNA	Surgery		41	Inclusion
PM-J047	E	Phylogenetic tree-based epidemiological analysis of hepatitis C virus transmission in a region of Japan with a high prevalence of infection.	Hara, T and Setoguchi, Y and Kajihara, S and Yamamoto, K and Sakai, T and Inoue, T and Ohba, K and Mizokami, M	<u>J Gastroenterol Hepatol. 1996 Jul;11(7):641-5.</u>	Cross-sectional	1993	1993	HCV genotype-1 positive in Saga prefecture	20	HCV RNA	Nosocomial Transmission		4	Inclusion

PM-J047	E	Phylogenetic tree-based epidemiological analysis of hepatitis C virus transmission in a region of Japan with a high prevalence of infection.	Hara, T and Setoguchi, Y and Kajihara, S and Yamamoto, K and Sakai, T and Inoue, T and Ohba, K and Mizokami, M	<u>J Gastroenterol Hepatol. 1996 Jul;11(7):641-5.</u>	Cross-sectional	1993	1993	HCV genotype-1 positive in Saga prefecture	20	HCV RNA	Acupuncture therapy			7	Inclusion
PM-J048	E	Mother-to-infant transmission of hepatitis C virus in human immunodeficiency virus-coinfected mother: a case report.	Koseki, S and Taga, M and Aoyama, M and Hirabuki, T and Hirahara, F and Takahasi, T and Minaguchi, H and Yokota, S and Ito, A	<u>J Obstet Gynaecol Res. 1996 Apr;22(2):139-42.</u>	Case Report	NA	1996	Child born to infected mother	1	Anti-HCV	MTCT	1	0	Inclusion	
PM-J049	E	Low prevalence of anti-hepatitis C virus antibodies in female hemodialysis patients without blood transfusion: a multicenter analysis.	Nakayama, E and Liu, J H and Akiba, T and Marumo, F and Sato, C	<u>J Med Virol. 1996 Mar;48(3):284-8.</u>	Cross-sectional	NA	NA	Chronic hemodialysis patients in 23 dialysis units in Tokyo	2132	Anti-HCV	Blood Transfusion	1076	322	Inclusion	
PM-J050	E	Epidemiology of HCV infection in the general population and in blood transfusion.	BottÃ©, C and Janot, C	<u>Nephrol Dial Transplant. 1996;11 Suppl 4:19-21.</u>										Exclusion	
PM-J051	E	Mother-to-infant transmission of hepatitis C virus: a prospective study.	Matsubara, T and Sumazaki, R and Takita, H	<u>Eur J Pediatr. 1995 Dec;154(12):973-8.</u>	Prospective cohort	1989	1993	Babies born to anti HCV-positive mothers, Tsukuba University	31	HCV RNA	MTCT	31	3	Inclusion	
PM-J052	E	Hepatitis C virus infection among Japanese general surgical patients.	Yanaga, K and Wakiyama, S and Soejima, Y and Yoshizumi, T and Nishizaki, T and Sugimachi, K	<u>World J Surg. 1995 Sep-Oct;19(5):694-6; discussion 697.</u>										Exclusion	
PM-J053	E	Heterosexual activity as a risk factor for the transmission of hepatitis C virus.	Utsumi, T and Hashimoto, E and Okumura, Y and Takayanagi, M and Nishikawa, H and Kigawa, M and Kumakura, N and Toyokawa, H	<u>J Med Virol. 1995 Jun;46(2):122-5.</u>	Cross-sectional	1993	1993	Prisoners in Tokyo	201	Anti-HCV	Injecting Drug User	69	56	Inclusion	
PM-J053	E	Heterosexual activity as a risk factor for the transmission of hepatitis C virus.	Utsumi, T and Hashimoto, E and Okumura, Y and Takayanagi, M and Nishikawa, H and Kigawa, M and Kumakura, N and Toyokawa, H	<u>J Med Virol. 1995 Jun;46(2):122-5.</u>	Cross-sectional	1993	1993	Prisoners in Tokyo	201	Anti-HCV	Tattooing	59	44	Inclusion	
PM-J053	E	Heterosexual activity as a risk factor for the transmission of hepatitis C virus.	Utsumi, T and Hashimoto, E and Okumura, Y and Takayanagi, M and Nishikawa, H and Kigawa, M and Kumakura, N and Toyokawa, H	<u>J Med Virol. 1995 Jun;46(2):122-5.</u>	Cross-sectional	1993	1993	Prisoners in Tokyo	201	Anti-HCV	Surgery	40	24	Inclusion	
PM-J054	E	Transmission of hepatitis C virus from mothers to infants: its frequency and risk factors revisited.	Moriya, T and Sasaki, F and Mizui, M and Ohno, N and Mohri, H and Mishiro, S and Yoshizawa, H	<u>Biomed Pharmacother. 1995;49(2):59-64.</u>	Cross-sectional	1990	1993	Children born to infected mothers	84	Anti-HCV	MTCT	84	2	Inclusion	
PM-J054	E	Transmission of hepatitis C virus from mothers to infants: its frequency and risk factors revisited.	Moriya, T and Sasaki, F and Mizui, M and Ohno, N and Mohri, H and Mishiro, S and Yoshizawa, H	<u>Biomed Pharmacother. 1995;49(2):59-64.</u>	Cross-sectional	1990	1993	Pregnant women (infected)	84	Anti-HCV	Breastfeeding	59	5	Inclusion	
PM-J055	E	Detection of hepatitis C virus RNA in the ultrasonic dissector irrigating solution used in liver surgery.	Higashi, H and Matsumata, T and Hayashi, J and Yanaga, K and Shimada, M and Shirabe, K and Taketomi, A and Kashiwagi, S and Sugimachi, K	<u>Br J Surg. 1994 Sep;81(9):1346-7.</u>										Exclusion	
PM-J056	E	Analysis of nucleotide sequences of hepatitis C virus isolates from husband-wife pairs.	Setoguchi, Y and Kajihara, S and Hara, T and Motomura, M and Mizuta, T and Wada, I and Yamamoto, K and Sakai, T	<u>J Gastroenterol Hepatol. 1994 Sep-Oct;9(5):468-71.</u>	Cross-sectional	1993	1993	Spouse of HCV Infected Patients	83	Anti-HCV	Sexual	82	20	Inclusion	
PM-J057	E	Transmission of hepatitis C in an isolated area in Japan: community-acquired infection. The South Kiso Hepatitis Study Group.	Kiyosawa, K and Tanaka, E and Sodeyama, T and Yoshizawa, K and Yabu, K and Furuta, K and Imai, H and Nakano, Y and Usuda, S and Uemura, K	<u>Gastroenterology. 1994 Jun;106(6):1596-602.</u>	Cross-sectional	1985	1985	Population of the Arahiro area (South Kiso town)	435	Anti-HCV	Surgery	73	45	Inclusion	

PM-J057-1	E	Transmission of hepatitis C in an isolated area in Japan: community-acquired infection. The South Kiso Hepatitis Study Group.	Kiyosawa, K and Tanaka, E and Sodeyama, T and Yoshizawa, K and Yabu, K and Furuta, K and Imai, H and Nakano, Y and Usuda, S and Uemura, K	<u>Gastroenterology</u> 1994 Jun;106(6):1596-602.	Cross-sectional	1985	1985	Population of the Arahiro area (South Kiso town)	435	Anti-HCV	Blood Transfusion	30	16	Inclusion
PM-J057-1	E	Transmission of hepatitis C in an isolated area in Japan: community-acquired infection. The South Kiso Hepatitis Study Group.	Kiyosawa, K and Tanaka, E and Sodeyama, T and Yoshizawa, K and Yabu, K and Furuta, K and Imai, H and Nakano, Y and Usuda, S and Uemura, K	<u>Gastroenterology</u> 1994 Jun;106(6):1596-602.	Cross-sectional	1985	1985	Population of the Arahiro area (South Kiso town)	435	Anti-HCV	Injecting Drug User	1	1	Inclusion
PM-J057-1	E	Transmission of hepatitis C in an isolated area in Japan: community-acquired infection. The South Kiso Hepatitis Study Group.	Kiyosawa, K and Tanaka, E and Sodeyama, T and Yoshizawa, K and Yabu, K and Furuta, K and Imai, H and Nakano, Y and Usuda, S and Uemura, K	<u>Gastroenterology</u> 1994 Jun;106(6):1596-602.	Cross-sectional	1985	1985	Population of the Arahiro area (South Kiso town)	435	Anti-HCV	Tattooing	1	1	Inclusion
PM-J057-2	E	Transmission of hepatitis C in an isolated area in Japan: community-acquired infection. The South Kiso Hepatitis Study Group.	Kiyosawa, K and Tanaka, E and Sodeyama, T and Yoshizawa, K and Yabu, K and Furuta, K and Imai, H and Nakano, Y and Usuda, S and Uemura, K	<u>Gastroenterology</u> 1994 Jun;106(6):1596-602.	Cross-sectional	1985	1985	Population of the non-endemic areas	1542	Anti-HCV	Surgery	301	25	Inclusion
PM-J057-2	E	Transmission of hepatitis C in an isolated area in Japan: community-acquired infection. The South Kiso Hepatitis Study Group.	Kiyosawa, K and Tanaka, E and Sodeyama, T and Yoshizawa, K and Yabu, K and Furuta, K and Imai, H and Nakano, Y and Usuda, S and Uemura, K	<u>Gastroenterology</u> 1994 Jun;106(6):1596-602.	Cross-sectional	1985	1985	Population of the non-endemic areas	1542	Anti-HCV	Blood Transfusion	71	26	Inclusion
PM-J057-2	E	Transmission of hepatitis C in an isolated area in Japan: community-acquired infection. The South Kiso Hepatitis Study Group.	Kiyosawa, K and Tanaka, E and Sodeyama, T and Yoshizawa, K and Yabu, K and Furuta, K and Imai, H and Nakano, Y and Usuda, S and Uemura, K	<u>Gastroenterology</u> 1994 Jun;106(6):1596-602.	Cross-sectional	1985	1985	Population of the non-endemic areas	1542	Anti-HCV	Injecting Drug User	1	1	Inclusion
PM-J057-2	E	Transmission of hepatitis C in an isolated area in Japan: community-acquired infection. The South Kiso Hepatitis Study Group.	Kiyosawa, K and Tanaka, E and Sodeyama, T and Yoshizawa, K and Yabu, K and Furuta, K and Imai, H and Nakano, Y and Usuda, S and Uemura, K	<u>Gastroenterology</u> 1994 Jun;106(6):1596-602.	Cross-sectional	1985	1985	Population of the non-endemic areas	1542	Anti-HCV	Tattooing	1	1	Inclusion
PM-J058	E	Hepatitis C virus infection in spouses of patients with type C chronic liver disease.	Akahane, Y and Kojima, M and Sugai, Y and Sakamoto, M and Miyazaki, Y and Tanaka, T and Tsuda, F and Mishiro, S and Okamoto, H and Miyakawa, Y and Mayumi, M	<u>Ann Intern Med.</u> 1994 May 1;120(9):	Cross-sectional	1991	1991	HCV Infected Patients (+and their spouse)	154	HCV RNA	Sexual	154	25	Inclusion
PM-J059	E	Transmission of hepatitis C virus from mothers to infants. The Vertical Transmission of Hepatitis C Virus Collaborative Study Group.	Ohto, H and Terazawa, S and Sasaki, N and Sasaki, N and Hino, K and Ishiwata, C and Kako, M and Ujiie, N and Endo, C and Matsui, A	<u>N Engl J Med.</u> 1994 Mar 17;330(11):744-50.	Prospective cohort	1990	1992	Children born to HCV positive women	54	HCV RNA	MTCT	54	3	Inclusion
PM-J060	E	Risk of hepatitis C virus infections through household contact with chronic carriers: analysis of nucleotide sequences.	Honda, M and Kaneko, S and Unoura, M and Kobayashi, K and Murakami, S	<u>Hepatology</u> 1993 Jun;17(6):971-6.	Cross-sectional	1991	1992		88	Anti-HCV	Household Contact	88	20	Inclusion
PM-J061	E	The epidemiology and infection route of asymptomatic HCV carriers detected through blood donations.	Shimoyama, R and Sekiguchi, S and Suga, M and Sakamoto, S and Yachi, A	<u>Gastroenterol Jpn.</u> 1993 May;28 Suppl 5:1-5.	Cross-sectional	1991	1992	HCV positive blood donors in Hokkaido	262	Anti-HCV	Blood Transfusion		86	Inclusion
PM-J061	E	The epidemiology and infection route of asymptomatic HCV carriers detected through blood donations.	Shimoyama, R and Sekiguchi, S and Suga, M and Sakamoto, S and Yachi, A	<u>Gastroenterol Jpn.</u> 1993 May;28 Suppl 5:1-5.	Cross-sectional	1991	1992	HCV positive blood donors in Hokkaido	262	Anti-HCV	Acupuncture therapy		52	Inclusion
PM-J061	E	The epidemiology and infection route of asymptomatic HCV carriers detected through blood donations.	Shimoyama, R and Sekiguchi, S and Suga, M and Sakamoto, S and Yachi, A	<u>Gastroenterol Jpn.</u> 1993 May;28 Suppl 5:1-5.	Cross-sectional	1991	1992	HCV positive blood donors in Hokkaido	262	Anti-HCV	Surgery		42	Inclusion
PM-J061	E	The epidemiology and infection route of asymptomatic HCV carriers detected through blood donations.	Shimoyama, R and Sekiguchi, S and Suga, M and Sakamoto, S and Yachi, A	<u>Gastroenterol Jpn.</u> 1993 May;28 Suppl 5:1-5.	Cross-sectional	1991	1992	HCV positive blood donors in Hokkaido	262	Anti-HCV	Household Contact		26	Inclusion

PM-J061	E	The epidemiology and infection route of asymptomatic HCV carriers detected through blood donations.	Shimoyama, R and Sekiguchi, S and Suga, M and Sakamoto, S and Yachi, A	<u>Gastroenterol Jpn. 1993 May;28 Suppl 5:1-5.</u>	Cross-sectional	1991	1992	HCV positive blood donors in Hokkaido	262	Anti-HCV	Sexual			37	Inclusion
PM-J061	E	The epidemiology and infection route of asymptomatic HCV carriers detected through blood donations.	Shimoyama, R and Sekiguchi, S and Suga, M and Sakamoto, S and Yachi, A	<u>Gastroenterol Jpn. 1993 May;28 Suppl 5:1-5.</u>	Cross-sectional	1991	1992	HCV positive blood donors in Hokkaido	262	Anti-HCV	Needlestick injury			5	Inclusion
PM-J062	E	Hepatitis C virus infection in medical personnel after needlestick accident.	Mitsui, T and Iwano, K and Masuko, K and Yamazaki, C and Okamoto, H and Tsuda, F and Tanaka, T and Mishiro, S	<u>Hepatology. 1992 Nov;16(5):1109-14.</u>	Cross-sectional	1977	1990	Medical staffs got needlestick accident (with HCV, NANB)	159	Anti-HCV	Needlestick injury	68		7	Inclusion
PM-J063	E	Prevalence of four blood-borne viruses (HBV, HCV, HTLV-1, HIV-1) among haemodialysis patients in Japan.	Tamura, I and Koda, T and Kobayashi, Y and Ichimura, H and Kurimura, O and Kurimura, T	<u>J Med Virol. 1992 Apr;36(4):271-3.</u>	Cross-sectional	1990	1990	Hemodialysis patients from 5 hospitals in Hiroshima	393	Anti-HCV	Blood transfusion	306		62	Inclusion
PM-J063	E	Prevalence of four blood-borne viruses (HBV, HCV, HTLV-1, HIV-1) among haemodialysis patients in Japan.	Tamura, I and Koda, T and Kobayashi, Y and Ichimura, H and Kurimura, O and Kurimura, T	<u>J Med Virol. 1992 Apr;36(4):271-3.</u>	Cross-sectional	1990	1990	Hemodialysis patients from 5 hospitals in Hiroshima	393	Anti-HCV	Hemodialysis	393		70	Inclusion
PM-J064	E	Hepatitis C in hospital employees with needlestick injuries.	Kiyosawa, K and Sodeyama, T and Tanaka, E and Nakano, Y and Furuta, S and Nishioka, K and Purcell, R H and Alter, H J	<u>Ann Intern Med. 1991 Sep;115(5):367-9.</u>	Prospective cohort	1981	1989	Medical staffs got needlestick accident (with HCV-positive)	110	Anti-HCV	Needlestick injury	110		3	Inclusion
PM-J065	E	Hepatitis C and hepatitis B in the etiology of hepatocellular carcinoma in the Japanese population.	Tanaka, K and Hirohata, T and Koga, S and Sugimachi, K and Kanematsu, T and Ohryohji, F and Nawata, H and Ishibashi, H and Maeda, Y and Kiyokawa, H	<u>Cancer Res. 1991 Jun;51(11):2842-7.</u>											Exclusion
PM-J066	J	Intrafamilial transmission of hepatitis C virus in Japan.	Kiyosawa, K and Sodeyama, T and Tanaka, E and Shimizu, S and Furuta, S and Miyazaki, Y and Akahane, Y and Suzuki, H	<u>J Med Virol. 1991 Feb;33(2):114-6.</u>	Cross-sectional	1980	1989	Family members of HCV positive patient.	211	Anti-HCV	Household Contact	211		15	Inclusion
PM-J067	J	[Transfusion-transmitted diseases].	Shimoyama, Ryushi	[ <i>Hokkaido igaku zasshi</i> ] The <i>Hokkaido journal of medical</i>											Exclusion
PM-J068	J	[HCV infection in medical environments].	Yano, K and Yatsuhashi, H and Yano, M	<i>Rinsho byori</i> : The <i>Japanese journal of clinical pathology</i>											Exclusion
PM-J069	J	[Viral hepatitis in hemodialysis patients].	Yanai, M	<i>Rinsho byori</i> : The <i>Japanese journal of clinical pathology</i>											Exclusion
PM-J070	J	[Hepatitis C: epidemiology and therapy—with special reference to long-term prognosis after IFN therapy].	Fujiyama, S and Tanaka, M	<i>Rinsho byori</i> : The <i>Japanese journal of clinical pathology</i>											Exclusion
PM-J071	J	[The prevalence of TTV infection and the route of TTV transmission in hemodialysis patients—compared with HCV infection].	Utsunomiya, S and Yoshioka, K and Takagi, K and Wakita, T	<i>Nihon rinsho</i> : Japanese journal of clinical medicine	Cross-sectional	NA	NA	Hemodialysis patients	115	HCV RNA	Blood Transfusion	84		14	Inclusion
PM-J072	J	[The blood-born viral infections].	Nakamura, Y	<i>Rinsho byori</i> : The <i>Japanese journal of clinical pathology</i>											Exclusion
PM-J073	J	[The basics for establishing a needlestick injury prevention program in hospitals].	Kidouchi, K and Kashiwamata, M and Nakamura, C and Katoh, T and Mizuno, Y and Watanabe, S	<i>Kansenshogaku zasshi</i> : The <i>Journal of the Japanese Association for Infectious</i>											Exclusion
PM-J074	J	[The screening of hepatitis virus and its efficacy].	Kuroki, T and Murai, J and Fujino, K and Ozaki, S and Nakagishi, M and Toukaiya,	<i>Rinsho byori</i> : The <i>Japanese journal of clinical pathology</i>											Exclusion
PM-J075	J	[Epidemiological study of hepatitis B and C virus in Okinawa and Kyushu, Japan].	Kashiwagi, S	<i>Rinsho byori</i> : The <i>Japanese journal of clinical pathology</i>											Exclusion
PM-J076	J	[Risk of hepatitis C virus infection by needlestick among medical employees].	Okamoto, N and Mizokami, M and Kano, H and Orito, E and Yoshihara, N	<i>Kansenshogaku zasshi</i> : The <i>Journal of the Japanese Association for Infectious Diseases</i>	Cross-sectional	1984	1989	Medical staffs got needlestick accident (with HCV)	99	Anti-HCV	Blood transfusion	38		10	Inclusion

PM-J077	J	[Sexually transmitted disease infection in HIV carriers].	Ishikawa, K and Takebe, Y and Kishimoto, R and Kurata, T and Kawana, T	Kansenshogaku zasshi. The Journal of the Japanese Association for Infectious													Exclusion
PM-J078	J	[Hepatitis virus C infection in children].	Miyoshi, Y and Tajiri, H	Nihon rinsho. Japanese journal of clinical medicine													Exclusion
PM-J079	J	[Transmission of hepatitis C virus (HCV) by tattooing and acupuncture].	Aikawa, Tatsuya and Kojima, Maki	Nihon rinsho. Japanese journal of clinical medicine	Cross-sectional	1995	2003	Patients visited internal Department	18856	抗HCV	Blood transfusion				303	Inclusion	
PM-J079	J	[Transmission of hepatitis C virus (HCV) by tattooing and acupuncture].	Aikawa, Tatsuya and Kojima, Maki	Nihon rinsho. Japanese journal of clinical medicine	Cross-sectional	1995	2003	Patients visited internal Department	18856	抗HCV	Injecting Drug User				106	Inclusion	
PM-J079	J	[Transmission of hepatitis C virus (HCV) by tattooing and acupuncture].	Aikawa, Tatsuya and Kojima, Maki	Nihon rinsho. Japanese journal of clinical medicine	Cross-sectional	1995	2003	Patients visited internal Department	18856	抗HCV	Tattooing				66	Inclusion	
PM-J080	J	[Rou+D185:G185tes of transmission of hepatitis C virus in hyperendemic areas, and molecular epidemiologic study of hepatitis C virus infection].	Tanaka, Kazuo and Ide, Tatsuya and Sata, Michio	Nihon rinsho. Japanese journal of clinical medicine	Cross-sectional	1992	1992	Resident screening examinees	857	抗HCV	Blood transfusion			82	39	Inclusion	
PM-J080	J	[Rou+D185:G185tes of transmission of hepatitis C virus in hyperendemic areas, and molecular epidemiologic study of hepatitis C virus infection].	Tanaka, Kazuo and Ide, Tatsuya and Sata, Michio	Nihon rinsho. Japanese journal of clinical medicine	Cross-sectional	1992	1992	Resident screening examinees	857	抗HCV	Surgery			359	122	Inclusion	
PM-J080	J	[Rou+D185:G185tes of transmission of hepatitis C virus in hyperendemic areas, and molecular epidemiologic study of hepatitis C virus infection].	Tanaka, Kazuo and Ide, Tatsuya and Sata, Michio	Nihon rinsho. Japanese journal of clinical medicine	Cross-sectional	1992	1992	Resident screening examinees	857	抗HCV	Acupuncture therapy			303	100	Inclusion	
PM-J080	J	[Rou+D185:G185tes of transmission of hepatitis C virus in hyperendemic areas, and molecular epidemiologic study of hepatitis C virus infection].	Tanaka, Kazuo and Ide, Tatsuya and Sata, Michio	Nihon rinsho. Japanese journal of clinical medicine	Cross-sectional	1992	1992	Resident screening examinees	857	抗HCV	Tattooing			7	4	Inclusion	
PM-J081	J	[Hepatitis C virus infection as a sexually transmitted disease].	Kato, Hideaki and Mizokami, Masashi	Nihon rinsho. Japanese journal of clinical medicine												Exclusion	
PM-J082	J	[HCV infection among narcotics/methamphetamine abusers].	Wada, Kiyoshi	Nihon rinsho. Japanese journal of clinical medicine												Exclusion	

ID	Information of paper				Study period		Study subjects			subjects who has factor			
	Title	Description	Details	Study design	From	To	Subjects	Total N	Outcome	Factor	N	No.who was infected	Decision
PM-U001	Risk of posttransfusion hepatitis in the United States. A prospective cooperative study.	Grady, G F and Bennett, A J	<a href="#">JAMA. 1972 May 1;220(5):692-701.</a>	Prospective cohort	1966	1970	Cardiovascular surgery patients	5142	Non-A Non-B	Blood transfusion	4984	157	Inclusion
PM-U002	Serum alanine aminotransferase of donors in relation to the risk of non-A,non-B hepatitis in recipients: the transfusion-transmitted	Aach, R D and Szmuness, W and Mosley, J W and Hollinger, F B and Kahn, R A and Stevens, C E and Edwards, V M and	<a href="#">N Engl J Med. 1981 Apr 23;304(17):989-94.</a>	Prospective Cohort	1974	1979	Patients aged at least 16 years	1513	Non-A Non-B	Blood transfusion	1513	156	Inclusion
PM-U003	Post-transfusion viral hepatitis and the	Holland, P V and Bancroft, W and	<a href="#">N Engl J Med. 1981</a>										Exclusion
PM-U004	Sporadic non-A, non-B hepatitis: frequency and epidemiology in an urban U.S. population.	Alter, M J and Gerety, R J and Smallwood, L A and Sampliner, R E and Tabor, E and Deinhardt, F and FrA¶sner, G and Matanoski, G M	<a href="#">J Infect Dis. 1982 Jun;145(6):886-93.</a>	Prospective Cohort	1979	1980	Among non-A, non-B Hepatitis patients	96	Non-A Non-B	Blood transfusion		11	Inclusion
PM-U004	Sporadic non-A, non-B hepatitis: frequency and epidemiology in an urban U.S. population.	Alter, M J and Gerety, R J and Smallwood, L A and Sampliner, R E and Tabor, E and Deinhardt, F and FrA¶sner, G and Matanoski, G M	<a href="#">J Infect Dis. 1982 Jun;145(6):886-93.</a>	Prospective Cohort	1979	1980	Among non-A, non-B Hepatitis patients	96	Non-A Non-B	Intravenous drug use		40	Inclusion
PM-U004	Sporadic non-A, non-B hepatitis: frequency and epidemiology in an urban U.S. population.	Alter, M J and Gerety, R J and Smallwood, L A and Sampliner, R E and Tabor, E and Deinhardt, F and FrA¶sner, G and Matanoski, G M	<a href="#">J Infect Dis. 1982 Jun;145(6):886-93.</a>	Prospective Cohort	1979	1980	Among non-A, non-B Hepatitis patients	96	Non-A Non-B	Raw shellfish ingestion		33	Inclusion
PM-U004	Sporadic non-A, non-B hepatitis: frequency and epidemiology in an urban U.S. population.	Alter, M J and Gerety, R J and Smallwood, L A and Sampliner, R E and Tabor, E and Deinhardt, F and FrA¶sner, G and Matanoski, G M	<a href="#">J Infect Dis. 1982 Jun;145(6):886-93.</a>	Prospective Cohort	1979	1980	Among non-A, non-B Hepatitis patients	96	Non-A Non-B	Sexual		4	Inclusion
PM-U004	Sporadic non-A, non-B hepatitis: frequency and epidemiology in an urban U.S. population.	Alter, M J and Gerety, R J and Smallwood, L A and Sampliner, R E and Tabor, E and Deinhardt, F and FrA¶sner, G and Matanoski, G M	<a href="#">J Infect Dis. 1982 Jun;145(6):886-93.</a>	Prospective Cohort	1979	1980	Among non-A, non-B Hepatitis patients	96	Non-A Non-B	Surgery		13	Inclusion
PM-U005	Non-A, non-B hepatitis and chronic dialysis--another dilemma.	Seaworth, B J and Garrett, L E and Stead, W W and Hamilton, J D	<a href="#">Am J Nephrol. 1984;4(4):235-9</a>	Cross-sectional	1978	1981	Dialysis patients	163	Non-A non-B	Hemodialysis	163	23	Inclusion
PM-U006	Importance of heterosexual activity in the transmission of hepatitis B and non-A, non-B hepatitis.	Alter, M J and Coleman, P J and Alexander, W J and Kramer, E and Miller, J K and Mandel, E and Hadler, S C and	<a href="#">JAMA. 1989 Sep 1;262(9):1201-5.</a>	Cross-sectional	1985	1986	Among non-A, non-B Hepatitis patients	140	Non-A Non-B	Blood transfusion	138	18	Inclusion
PM-U006	Importance of heterosexual activity in the transmission of hepatitis B and non-A, non-B hepatitis.	Alter, M J and Coleman, P J and Alexander, W J and Kramer, E and Miller, J K and Mandel, E and Hadler, S C and	<a href="#">JAMA. 1989 Sep 1;262(9):1201-5.</a>	Cross-sectional	1985	1986	Among non-A, non-B Hepatitis patients	140	Non-A Non-B	Intravenous drug use		48	Inclusion
PM-U007	Non-A, non-B hepatitis--Illinois.	Centers for Disease Control (CDC), [Collective Name]	<a href="#">MMWR Morb Mortal Wkly Rep. 1989 Aug 11;38(31):529-31.</a>	Case report	1988	1989	HCV-positive residents of Wabash county	17	Non-A non-B	Intravenous drug use		7	Inclusion
PM-U008	An outbreak of non-A, non-B hepatitis associated with the infusion of a commercial factor IX complex during cardiovascular	Gerber, A R and Englander, S J and Selvey, D and Carlson, J F and Matthews, D L and Webster, H M and Caldwell, G G	<a href="#">Vox Sang. 1990;58(4):270-5.</a>	Retrospective Cohort	1984	1995	Among Cardiovascular surgery patients	171	Non-A Non-B	Blood transfusion	171	30	Inclusion
PM-U009	Antibody to hepatitis C virus among cardiac surgery patients, homosexual men, and intravenous drug users in Baltimore,	Donahue, J G and Nelson, K E and MuA±oz, A and Vlahov, D and Rennie, L L and Taylor, E L and Saah, A J and Cohn, S and	<a href="#">Am J Epidemiol. 1991 Nov 15;134(10):1206-11.</a>	Prospective cohort	1985	1986	Cardiovascular surgery patients	500	Anti-HCV	Blood transfusion	488	19	Inclusion

PM-U009	Antibody to hepatitis C virus among cardiac surgery patients, homosexual men, and intravenous drug users in Baltimore, Maryland.	Donahue, J G and Nelson, K E and Muñoz, A and Vlahov, D and Rennie, L L and Taylor, E L and Saah, A J and Cohn, S and Odaka, N J and Farzadegan, H	<a href="#">Am J Epidemiol. 1991 Nov 15;134(10):1206-11.</a>	Prospective cohort	1988	1989	among cardiac surgery patients, homosexual men, and intravenous drug users in Baltimore, Maryland.	225	Anti-HCV	Intravenous drug use	225	192	Inclusion
PM-U009	Antibody to hepatitis C virus among cardiac surgery patients, homosexual men, and intravenous drug users in Baltimore.	Donahue, J G and Nelson, K E and Muñoz, A and Vlahov, D and Rennie, L L and Taylor, E L and Saah, A J and Cohn, S and	<a href="#">Am J Epidemiol. 1991 Nov 15;134(10):1206-11.</a>	Prospective cohort	1984	1984	Homosexual and bisexual men	926	Anti-HCV	Sexual	926	15	Inclusion
PM-U010	Epidemiology of hepatitis C virus infection in a suburban Detroit community.	Meyer, R A and Gordon, S C	<a href="#">Am J Gastroenterol. 1991 Sep;86(9):1224-6.</a>	Retrospective cohort	1990	1990	All Anti-CV positive	50	Anti-HCV	Blood transfusion		29	Inclusion
PM-U010	Epidemiology of hepatitis C virus infection in a suburban Detroit community.	Meyer, R A and Gordon, S C	<a href="#">Am J Gastroenterol. 1991 Sep;86(9):1224-6.</a>	Retrospective cohort	1990	1990	All Anti-CV positive	50	Anti-HCV	Intravenous drug use		11	Inclusion
PM-U011	The low risk of hepatitis C virus transmission among sexual partners of hepatitis C-infected hemophilic males: an international, multicenter study.	Brettler, D B and Mannucci, P M and Gringeri, A and Rasko, J E and Forsberg, A D and Rumi, M G and Garsia, R J and Rickard, K A and Colombo, M	<a href="#">Blood. 1992 Jul 15;80(2):540-3</a>	Cross-sectional	NA	NA	Female sexual partners of anti-HCV-positive hemophiliacs	106	Anti-HCV	Sexual	33	1	Inclusion
PM-U012	Antibody to hepatitis C virus increases with time on hemodialysis.	Hardy, N M and Sandroni, S and Danielson, S and Wilson, W J	<a href="#">Clin Nephrol. 1992 Jul;38(1):44-8.</a>	Cross-sectional	NA	NA	All patients receiving treatment from the University Medical Center Hemodialysis Unit.	87	Anti-HCV	Blood transfusion	87	31	Inclusion
PM-U013	Seroprevalence of parenterally transmitted viruses (HIV-1, HBV, HCV, and HTLV-1/II) in forensic autopsy cases.	Li, L and Zhang, X and Constantine, N T and Smialek, J E	<a href="#">J Forensic Sci. 1993 Sep;38(5):1075-83</a>	Cross-sectional	1992	1992	Autopsied cases	414	Anti-HCV	Intravenous drug use	55	34	Inclusion
PM-U014	Risk factors for hepatitis C virus infection among health care personnel in a community hospital.	Polish, L B and Tong, M J and Co, R L and Coleman, P J and Alter, M J	<a href="#">Am J Infect Control. 1993 Aug;21(4):196-200.</a>	Cross-sectional	1983	1983	Hospital Employees	1677	Anti-HCV	Accidental puncture	56	2	Inclusion
PM-U014	Risk factors for hepatitis C virus infection among health care personnel in a community hospital.	Polish, L B and Tong, M J and Co, R L and Coleman, P J and Alter, M J	<a href="#">Am J Infect Control. 1993 Aug;21(4):196-200.</a>	Cross-sectional	1983	1983	Hospital Employees	1677	Anti-HCV	Blood transfusion	141	5	Inclusion
PM-U014	Risk factors for hepatitis C virus infection among health care personnel in a community hospital.	Polish, L B and Tong, M J and Co, R L and Coleman, P J and Alter, M J	<a href="#">Am J Infect Control. 1993 Aug;21(4):196-200.</a>	Cross-sectional	1983	1983	Hospital Employees	1677	Anti-HCV	Household contact	374	8	Inclusion
PM-U014	Risk factors for hepatitis C virus infection among health care personnel in a community hospital.	Polish, L B and Tong, M J and Co, R L and Coleman, P J and Alter, M J	<a href="#">Am J Infect Control. 1993 Aug;21(4):196-200.</a>	Cross-sectional	1983	1983	Hospital Employees	1677	Anti-HCV	Surgery	629	11	Inclusion
PM-U015	Viral hepatitis in health care personnel at The Johns Hopkins Hospital. The seroprevalence of and risk factors for hepatitis B virus and	Thomas, D L and Factor, S H and Kelen, G D and Washington, A S and Taylor, E and Quinn, T C	<a href="#">Arch Intern Med. 1993 Jul 26;153(14):1705-12.</a>										Exclusion
PM-U016	Heterosexual transmission of viral hepatitis and cytomegalovirus infection among United States military personnel stationed in the	Hyams, K C and Krogwold, R A and Brock, S and Wignall, F S and Cross, E and Hayes, C	<a href="#">Sex Transm Dis. 1993 Jan-Feb;20(1):36-40.</a>	Cross-sectional	1990	1991	US military personnel stationed in Philippine	470	Anti-HCV	Sexual	278	5	Inclusion
PM-U017	Community acquired viral hepatitis B and C in the United States.	Alter, M J	<a href="#">Gut. 1993;34(2 Suppl):S17-9</a>										Exclusion
PM-U018	Incidence and prevalence of human immunodeficiency virus, hepatitis B virus, hepatitis C virus, and cytomegalovirus among health care personnel at risk for blood	Gerberding, J L	<a href="#">J Infect Dis. 1994 Dec;170(6):1410-7.</a>										Exclusion
PM-U019	Hepatitis C virus infection in healthcare workers: risk of exposure and infection.	Lanphear, B P and Linnemann, C C and Cannon, C G and DeRonde, M M and Pendy, L and Kerley, L M	<a href="#">Infect Control Hosp Epidemiol. 1994 Dec;15(12):745-50.</a>	Retrospective cohort	1987	1989	Healthcare workers exposed to HCV	50	Anti-HCV	Accidental puncture	50	3	Inclusion
PM-U020	Outbreak of hepatitis C associated with intravenous immunoglobulin administration--United States, October 1993–June 1994.	Centers for Disease Control and Prevention (CDC), [Collective Name]	<a href="#">JAMA. 1994 Aug 10;272(6):424-5.</a>										Exclusion
PM-U021	Outbreak of hepatitis C associated with intravenous immunoglobulin administration--United States, October 1993–June 1994.	Centers for Disease Control and Prevention (CDC), [Collective Name]	<a href="#">MMWR Morb Mortal Wkly Rep. 1994 Jul 22;43(28):505-9.</a>	Case report	1993	1994	Reported cases of HCV in 24 states	112	Anti-HCV	Blood transfusion		68	Inclusion

PM-U022	Hepatitis C, hepatitis B, and human immunodeficiency virus infections among non-intravenous drug-using patients attending clinics for sexually transmitted diseases.	Thomas, D L and Cannon, R O and Shapiro, C N and Hook, E W and Alter, M J and Quinn, T C	J Infect Dis. 1994 May;169(5):990-5.	Cross-sectional	1987	1987	Among non-intravenous drug-using patients attending Baltimore sexually transmitted diseases clinics	1257	Anti-HCV	Blood transfusion	36	4	Inclusion
PM-U022	Hepatitis C, hepatitis B, and human immunodeficiency virus infections among non-intravenous drug-using patients attending clinics for sexually transmitted diseases.	Thomas, D L and Cannon, R O and Shapiro, C N and Hook, E W and Alter, M J and Quinn, T C	J Infect Dis. 1994 May;169(5):990-5.	Cross-sectional	1987	1987	Among men: non-intravenous drug-using patients attending Baltimore sexually transmitted diseases clinics	793	Anti-HCV	Sexual	40	6	Inclusion
PM-U023	Hepatitis C virus seroprevalence in clients of sexually transmitted disease clinics in North Carolina.	Fiscus, S A and Kelly, W F and Battigelli, D A and Weber, D J and Schoenbach, V J and Landis, S E and Wilber, J C and Van	<a href="#">Sex Transm Dis. 1994 May-Jun;21(3):155-60.</a>	Cross-sectional	1988	1988	Clients of a STD clinic	576	Anti-HCV	Intravenous drug use	149	102	Inclusion
PM-U023	Hepatitis C virus seroprevalence in clients of sexually transmitted disease clinics in North Carolina.	Fiscus, S A and Kelly, W F and Battigelli, D A and Weber, D J and Schoenbach, V J and Landis, S E and Wilber, J C and Van	<a href="#">Sex Transm Dis. 1994 May-Jun;21(3):155-60.</a>	Cross-sectional	1988	1988	Clients of a STD clinic	576	Anti-HCV	Sexual	94	9	Inclusion
PM-U024	Hepatitis C virus infection in a sexually active inner city population. The potential for heterosexual transmission.	Daikos, G L and Lai, S and Fischl, M A	Infection. 1994 Mar-Apr;22(2):72-6.	cross-sectional	1988	1991	heterosexual men and women attending inner city health care clinics in Dade county	571	Anti-HCV	Sexual	571	25	Inclusion
PM-U025	Low incidence of intraspousal transmission of hepatitis C virus after liver transplantation.	McCashland, T M and Wright, T L and Donovan, J P and Schafer, D F and Sorrell, M F and Heffron, T G and Langnas, A N and Fox, I J and Shaw, B W and	<a href="#">Liver Transpl Surg. 1995 Nov;1(6):358-61.</a>	Cross-sectional	NA	NA	Spouses of HCV-positive patients	22	Anti-HCV	Sexual	22	1	Inclusion
PM-U026	Seroprevalence of human immunodeficiency virus-1, hepatitis B virus, and hepatitis C virus in patients having major surgery.	Montecalvo, M A and Lee, M S and DePalma, H and Wynn, P S and Lowenfels, A B and Jorde, U and Wuest, D and Klingaman, A and O'Brien, T A and	Infect Control Hosp Epidemiol. 1995 Nov;16(11):627-32.										Exclusion
PM-U027	Incidence of hepatitis C in patients requiring orthopaedic surgery.	Simonian, P T and Gilbert, M and Trumble, T E	<a href="#">J Bone Joint Surg Br. 1995 Nov;77(6):971-4.</a>	Cross-sectional	NA	NA	HCV-positive Orthopedic surgery patients	19	Anti-HCV	Intravenous drug use		7	Inclusion
PM-U027	Incidence of hepatitis C in patients requiring orthopaedic surgery.	Simonian, P T and Gilbert, M and Trumble, T E	<a href="#">J Bone Joint Surg Br. 1995 Nov;77(6):971-4.</a>	Cross-sectional	NA	NA	HCV-positive Orthopedic surgery patients	19	Anti-HCV	Sexual		1	Inclusion
PM-U027	Incidence of hepatitis C in patients requiring orthopaedic surgery.	Simonian, P T and Gilbert, M and Trumble, T E	<a href="#">J Bone Joint Surg Br. 1995 Nov;77(6):971-4.</a>	Cross-sectional	NA	NA	HCV-positive Orthopedic surgery patients	19	Anti-HCV	Tattooing		15	Inclusion
PM-U028	Detection of hepatitis C virus with RNA polymerase chain reaction in fulminant hepatic failure.	Villamil, F G and Hu, K Q and Yu, C H and Lee, C H and Rojter, S E and Podesta, L G and Makowka, L and Geller, S A and	Hepatology. 1995 Nov;22(5):1379-86.										Exclusion
PM-U029	Presence of anti-hepatitis C virus serum markers in a dental school patient population.	Shopper, T and Boozer, C and Lancaster, D and Cade, J E and Lundgren, G	<a href="#">Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1995</a>	Cross-sectional	1992	1992	Dental care patients	500	Anti-HCV	Acupuncture	7	1	Inclusion
PM-U029	Presence of anti-hepatitis C virus serum markers in a dental school patient population.	Shopper, T and Boozer, C and Lancaster, D and Cade, J E and Lundgren, G	<a href="#">Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1995</a>	Cross-sectional	1992	1992	Dental care patients	500	Anti-HCV	Blood transfusion	72	8	Inclusion
PM-U029	Presence of anti-hepatitis C virus serum markers in a dental school patient population.	Shopper, T and Boozer, C and Lancaster, D and Cade, J E and Lundgren, G	<a href="#">Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1995</a>	Cross-sectional	1992	1992	Dental care patients	500	Anti-HCV	Intravenous drug use	7	1	Inclusion
PM-U029	Presence of anti-hepatitis C virus serum markers in a dental school patient population.	Shopper, T and Boozer, C and Lancaster, D and Cade, J E and Lundgren, G	<a href="#">Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1995</a>	Cross-sectional	1992	1992	Dental care patients	500	Anti-HCV	Piercing	293	11	Inclusion
PM-U029	Presence of anti-hepatitis C virus serum markers in a dental school patient population.	Shopper, T and Boozer, C and Lancaster, D and Cade, J E and Lundgren, G	<a href="#">Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1995</a>	Cross-sectional	1992	1992	Dental care patients	500	Anti-HCV	Surgery	328	21	Inclusion

PM-U029	Presence of anti-hepatitis C virus serum markers in a dental school patient population.	Shopper, T and Boozer, C and Lancaster, D and Cade, J E and Lundgren, G	<a href="#">Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1995</a>	Cross-sectional	1992	1992	Dental care patients	500	Anti-HCV	Tattooing	43	9	Inclusion
PM-U030	Occupational risk of human immunodeficiency virus, hepatitis B virus, and hepatitis C virus infections among funeral service practitioners	Gershon, R R and Vlahov, D and Farzadegan, H and Alter, M J	<a href="#">Infect Control Hosp Epidemiol. 1995 Apr;16(4):194-7.</a>										Exclusion
PM-U031	Sexual transmission of hepatitis C virus among patients attending sexually transmitted diseases clinics in Baltimore—an analysis of	Thomas, D L and Zenilman, J M and Alter, H J and Shih, J W and Galai, N and Carella, A V and Quinn, T C	<a href="#">J Infect Dis. 1995 Apr;171(4):768-75.</a>	Cross-sectional	1990	1992	Patients attending STD clinics	555	Anti-HCV	Sexual	38	7	Inclusion
PM-U032	Evaluation of sexual transmission in patients with chronic hepatitis C infection.	Tong, M J and Lai, P P and Hwang, S J and Lee, S Y and Co, R L and Chien, R N	<a href="#">Clin Diagn Virol. 1995 Jan;3(1):39-47.</a>	cross-sectional	NA	NA	Among spouse of chronic HCV patient.	68	Anti-HCV	Sexual	68	5	Inclusion
PM-U033	Sexual, vertical and household transmission of hepatitis C.	Caldwell, S H and Dickson, R C and Driscoll, C and Sue, M	<a href="#">Va Med Q. 1995 Fall;12(4):270-4.</a>										Exclusion
PM-U034	Incidence of and risk factors for hepatitis B virus and hepatitis C virus infection among haemodialysis and CAPD patients: evidence	Cendoroglo Neto, M and Draibe, S A and Silva, A E and Ferraz, M L and Granato, C and Pereira, C A and Sesso, R C and	Nephrol Dial Transplant. 1995;10(2):240-6.	Prospective Cohort	1987	1990	Among Hemodialysis patients	129	Anti-HCV	Hemodialysis	83	18	Inclusion
PM-U035	Hepatitis C virus infection associated with administration of intravenous immune globulin. A cohort study.	Bresee, J S and Mast, E E and Coleman, P J and Baron, M J and Schonberger, L B and Alter, M J and Jonas, M M and Yu, M Y and Renzi, P M and Schneider, L C	<a href="#">JAMA. 1996 Nov 20;276(19):1563-7.</a>	Prospective cohort	1993	1994	Patients treated with intravenous immunoglobulin	278	Anti-HCV	Blood transfusion	278	26	Inclusion
PM-U036	High incidence of hepatitis C virus infection in hemodialysis patients in units with high prevalence.	Pujol, F H and Ponce, J G and Lema, M G and Capriles, F and Devesa, M and Sirit, F and Salazar, M and VÁsquez, G and Monsalve, F and Blitz-Dorfman, L	<a href="#">J Clin Microbiol. 1996 Jul;34(7):1633-6.</a>										Exclusion
PM-U037	Routes of infection, viremia, and liver disease in blood donors found to have hepatitis C virus infection.	Conry-Cantilena, C and VanRaden, M and Gibble, J and Melpolder, J and Shakil, A O and Viladomiu, L and Cheung, L and DiBisceglie, A and Hoofnagle, J and Shih,	<a href="#">N Engl J Med. 1996 Jun 27;334(26):1691-6</a>	Cross-sectional	1991	1994	Blood donors	481	Anti-HCV	Blood transfusion		66	Inclusion
PM-U038	The risk of B51:U51f transfusion-transmitted viral infections. The Retrovirus Epidemiology	Schreiber, G B and Busch, M P and Kleinman, S H and Korelitz, J J	<a href="#">N Engl J Med. 1996 Jun 27;334(26):1685-</a>										Exclusion
PM-U037	Routes of infection, viremia, and liver disease in blood donors found to have hepatitis C virus infection.	Conry-Cantilena, C and VanRaden, M and Gibble, J and Melpolder, J and Shakil, A O and Viladomiu, L and Cheung, L and DiBisceglie, A and Hoofnagle, J and Shih,	<a href="#">N Engl J Med. 1996 Jun 27;334(26):1691-6</a>	Cross-sectional	1991	1994	Blood donors	481	Anti-HCV	Intravenous drug use		15	Inclusion
PM-U037	Routes of infection, viremia, and liver disease in blood donors found to have hepatitis C virus infection.	Conry-Cantilena, C and VanRaden, M and Gibble, J and Melpolder, J and Shakil, A O and Viladomiu, L and Cheung, L and DiBisceglie, A and Hoofnagle, J and Shih,	<a href="#">N Engl J Med. 1996 Jun 27;334(26):1691-6</a>	Cross-sectional	1991	1994	Blood donors	481	Anti-HCV	Sexual		132	Inclusion
PM-U039	Hepatitis C infection in children who received extracorporeal membrane oxygenation.	Nelson, S P and Jonas, M M	<a href="#">J Pediatr Surg. 1996 May;31(5):644-8</a>	Prospective cohort	1986	1992	Children who received extracorporeal membrane	83	Anti-HCV	Blood transfusion	83	7	Inclusion
PM-U040	Hepatitis C virus (HCV) infection in bone marrow transplant patients after transfusions from anti-HCV-positive blood donors.	Shuhart, M C and Myerson, D and Spurgeon, C L and Bevan, C A and Sayers, M H and McDonald, G B	Bone Marrow Transplant. 1996 Apr;17(4):601-6.	Prospective cohort	1992	1992	Bone marrow transplant patients at the Fred Hutchinson Cancer Research Center.	12	HCV RNA	Blood transfusion	12	6	Inclusion
PM-U041	Occupational risk of hepatitis C infections among general dentists and oral surgeons in North America.	Thomas, D L and Gruninger, S E and Siew, C and Joy, E D and Quinn, T C	<a href="#">Am J Med. 1996 Jan;100(1):41-5.</a>	Cross-sectional	1992	1992	Oral surgeons and general dentists	648	Anti-HCV	Accidental puncture	111	2	Inclusion
PM-U042	Incidence and risk factors for hepatitis C among injection drug users in Baltimore, Maryland.	Villano, S A and Vlahov, D and Nelson, K E and Lyles, C M and Cohn, S and Thomas, D L	<a href="#">J Clin Microbiol. 1997 Dec;35(12):3274-7.</a>	Prospective Cohort	1988	1989	Injection drug users in Baltimore	142	HCV RNA	Intravenous drug use	142	42	Inclusion
PM-U043	Potential increased risk of virus transmission due to exclusion of older donors because of concern over Creutzfeldt-Jakob disease. The National Heart, Lung, and Blood Institute	Busch, M P and Glynn, S A and Schreiber, G B	<a href="#">Transfusion. 1997 Oct;37(10):996-1002.</a>										Exclusion

PM-U044	Sex, drugs, and infections among youth. Parenterally and sexually transmitted diseases in a high-risk neighborhood.	Friedman, S R and Curtis, R and Jose, B and Neagis, A and Zenilman, J and Culpepper-Morgan, J and Borg, L and Kreek, J and Paone, D and Des Jarlais, D	Sex Transm Dis. 1997 Jul;24(6):322-6.										Exclusion
PM-U045	Hepatitis C infection in patients undergoing liver retransplantation.	Rosen, H R and Martin, P	<a href="#">Transplantation. 1998 Dec;27:66(12):1612-6.</a>										Exclusion
PM-U046	Hepatitis C virus infection in Chicago women with or at risk for HIV infection: evidence for sexual transmission.	Hershaw, R C and Kalish, L A and Sha, B and Till, M and Cohen, M	Sex Transm Dis. 1998 Nov;25(10):527-32.	Cross-sectional	1994	1995	Women with or at risk for HIV infection	296	Anti-HCV	Blood transfusion	43	26	Inclusion
PM-U046	Hepatitis C virus infection in Chicago women with or at risk for HIV infection: evidence for sexual transmission.	Hershaw, R C and Kalish, L A and Sha, B and Till, M and Cohen, M	Sex Transm Dis. 1998 Nov;25(10):527-32.	Cross-sectional	1994	1995	Women with or at risk for HIV infection	296	Anti-HCV	Intravenous drug use	111	100	Inclusion
PM-U047	Hepatitis C virus infection in the mothers and infants cohort study.	Granovsky, M O and Minkoff, H L and Tess, B H and Waters, D and Hatzakis, A and Devoid, D E and Landesman, S H and Rubinstein, A and Di Bisceglie, A M and	<a href="#">Pediatrics. 1998 Aug;102(2 Pt 1):355-9.</a>	Prospective cohort	NA	NA	Children born to HCV-positive mothers	151	HCV RNA	Mother to child	122	7	Inclusion
PM-U048	Prevalence and incidence of hepatitis C virus infection among young adult injection drug users.	Garfein, R S and Doherty, M C and Monterroso, E R and Thomas, D L and Nelson, K E and Vlahov, D	J Acquir Immune Defic Syndr Hum Retrovirol. 1998;18 Suppl 1:S11-	Prospective Cohort	1994	1996	Young adult injection drug users.	229	Anti-HCV	Intravenous drug use	229	86	Inclusion
PM-U049	Perinatal transmission of hepatitis C virus from human immunodeficiency virus type 1-infected mothers. Women and Infants Transmission Study.	Thomas, D L and Villano, S A and Riester, K A and Hershaw, R and Mofenson, L M and Landesman, S H and Hollinger, F B and Davenny, K and Riley, L and Diaz, C	<a href="#">J Infect Dis. 1998 Jun;177(6):1480-8.</a>	Prospective cohort	1989	1995	Children born to anti-HCV-positive mothers	155	HCV RNA	Mother to child	155	13	Inclusion
PM-U050	Risk factors associated with chronic hepatitis C virus infection: limited frequency of an unidentified source of transmission.	Flamm, S L and Parker, R A and Chopra, S	Am J Gastroenterol. 1998 Apr;93(4):597-600.	Case Study	1989	1995	Chronic HCV infection patients	301	Anti-HCV	Blood transfusion		76	Inclusion
PM-U050	Risk factors associated with chronic hepatitis C virus infection: limited frequency of an unidentified source of transmission.	Flamm, S L and Parker, R A and Chopra, S	Am J Gastroenterol. 1998 Apr;93(4):597-600.	Case Study	1989	1995	Chronic HCV infection patients	301	Anti-HCV	Intravenous drug use		147	Inclusion
PM-U050	Risk factors associated with chronic hepatitis C virus infection: limited frequency of an unidentified source of transmission.	Flamm, S L and Parker, R A and Chopra, S	Am J Gastroenterol. 1998 Apr;93(4):597-600.	Case Study	1989	1995	Chronic HCV infection patients	301	Anti-HCV	Piercing		4	Inclusion
PM-U050	Risk factors associated with chronic hepatitis C virus infection: limited frequency of an unidentified source of transmission.	Flamm, S L and Parker, R A and Chopra, S	Am J Gastroenterol. 1998 Apr;93(4):597-600.	Case Study	1989	1995	Chronic HCV infection patients	301	Anti-HCV	Sexual		11	Inclusion
PM-U050	Risk factors associated with chronic hepatitis C virus infection: limited frequency of an unidentified source of transmission.	Flamm, S L and Parker, R A and Chopra, S	Am J Gastroenterol. 1998 Apr;93(4):597-600.	Case Study	1989	1995	Chronic HCV infection patients	301	Anti-HCV	Tattooing		11	Inclusion
PM-U051	The occupational risk to dental anesthesiologists of acquiring 3 bloodborne	Suljak, J P and Leake, J L and Haas, D A	<a href="#">Anesth Prog. 1999 Spring;46(2):63-70.</a>										Exclusion
PM-U052	Bloodborne exposures at a United States Army Medical Center.	Goob, T C and Yamada, S M and Newman, R E and Cashman, T M	Appl Occup Environ Hyg. 1999 Jan;14(1):20-5.	Case Study	1992	1995	Among health worker expose to needlestick injuries.	339	Anti-HCV	Accidental puncture	168	12	Inclusion
PM-U053	Seroprevalence of hepatitis C in a sample of middle class substance abusers.	Abraham, H D and Degli-Esposti, S and Marino, L	<a href="#">J Addict Dis. 1999;18(4):77-87</a>	Cross-sectional	1997	1997	Substance abusers	334	Anti-HCV	Intravenous drug use			Inclusion
PM-U053	Seroprevalence of hepatitis C in a sample of middle class substance abusers.	Abraham, H D and Degli-Esposti, S and Marino, L	<a href="#">J Addict Dis. 1999;18(4):77-87</a>	Cross-sectional	1997	1997	Substance abusers	334	Anti-HCV	Needle sharing			Inclusion
PM-U054	A case-control study of risk factors for sporadic hepatitis C virus infection in the southwestern United States.	Balasekaran, R and Butlyers, M and Jamal, M M and Quinn, P G and Johnston, D E and Skipper, B and Chaturvedi, S and	Am J Gastroenterol. 1999 May;94(5):1341-6.	Case-control	1995	1996	patients in gastroenterology outpatient	116	Anti-HCV	Accidental puncture		7	Inclusion
PM-U054	A case-control study of risk factors for sporadic hepatitis C virus infection in the southwestern United States.	Balasekaran, R and Butlyers, M and Jamal, M M and Quinn, P G and Johnston, D E and Skipper, B and Chaturvedi, S and	Am J Gastroenterol. 1999 May;94(5):1341-6.	Case-control	1995	1996	patients in gastroenterology outpatient	116	Anti-HCV	Tattooing		25	Inclusion
PM-U055	Mother-infant hepatitis C transmission: second generation research.	Thomas, D L	<a href="#">Hepatology. 1999 Mar;29(3):992-3.</a>										Exclusion
PM-U056	The multiperson use of non-syringe injection equipment and risk of hepatitis c infection in a cohort of young adult injection drug users, chicago 1997-1999.	Thorpe, [Collective Name] and Ouellet, [Collective Name] and Hershow, [Collective Name] and Bailey, [Collective Name] and Williams, [Collective Name] and	Ann Epidemiol. 2000 Oct;11(7):472-473.										Exclusion

PM-U057	Heterosexual transmission of hepatitis C, hepatitis B, and HIV-1 in a sample of inner city women.	Feldman, J G and Minkoff, H and Landesman, S and Dehovitz, J	<a href="#">Sex Transm Dis. 2000 Jul;27(6):338-42.</a>	Cross-sectional	1990	1991	Non- IDU and never transfused sexually active women	502	Anti-HCV	Sexual	502	8	Inclusion
PM-U058	Prevalence of hepatitis C virus seropositivity among hospitalized US veterans.	Austin, G E and Jensen, B and Leete, J and De L'Aune, W and Bhatnagar, J and Racine, M and Braun, J E	<a href="#">Am J Med Sci. 2000 Jun;319(6):353-9.</a>	Cross-sectional	1993	1994	Patients admitted to the Atlanta VA Medical Center between November 1993 and November 1994.	530	Anti-HCV	Blood transfusion		41	Inclusion
PM-U058	Prevalence of hepatitis C virus seropositivity among hospitalized US veterans.	Austin, G E and Jensen, B and Leete, J and De L'Aune, W and Bhatnagar, J and Racine, M and Braun, J E	<a href="#">Am J Med Sci. 2000 Jun;319(6):353-9.</a>	Cross-sectional	1993	1994	Patients admitted to the Atlanta VA Medical Center between November 1993 and November 1994.	530	Anti-HCV	Hemodialysis		9	Inclusion
PM-U058	Prevalence of hepatitis C virus seropositivity among hospitalized US veterans.	Austin, G E and Jensen, B and Leete, J and De L'Aune, W and Bhatnagar, J and Racine, M and Braun, J E	<a href="#">Am J Med Sci. 2000 Jun;319(6):353-9.</a>	Cross-sectional	1993	1994	Patients admitted to the Atlanta VA Medical Center between November 1993 and November 1994.	530	Anti-HCV	Intravenous drug use		48	Inclusion
PM-U058	Prevalence of hepatitis C virus seropositivity among hospitalized US veterans.	Austin, G E and Jensen, B and Leete, J and De L'Aune, W and Bhatnagar, J and Racine, M and Braun, J E	<a href="#">Am J Med Sci. 2000 Jun;319(6):353-9.</a>	Cross-sectional	1993	1994	Patients admitted to the Atlanta VA Medical Center between November 1993 and November 1994.	530	Anti-HCV	Sexual		9	Inclusion
PM-U058	Prevalence of hepatitis C virus seropositivity among hospitalized US veterans.	Austin, G E and Jensen, B and Leete, J and De L'Aune, W and Bhatnagar, J and Racine, M and Braun, J E	<a href="#">Am J Med Sci. 2000 Jun;319(6):353-9.</a>	Cross-sectional	1993	1994	Patients admitted to the Atlanta VA Medical Center between November 1993 and November 1994.	530	Anti-HCV	Surgery		45	Inclusion
PM-U059	Tattoo application is not associated with an increased risk for chronic viral hepatitis.	Silverman, A L and Sekhon, J S and Saginaw, S J and Wiedbrauk, D and Balasubramaniam, M and Gordon, S C	<a href="#">Am J Gastroenterol. 2000 May;95(5):1312-5.</a>	Cross-sectional	NA	NA	Young adults visiting William Beaumont hospital	212	Anti-HCV	Tattooing	106	7	Inclusion
PM-U060	Hepatitis C transmission and infection by orthotopic heart transplantation.	Pfau, P R and Rho, R and DeNofrio, D and Loh, E and Blumberg, E A and Acker, M A and Lucey, M R	<a href="#">J Heart Lung Transplant. 2000 Apr;19(4):350-4.</a>	Retrospective Cohort	1997	1998	Patients who received donor hearts from HCV-infected donors between 1997 and	5	Anti-HCV	Surgery	5	1	Inclusion
PM-U061	Virus load and risk of heterosexual transmission of human immunodeficiency virus and hepatitis C virus by men with hemophilia. The Multicenter Hemophilia	Hisada, M and O'Brien, T R and Rosenberg, P S and Goedert, J J	<a href="#">J Infect Dis. 2000 Apr;181(4):1475-8. Epub 2000 Apr 7.</a>	Prospective cohort	1982	1988	Female sexual partners of anti-HCV-positive hemophiliacs	393	Anti-HCV	Sexual	393	21	Inclusion
PM-U062	Epidemiology of hepatitis C virus infection in American veterans.	Cheung, R C	<a href="#">Am J Gastroenterol. 2000 Mar;95(3):740-7.</a>	Cross-sectional	1992	1998	All veterans of US military	8558	Anti-HCV	Blood transfusion		11	Inclusion
PM-U062	Epidemiology of hepatitis C virus infection in American veterans.	Cheung, R C	<a href="#">Am J Gastroenterol. 2000 Mar;95(3):740-7.</a>	Cross-sectional	1992	1998	All veterans of US military	8558	Anti-HCV	Intravenous drug use		334	Inclusion
PM-U062	Epidemiology of hepatitis C virus infection in American veterans.	Cheung, R C	<a href="#">Am J Gastroenterol. 2000 Mar;95(3):740-7.</a>	Cross-sectional	1992	1998	All veterans of US military	8558	Anti-HCV	Sexual		7	Inclusion
PM-U062	Epidemiology of hepatitis C virus infection in American veterans.	Cheung, R C	<a href="#">Am J Gastroenterol. 2000 Mar;95(3):740-7.</a>	Cross-sectional	1992	1998	All veterans of US military	8558	Anti-HCV	Tattooing		4	Inclusion
PM-U063	Risk factors for hepatitis C virus infection in United States blood donors. NHLBI Retrovirus Epidemiology Donor Study (REDS)	Murphy, E L and Bryzman, S M and Glynn, S A and Ameti, D I and Thomson, R A and Williams, A E and Nass, C C and Ownby, H E and Schreiber, G B and Kong, F and	<a href="#">Hepatology. 2000 Mar;31(3):756-62.</a>	Case-control	1994	1995	Blood donors	1797	Anti-HCV	Accidental puncture			Inclusion

PM-U063	Risk factors for hepatitis C virus infection in United States blood donors. NHLBI Retrovirus Epidemiology Donor Study (REDS)	Murphy, E L and Bryzman, S M and Glynn, S A and Ameti, D I and Thomson, R A and Williams, A E and Nass, C C and Ownby, H E and Schreiber, G B and Kong, F and	<a href="#">Hepatology. 2000 Mar;31(3):756-62.</a>	Case-control	1994	1995	Blood donors	1797	Anti-HCV	Blood transfusion			Inclusion
PM-U063	Risk factors for hepatitis C virus infection in United States blood donors. NHLBI Retrovirus Epidemiology Donor Study (REDS)	Murphy, E L and Bryzman, S M and Glynn, S A and Ameti, D I and Thomson, R A and Williams, A E and Nass, C C and Ownby, H E and Schreiber, G B and Kong, F and	<a href="#">Hepatology. 2000 Mar;31(3):756-62.</a>	Case-control	1994	1995	Blood donors	1797	Anti-HCV	Intravenous drug use			Inclusion
PM-U063	Risk factors for hepatitis C virus infection in United States blood donors. NHLBI Retrovirus Epidemiology Donor Study (REDS)	Murphy, E L and Bryzman, S M and Glynn, S A and Ameti, D I and Thomson, R A and Williams, A E and Nass, C C and Ownby, H E and Schreiber, G B and Kong, F and	<a href="#">Hepatology. 2000 Mar;31(3):756-62.</a>	Case-control	1994	1995	Blood donors	1797	Anti-HCV	Razor sharing			Inclusion
PM-U063	Risk factors for hepatitis C virus infection in United States blood donors. NHLBI Retrovirus Epidemiology Donor Study (REDS)	Murphy, E L and Bryzman, S M and Glynn, S A and Ameti, D I and Thomson, R A and Williams, A E and Nass, C C and Ownby, H E and Schreiber, G B and Kong, F and	<a href="#">Hepatology. 2000 Mar;31(3):756-62.</a>	Case-control	1994	1995	Blood donors	1797	Anti-HCV	Surgery			Inclusion
PM-U064	Hepatitis C virus RNA (HCV-RNA) in blood donors and family members seropositive for anti-HCV antibodies.	Alvarez-Muñoz, M T and Vences-Aviles, M A and Damacio, L and Vázquez-Rosales, G and Torres, J and González-	<a href="#">Arch Med Res. 2001 Sep-Oct;32(5):442-5.</a>										Exclusion
PM-U063	Risk factors for hepatitis C virus infection in United States blood donors. NHLBI Retrovirus Epidemiology Donor Study (REDS)	Murphy, E L and Bryzman, S M and Glynn, S A and Ameti, D I and Thomson, R A and Williams, A E and Nass, C C and Ownby, H E and Schreiber, G B and Kong, F and	<a href="#">Hepatology. 2000 Mar;31(3):756-62.</a>	Case-control	1994	1995	Blood donors	1797	Anti-HCV	Acupuncture			Inclusion
PM-U065	Risk factors for acquisition of hepatitis C virus infection: a case series and potential implications for disease surveillance.	Yee, L J and Weiss, H L and Langner, R G and Herrera, J and Kaslow, R A and van Leeuwen, D J	<a href="#">BMC Infect Dis. 2001;1:8. Epub 2001 Jul 24.</a>	Cross-sectional	NA	NA	Patients with chronic hepatitis C	148	NA	Blood transfusion	62		Inclusion
PM-U065	Risk factors for acquisition of hepatitis C virus infection: a case series and potential implications for disease surveillance.	Yee, L J and Weiss, H L and Langner, R G and Herrera, J and Kaslow, R A and van Leeuwen, D J	<a href="#">BMC Infect Dis. 2001;1:8. Epub 2001 Jul 24.</a>	Cross-sectional	NA	NA	Patients with chronic hepatitis C	148	NA	Intravenous drug use	71		Inclusion
PM-U065	Risk factors for acquisition of hepatitis C virus infection: a case series and potential implications for disease surveillance.	Yee, L J and Weiss, H L and Langner, R G and Herrera, J and Kaslow, R A and van Leeuwen, D J	<a href="#">BMC Infect Dis. 2001;1:8. Epub 2001 Jul 24.</a>	Cross-sectional	NA	NA	Patients with chronic hepatitis C	148	NA	Piercing	63		Inclusion
PM-U065	Risk factors for acquisition of hepatitis C virus infection: a case series and potential implications for disease surveillance.	Yee, L J and Weiss, H L and Langner, R G and Herrera, J and Kaslow, R A and van Leeuwen, D J	<a href="#">BMC Infect Dis. 2001;1:8. Epub 2001 Jul 24.</a>	Cross-sectional	NA	NA	Patients with chronic hepatitis C	148	NA	Razor sharing	65		Inclusion
PM-U065	Risk factors for acquisition of hepatitis C virus infection: a case series and potential implications for disease surveillance.	Yee, L J and Weiss, H L and Langner, R G and Herrera, J and Kaslow, R A and van Leeuwen, D J	<a href="#">BMC Infect Dis. 2001;1:8. Epub 2001 Jul 24.</a>	Cross-sectional	NA	NA	Patients with chronic hepatitis C	148	NA	Sexual	55		Inclusion
PM-U065	Risk factors for acquisition of hepatitis C virus infection: a case series and potential implications for disease surveillance.	Yee, L J and Weiss, H L and Langner, R G and Herrera, J and Kaslow, R A and van Leeuwen, D J	<a href="#">BMC Infect Dis. 2001;1:8. Epub 2001 Jul 24.</a>	Cross-sectional	NA	NA	Patients with chronic hepatitis C	148	NA	Tattooing	25		Inclusion
PM-U066	Sexual transmission risk among noninjecting heroin users infected with human immunodeficiency virus or hepatitis C virus.	Neaigus, A and Miller, M and Friedman, S R and Des Jarlais, D C	<a href="#">J Infect Dis. 2001 Aug 1;184(3):359-63. Epub 2001 Jun 26.</a>	Prospective Cohort	1996	1999	Over 18 years old injecting and non-injecting drug users	155	Anti-HCV	Intravenous drug use	107		Inclusion
PM-U066	Sexual transmission risk among noninjecting heroin users infected with human immunodeficiency virus or hepatitis C virus.	Neaigus, A and Miller, M and Friedman, S R and Des Jarlais, D C	<a href="#">J Infect Dis. 2001 Aug 1;184(3):359-63. Epub 2001 Jun 26.</a>	Prospective Cohort	1996	1999	Over 18 years old injecting and non-injecting drug users	155	Anti-HCV	Sexual	5		Inclusion
PM-U067	Hepatitis C screening and prevalence among urban public safety workers.	Upfal, M J and Naylor, P and Mutchnick, M M	<a href="#">J Occup Environ Med. 2001 Apr;43(4):402-11.</a>	Cross-sectional	NA	NA	Police, fire and EMS professionals	2447	Anti-HCV	Blood transfusion			Inclusion
PM-U067	Hepatitis C screening and prevalence among urban public safety workers.	Upfal, M J and Naylor, P and Mutchnick, M M	<a href="#">J Occup Environ Med. 2001 Apr;43(4):402-11.</a>	Cross-sectional	NA	NA	Police, fire and EMS professionals	2447	Anti-HCV	Surgery			Inclusion
PM-U067	Hepatitis C screening and prevalence among urban public safety workers.	Upfal, M J and Naylor, P and Mutchnick, M M	<a href="#">J Occup Environ Med. 2001 Apr;43(4):402-11.</a>	Cross-sectional	NA	NA	Police, fire and EMS professionals	2447	Anti-HCV	Tattooing			Inclusion

PM-U068	Commercial tattooing as a potentially important source of hepatitis C infection. Clinical epidemiology of 626 consecutive patients unaware of their hepatitis C serologic status.	Haley, R W and Fischer, R P	Medicine (Baltimore). 2001 Mar;80(2):134-51.	Cross-sectional	1991	1992	Patients from the southwestern United States who visited an orthopedic spinal clinic in Dallas, Texas, between July 1, 1991, and November 15, 1992.	629	Anti-HCV	Tattooing	110	24	Inclusion
PM-U069	Risk of infection from needle reuse at a phlebotomy center.	Porco, T C and AragÃ³n, T J and Fernyak, S E and Cody, S H and Vugia, D J and Katz, M H and Bangsberg, D R	<a href="#">Am J Public Health. 2001 Apr;91(4):636-8.</a>										Exclusion
PM-U070	Incidence and prevalence of chlamydia, herpes, and viral hepatitis in a homeless adolescent population.	Noell, J and Rohde, P and Ochs, L and Yovanoff, P and Alter, M J and Schmid, S and Bullard, J and Black, C	Sex Transm Dis. 2001 Jan;28(1):4-10.	Prospective Cohort	1994	1997	Homeless adolescents recruited from the streets of a large northwestern US city.	536	Anti-HCV	Intravenous drug use		9	Inclusion
PM-U071	Sharing of drug preparation equipment as a risk factor for hepatitis C.	Hagan, H and Thiede, H and Weiss, N S and Hopkins, S G and Duchin, J S and Alexander, E R	<a href="#">Am J Public Health. 2001 Jan;91(1):42-6.</a>	Prospective cohort	1994	1997	Injecting drug users	317	Anti-HCV	Intravenous drug use	317	53	Inclusion
PM-U072	Factors associated with prevalent hepatitis C: differences among young adult injection drug users in lower and upper Manhattan, New York City.	Diaz, T and Des Jarlais, D C and Vlahov, D and Perlis, T E and Edwards, V and Friedman, S R and Rockwell, R and Hoover, D and Williams, I T and Monterroso, E R	Am J Public Health. 2001 Jan;91(1):23-30.	Prospective Cohort	1997	1998	Young Injection Drug Users in New York City	557	Anti-HCV	Intravenous drug use	88	54	Inclusion
PM-U073	Hepatitis C virus seroconversion among young injection drug users: relationships and risks.	Hahn, Judith A and Page-Shafer, Kimberly and Lum, Paula J and Bourgois, Philippe and Stein, Ellen and Evans, Jennifer L and Busch, Michael P and Tobler, Leslie H and	<a href="#">J Infect Dis. 2002 Dec 1;186(11):1558-64. Epub 2002 Nov 4.</a>	Prospective cohort	2000	2001	Injecting drug users	195	Anti-HCV	Intravenous drug use	195	48	Inclusion
PM-U073	Hepatitis C virus seroconversion among young injection drug users: relationships and risks.	Hahn, Judith A and Page-Shafer, Kimberly and Lum, Paula J and Bourgois, Philippe and Stein, Ellen and Evans, Jennifer L and Busch, Michael P and Tobler, Leslie H and	<a href="#">J Infect Dis. 2002 Dec 1;186(11):1558-64. Epub 2002 Nov 4.</a>	Prospective cohort	2000	2001	Injecting drug users	195	Anti-HCV	Needle sharing	57	22	Inclusion
PM-U074	Prevalence and risk factors associated with hepatitis C in ED patients.	Brillman, Judith C and Crandall, Cameron S and Florence, Christopher S and Jacobs, Joshua L	Am J Emerg Med. 2002 Sep;20(5):476-80.	Cross-sectional	1996	1996	II adult patients (over 17 years) who presented to an urban emergency department.	121	Anti-HCV	Accidental puncture	15	3	Inclusion
PM-U074	Prevalence and risk factors associated with hepatitis C in ED patients.	Brillman, Judith C and Crandall, Cameron S and Florence, Christopher S and Jacobs, Joshua L	Am J Emerg Med. 2002 Sep;20(5):476-80.	Cross-sectional	1996	1996	II adult patients (over 17 years) who presented to an urban emergency department.	121	Anti-HCV	Intravenous drug use	19	17.005	Inclusion
PM-U074	Prevalence and risk factors associated with hepatitis C in ED patients.	Brillman, Judith C and Crandall, Cameron S and Florence, Christopher S and Jacobs, Joshua L	Am J Emerg Med. 2002 Sep;20(5):476-80.	Cross-sectional	1996	1996	II adult patients (over 17 years) who presented to an urban emergency department.	121	Anti-HCV	Piercing	85	10.965	Inclusion
PM-U074	Prevalence and risk factors associated with hepatitis C in ED patients.	Brillman, Judith C and Crandall, Cameron S and Florence, Christopher S and Jacobs, Joshua L	Am J Emerg Med. 2002 Sep;20(5):476-80.	Cross-sectional	1996	1996	II adult patients (over 17 years) who presented to an urban emergency department.	121	Anti-HCV	Sexual	2		Inclusion
PM-U074	Prevalence and risk factors associated with hepatitis C in ED patients.	Brillman, Judith C and Crandall, Cameron S and Florence, Christopher S and Jacobs, Joshua L	Am J Emerg Med. 2002 Sep;20(5):476-80.	Cross-sectional	1996	1996	II adult patients (over 17 years) who presented to an urban emergency department.	121	Anti-HCV	Tattooing	43	12.9086	Inclusion

PM-U075	Risk correlates of prevalent HIV, hepatitis B virus, and hepatitis C virus infections among noninjecting heroin users.	Gyarmathy, V Anna and Neagus, Alan and Miller, Maureen and Friedman, Samuel R and Des Jarlais, Don C	<a href="#">J Acquir Immune Defic Syndr. 2002 Aug 1;30(4):448-56.</a>	Cross-sectional	1996	2001	Non-Injecting drug users	337	Anti-HCV	Blood transfusion	9	2	Inclusion
PM-U075	Risk correlates of prevalent HIV, hepatitis B virus, and hepatitis C virus infections among noninjecting heroin users.	Gyarmathy, V Anna and Neagus, Alan and Miller, Maureen and Friedman, Samuel R and Des Jarlais, Don C	<a href="#">J Acquir Immune Defic Syndr. 2002 Aug 1;30(4):448-56.</a>	Cross-sectional	1996	2001	Non-Injecting and former injecting drug users	483	Anti-HCV	Intravenous drug use	146	85	Inclusion
PM-U075	Risk correlates of prevalent HIV, hepatitis B virus, and hepatitis C virus infections among noninjecting heroin users.	Gyarmathy, V Anna and Neagus, Alan and Miller, Maureen and Friedman, Samuel R and Des Jarlais, Don C	<a href="#">J Acquir Immune Defic Syndr. 2002 Aug 1;30(4):448-56.</a>	Cross-sectional	1996	2001	Non-Injecting drug users	337	Anti-HCV	Tattooing	99	18	Inclusion
PM-U076	Hepatitis C-positive donors in heart transplantation.	Marelli, Daniel and Bresson, Jessica and Laks, Hillel and Kubak, Bernard and Fonarow, Gregg and Tsai, Feng-Chun and Tran, Julie and Weston, Shiobhan R and	<a href="#">Am J Transplant. 2002 May;2(5):443-7.</a>	Case study	1994	1999	Heart transplant recipients	20	HCV RNA	Organ transplantation	17	2	Inclusion
PM-U077	Hepatitis C infection in children and adolescents with end-stage renal disease.	Molle, Zarela L and Baqi, Noosha and Gretch, David and Hidalgo, Guillermo and Tejani, Amir and Rabinowitz, Simon S	<a href="#">Pediatr Nephrol. 2002 Jun;17(6):444-9.</a>	Cross-sectional	NA	NA	End-stage renal disease (ESRD) children	37	HCV RNA	Hemodialysis	16	4	Inclusion
PM-U077	Hepatitis C infection in children and adolescents with end-stage renal disease.	Molle, Zarela L and Baqi, Noosha and Gretch, David and Hidalgo, Guillermo and Tejani, Amir and Rabinowitz, Simon S	<a href="#">Pediatr Nephrol. 2002 Jun;17(6):444-9.</a>	Cross-sectional	NA	NA	End-stage renal disease (ESRD) children	37	HCV RNA	Organ transplantation	27	5	Inclusion
PM-U078	High prevalence of hepatitis C infection among patients receiving hemodialysis at an urban dialysis center.	Sivapalasingam, Sumathi and Malak, Sharp F and Sullivan, John F and Lorch, Jonathan and Sepkowitz, Kent A	<a href="#">Infect Control Hosp Epidemiol. 2002 Jun;23(6):319-24.</a>	cross-sectional	1998	1998	Patients undergoing hemodialysis at the Rogosin Kidney Center	227	Anti-HCV	Blood transfusion	125	29	Inclusion
PM-U078	High prevalence of hepatitis C infection among patients receiving hemodialysis at an urban dialysis center.	Sivapalasingam, Sumathi and Malak, Sharp F and Sullivan, John F and Lorch, Jonathan and Sepkowitz, Kent A	<a href="#">Infect Control Hosp Epidemiol. 2002 Jun;23(6):319-24.</a>	cross-sectional	1998	1998	Patients undergoing hemodialysis at the Rogosin Kidney Center	227	Anti-HCV	Intravenous drug use	12	11	Inclusion
PM-U078	High prevalence of hepatitis C infection among patients receiving hemodialysis at an urban dialysis center.	Sivapalasingam, Sumathi and Malak, Sharp F and Sullivan, John F and Lorch, Jonathan and Sepkowitz, Kent A	<a href="#">Infect Control Hosp Epidemiol. 2002 Jun;23(6):319-24.</a>	cross-sectional	1998	1998	Patients undergoing hemodialysis at the Rogosin Kidney Center	227	Anti-HCV	Organ transplantation	35	16	Inclusion
PM-U078	High prevalence of hepatitis C infection among patients receiving hemodialysis at an urban dialysis center.	Sivapalasingam, Sumathi and Malak, Sharp F and Sullivan, John F and Lorch, Jonathan and Sepkowitz, Kent A	<a href="#">Infect Control Hosp Epidemiol. 2002 Jun;23(6):319-24.</a>	cross-sectional	1998	1998	Patients undergoing hemodialysis at the Rogosin Kidney Center	227	Anti-HCV	Sexual	12	7	Inclusion
PM-U079	Risk of hepatitis C virus infection among young adult injection drug users who share injection equipment.	Thorpe, Lorna E and Ouellet, Lawrence J and Hershow, Ronald and Bailey, Susan L and Williams, Ian T and Williamson, John and Monterroso, Edgar R and Garfein, Richard S	<a href="#">Am J Epidemiol. 2002 Apr 1;155(7):645-53.</a>	Prospective cohort	1997	1999	Injecting drug users	353	Anti-HCV	Intravenous drug use	353	29	Inclusion
PM-U079	Risk of hepatitis C virus infection among young adult injection drug users who share injection equipment.	Thorpe, Lorna E and Ouellet, Lawrence J and Hershow, Ronald and Bailey, Susan L and Williams, Ian T and Williamson, John and Monterroso, Edgar R and Garfein, Richard S	<a href="#">Am J Epidemiol. 2002 Apr 1;155(7):645-53.</a>	Prospective cohort	1997	1999	Injecting drug users	353	Anti-HCV	Needle sharing			Inclusion
PM-U080	Hepatitis C virus transmission from an anesthesiologist to a patient.	Cody, Sara H and Nainan, Omana V and Garfein, Richard S and Meyers, Hildy and Bell, Beth P and Shapiro, Craig N and Meeks, Emory L and Pitt, Harriett and Mouzin, Eric and Alter, Miriam J and	<a href="#">Arch Intern Med. 2002 Feb 11;162(3):345-50.</a>	cross-sectional	NA	NA	Surgical patients at two hospitals	348	Anti-HCV	Iatrogenic	348	2	Inclusion
PM-U081	Low incidence and prevalence of hepatitis C virus infection among sexually active non-intravenous drug-using adults, San Francisco, 1997-2000.	Hammer, Gwendolyn P and Kellogg, Timothy A and McFarland, Willi C and Wong, Ernest and Louie, Brian and Williams, Ian and Dilley, James and Page-	<a href="#">Sex Transm Dis. 2003 Dec;30(12):919-24.</a>	Retrospective cohort	1997	2000	Non-Injecting drug users men having sex with men	746	Anti-HCV	Sexual	303	6	Inclusion
PM-U081	Low incidence and prevalence of hepatitis C virus infection among sexually active non-intravenous drug-using adults, San Francisco, 1997-2000.	Hammer, Gwendolyn P and Kellogg, Timothy A and McFarland, Willi C and Wong, Ernest and Louie, Brian and Williams, Ian and Dilley, James and Page-	<a href="#">Sex Transm Dis. 2003 Dec;30(12):919-24.</a>	Retrospective cohort	1997	2000	Non-Injecting drug users men having sex with men	746	Anti-HCV	Tattooing	9	1	Inclusion
PM-U082	Women's drug injection practices in East Harlem: an event analysis in a high-risk	Tortu, Stephanie and McMahon, James M and Hamid, Rahul and Neagus, Alan	<a href="#">AIDS Behav. 2003 Sep;7(3):317-28.</a>	Cross-sectional	1997	1999	Injection-drug-using women	185	Anti-HCV	Intravenous drug use	185		Inclusion

PM-U083	Viral hepatitis among young men who have sex with men: prevalence of infection, risk behaviors, and vaccination.	Diamond, Catherine and Thiede, Hanne and Perdue, Thomas and Secura, Gina M and Valleroy, Linda and Mackellar, Duncan and Corey, Lawrence and Seattle Young	<a href="#">Sex Transm Dis. 2003 May;30(5):425-32.</a>	Cross-sectional	1997	2000	Men having sex with men	824	Anti-HCV	Intravenous drug use	72	7	Inclusion
PM-U084	Gender differences in hepatitis C infection and risks among persons with severe mental illness.	Butterfield, Marian I and Bosworth, Hayden B and Meador, Keith G and Stechuchak, Karen M and Essock, Susan M and Osher, Fred C and Goodman, Lisa A and Swanson, Jeffrey W and Bastian, Lori A and Horner, Ronnie D and Five-Site	<a href="#">Psychiatr Serv. 2003 Jun;54(6):848-53.</a>	Cross-sectional	1997	1998	Severe mental illness.	777	Anti-HCV	Intravenous drug use	152	122	Inclusion
PM-U085	Substance abuse and the transmission of hepatitis C among persons with severe mental illness.	Osher, Fred C and Goldberg, Richard W and McNary, Scot W and Swartz, Marvin S and Essock, Susan M and Butterfield, Marian I and Rosenberg, Stanley D and Five-Site Health and Risk Study Research	<a href="#">Psychiatr Serv. 2003 Jun;54(6):842-7.</a>	Cross-sectional	1997	1998	Patients with severe mental illness	668	Anti-HCV	Needle sharing	97		Inclusion
PM-U086	Hepatitis C virus infection among noninjecting drug users in New York City.	Koblin, Beryl A and Factor, Stephanie H and Wu, Yingfeng and Vlahov, David	<a href="#">J Med Virol. 2003 Jul;70(3):387-90.</a>										Exclusion
PM-U087	The tattooing paradox: are studies of acute hepatitis adequate to identify routes of transmission of subclinical hepatitis C infection?	Haley, Robert W and Fischer, R Paul	<a href="#">Arch Intern Med. 2003 May 12;163(9):1095-8.</a>	Cross-sectional	1991	1992	Patients with spinal disorders	626	Anti-HCV	Intravenous drug use	40		Inclusion
PM-U087	The tattooing paradox: are studies of acute hepatitis adequate to identify routes of transmission of subclinical hepatitis C infection?	Haley, Robert W and Fischer, R Paul	<a href="#">Arch Intern Med. 2003 May 12;163(9):1095-8.</a>	Cross-sectional	1991	1992	Patients with spinal disorders	626	Anti-HCV	Tattooing	52		Inclusion
PM-U088	Risk factors for hepatitis C virus infection among patients receiving health care in a Department of Veterans Affairs hospital.	Mishra, Girish and Sninsky, C and Roswell, Robert and Fitzwilliam, S and Hyams, Kenneth C	<a href="#">Dig Dis Sci. 2003 Apr;48(4):815-20.</a>	Cross-sectional	1999	2000	among veterans receiving health care from the VA	274	Anti-HCV	Accidental puncture	25	2	Inclusion
PM-U088	Risk factors for hepatitis C virus infection among patients receiving health care in a Department of Veterans Affairs hospital.	Mishra, Girish and Sninsky, C and Roswell, Robert and Fitzwilliam, S and Hyams, Kenneth C	<a href="#">Dig Dis Sci. 2003 Apr;48(4):815-20.</a>	Cross-sectional	1999	2000	among veterans receiving health care from the VA	274	Anti-HCV	Acupuncture	19	1	Inclusion
PM-U088	Risk factors for hepatitis C virus infection among patients receiving health care in a Department of Veterans Affairs hospital.	Mishra, Girish and Sninsky, C and Roswell, Robert and Fitzwilliam, S and Hyams, Kenneth C	<a href="#">Dig Dis Sci. 2003 Apr;48(4):815-20.</a>	Cross-sectional	1999	2000	among veterans receiving health care from the VA	274	Anti-HCV	Blood transfusion	86	7	Inclusion
PM-U088	Risk factors for hepatitis C virus infection among patients receiving health care in a Department of Veterans Affairs hospital.	Mishra, Girish and Sninsky, C and Roswell, Robert and Fitzwilliam, S and Hyams, Kenneth C	<a href="#">Dig Dis Sci. 2003 Apr;48(4):815-20.</a>	Cross-sectional	1999	2000	among veterans receiving health care from the VA	274	Anti-HCV	Piercing	33	6	Inclusion
PM-U088	Risk factors for hepatitis C virus infection among patients receiving health care in a Department of Veterans Affairs hospital.	Mishra, Girish and Sninsky, C and Roswell, Robert and Fitzwilliam, S and Hyams, Kenneth C	<a href="#">Dig Dis Sci. 2003 Apr;48(4):815-20.</a>	Cross-sectional	1999	2000	among veterans receiving health care from the VA	274	Anti-HCV	Sexual	111	13	Inclusion
PM-U088	Risk factors for hepatitis C virus infection among patients receiving health care in a Department of Veterans Affairs hospital.	Mishra, Girish and Sninsky, C and Roswell, Robert and Fitzwilliam, S and Hyams, Kenneth C	<a href="#">Dig Dis Sci. 2003 Apr;48(4):815-20.</a>	Cross-sectional	1999	2000	among veterans receiving health care from the VA	274	Anti-HCV	Tattooing	80	10	Inclusion
PM-U089	Intrafamilial transmission of hepatitis C virus in patients with hepatitis C and human immunodeficiency virus coinfection.	Keiserman, Daniela R and Both, Cristiane T and Mattos, Angelo A and Remiao, Jose and Alexandre, Claudio O P and Sherman, Beltrami, Elise M and Kozak, Anne and Williams, Ian T and Saekhou, Ae M and Kalish, Marcia L and Nainan, Omaha V and Stramer, Susan L and Fucci, Mei-Chen H and Frederickson, Debra and Cardo,	<a href="#">Am J Gastroenterol. 2003 Apr;98(4):878-83.</a>										Exclusion
PM-U090	Transmission of HIV and hepatitis C virus from a nursing home patient to a health care worker.	Beltrami, Elise M and Kozak, Anne and Williams, Ian T and Saekhou, Ae M and Kalish, Marcia L and Nainan, Omaha V and Stramer, Susan L and Fucci, Mei-Chen H and Frederickson, Debra and Cardo,	<a href="#">Am J Infect Control. 2003 May;31(3):168-75.</a>										Exclusion
PM-U091	Hepatitis C virus transmission from an antibody-negative organ and tissue donor—	Centers for Disease Control and Prevention (CDC), [Collective Name]	<a href="#">MMWR Morb Mortal Wkly Rep. 2003 Apr</a>										Exclusion

PM-U092	Prevalence of hepatitis C in a drug using and non-using welfare population.	Montoya, Isaac D and Atkinson, John S and Lichtiger, Benjamin and Whitsett, Donna D	<a href="#">Health Policy. 2003 May;64(2):221-8.</a>	Cross-sectional	1999	2000	General population	380	Anti-HCV	Intravenous drug use	112	35	Inclusion
PM-U093	Nosocomial transmission of hepatitis C virus associated with the use of multidose saline vials.	Krause, Gérard and Trepka, Mary Jo and Whisenhunt, Robert S and Katz, Dolly and Nainan, Omana and Wiersma, Steven T and Hopkins, Richard S	<a href="#">Infect Control Hosp Epidemiol. 2003 Feb;24(2):122-7</a>	Retrospective cohort	1998	1998	General population	41	Anti-HCV	Iatrogenic	24	5	Inclusion
PM-U094	Prevalence of hepatitis C virus infection and risk factors in an incarcerated juvenile population: a pilot study.	Murray, Karen F and Richardson, Laura P and Morishima, Chihiro and Owens, James W M and Gretch, David R	<a href="#">Pediatrics. 2003 Jan;111(1):153-7</a>	Cross-sectional	1999	2001	Juvenile population	305	Anti-HCV	Intravenous drug use	18	3	Inclusion
PM-U094	Prevalence of hepatitis C virus infection and risk factors in an incarcerated juvenile population: a pilot study.	Murray, Karen F and Richardson, Laura P and Morishima, Chihiro and Owens, James W M and Gretch, David R	<a href="#">Pediatrics. 2003 Jan;111(1):153-7</a>	Cross-sectional	1999	2001	Juvenile population	305	Anti-HCV	Sexual	215	28	Inclusion
PM-U095	A large nosocomial outbreak of hepatitis C and hepatitis B among patients receiving pain remediation treatments.	Comstock, R Dawn and Mallonee, Sue and Fox, Jan L and Moolenaar, Ronald L and Vogt, Tara M and Perz, Joseph F and Bell, Beth P and Crutcher, James M	<a href="#">Infect Control Hosp Epidemiol. 2004 Jul;25(7):576-83.</a>	Retrospective cohort	1999	2002	General population	905	Anti-HCV	Iatrogenic	795	71	Inclusion
PM-U096	Correlates of hepatitis C virus infection in homeless men: a latent variable approach.	Stein, Judith A and Nyamathi, Adeline	<a href="#">Drug Alcohol Depend. 2004 Jul 15;75(1):89-</a>										Exclusion
PM-U097	Sharing of noninjection drug-use implements as a risk factor for hepatitis C.	Tortu, Stephanie and McMahon, James M and Pouget, Enrique R and Hamid, Rahul	<a href="#">SUBSTANCE USE &amp; MISUSE Vol. 39, No. 2, pp. 211-224, 2004</a>	Case-control	1997	1999	Women drug users	123	Anti-HCV	Intravenous drug use	123	24	Inclusion
PM-U098	How great is the risk of transmitting the hepatitis C virus sexually?	Collantes, Rochelle S and Younossi, Zobair M	<a href="#">Clev Clin J Med. 2004 Feb;71(2):160-1.</a>										Exclusion
PM-U099	Risk factors for perinatal transmission of hepatitis C virus (HCV) and the natural history of HCV infection acquired in infancy.	Mast, Eric E and Hwang, Lu-Yu and Seto, Dexter S Y and Nolte, Frederick S and Nainan, Omana V and Wurtzel, Heather	<a href="#">J Infect Dis. 2005 Dec 1;192(11):1880-9. Epub 2005 Oct 28.</a>	Prospective Cohort	1993	1996	Infants	224	Anti-HCV	Mother to child	190	9	Inclusion
PM-U100	Sexually transmitted disease/HIV risk behaviour among women who have sex with	Pinto, Valdir Monteiro and Tancredi, Mariza Vono and Tancredi Neto, Antonio	<a href="#">AIDS. 2005 Oct;19 Suppl 4:S64-9.</a>										Exclusion
PM-U101	Risk factors for hepatitis C on the Texas-Mexico border.	Hand, W Lee and Vasquez, Yvonne	<a href="#">Am J Gastroenterol. 2005 Oct;100(10):2180-5.</a>	Cross-sectional	2000	2002	General population	320	Anti-HCV	Tattooing	182	43	Inclusion
PM-U102	Association of sex, hygiene and drug equipment sharing with hepatitis C virus infection among non-injecting drug users in New York City.	Howe, Chanelle J and Fuller, Crystal M and Ompad, Danielle C and Galea, Sandro and Koblin, Beryl and Thomas, David and Vlahov, David	<a href="#">Drug Alcohol Depend. 2005 Sep 1;79(3):389-95. Epub 2005 Apr 18.</a>	Prospective Cohort	2000	2003	Non-injecting drug users	740	Anti-HCV	Blood transfusion	27	1	Inclusion
PM-U102	Association of sex, hygiene and drug equipment sharing with hepatitis C virus infection among non-injecting drug users in New York City.	Howe, Chanelle J and Fuller, Crystal M and Ompad, Danielle C and Galea, Sandro and Koblin, Beryl and Thomas, David and Vlahov, David	<a href="#">Drug Alcohol Depend. 2005 Sep 1;79(3):389-95. Epub 2005 Apr 18.</a>	Prospective Cohort	2000	2003	Non-injecting drug users	740	Anti-HCV	Tattooing	106	4	Inclusion
PM-U103	An outbreak of hepatitis C virus infections among outpatients at a hematology/oncology clinic.	Macedo de Oliveira, Alexandre and White, Kathryn L and Leschinsky, Dennis P and Beecham, Brady D and Vogt, Tara M and Moolenaar, Ronald L and Perz, Joseph F and Safranek, Thomas J	<a href="#">Ann Intern Med. 2005 Jun 7;142(11):898-902.</a>	Prospective Cohort	2000	2001	among Outpatients at a Hematology/Oncology Clinic	367	Anti-HCV	Iatrogenic	140	99	Inclusion
PM-U104	Results of a hepatitis C general transfusion lookback program for patients who received blood products before July 1992.	Williams, James L and Cagle, Henry H and Christensen, Carol J and Fox-Leyva, Leslie K and McMahon, Brian J	<a href="#">Transfusion. 2005 Jun;45(6):1020-6.</a>	Prospective Cohort	1980	1992	persons who received transfusions at the Alaska Native Medical Center between January 1980 and July 1992.	764	Anti-HCV	Blood transfusion	764	41	Inclusion

PM-U105	Lack of evidence of sexual transmission of hepatitis C virus in a prospective cohort study of men who have sex with men.	Alary, Michel and Joly, Jean R and Vincelotte, Jean and Lavoie, RenÃ© and Turmel, Bruno and Remis, Robert S	Am J Public Health. 2005 Mar;95(3):502-5.										Exclusion
PM-U106	Prevalence of selected viral infections among blood donors deferred for potential risk to blood safety.	Zou, Shimian and Fujii, Karen and Johnson, Stephanie and Spencer, Bryan and Washington, Nicole and Iv, Edward Notari and Musavi, Fatemeh and Newman, Bruce and Cable, Ritchard and Rios, Jorge and Hillyer, Krista L and Hillyer, Christopher D and Dodd, Roger Y and ARCNET Study	Transfusion. 2006 Nov;46(11):1997-2003	Prospective Cohort	1999	2004	Blood donors	497	Anti-HCV	Blood transfusion	127	29	Inclusion
PM-U107	Social structural and behavioral underpinnings of hyperendemic hepatitis C virus transmission in drug injectors.	Brewer, Devon D and Hagan, Holly and Sullivan, Daniel G and Muth, Stephen Q and Hough, Eileen S and Feuerborn, Nathan A and Gretch, David R	J Infect Dis. 2006 Sep 15;194(6):764-72. Epub 2006 Aug 17	Case-control	2000	2002	intravenous drug injector	59	Anti-HCV	Intravenous drug use	52	18	Inclusion
PM-U107	Social structural and behavioral underpinnings of hyperendemic hepatitis C virus transmission in drug injectors.	Brewer, Devon D and Hagan, Holly and Sullivan, Daniel G and Muth, Stephen Q and Hough, Eileen S and Feuerborn, Nathan A and Gretch, David R	J Infect Dis. 2006 Sep 15;194(6):764-72. Epub 2006 Aug 17	Case-control	2000	2002	intravenous drug injector	59	Anti-HCV	Sexual	47	3.7	Inclusion
PM-U108	Hepatitis C virus infection among methamphetamine-dependent individuals in outpatient treatment.	Gonzales, Rachel and Marinelli-Casey, Patricia and Shoptaw, Steven and Ang, Alfonso and Rawson, Richard A	J Subst Abuse Treat. 2006 Sep;31(2):195-202. Epub 2006 Jul 18.	Prospective Cohort	1999	2005	among methamphetamine-dependent individuals in outpatient treatment.	723	Anti-HCV	Intravenous drug use	146	64	Inclusion
PM-U109	Relationship of cosmetic procedures and drug use to hepatitis C and hepatitis B virus infections in a low-risk population.	Hwang, Lu-Yu and Kramer, Jennifer R and Troisi, Catherine and Bull, Lara and Grimes, Carolyn Z and Lyerla, Rob and Alter, Miriam J	Hwang LY1, Kramer JR, Troisi C, Bull L, Grimes CZ, Lyerla R, Alter MJ.	Cross-sectional	2000	2001	low-risk population	5282	Anti-HCV	Intravenous drug use	102	23	Inclusion
PM-U109	Relationship of cosmetic procedures and drug use to hepatitis C and hepatitis B virus infections in a low-risk population.	Hwang, Lu-Yu and Kramer, Jennifer R and Troisi, Catherine and Bull, Lara and Grimes, Carolyn Z and Lyerla, Rob and Alter, Miriam J	Hwang LY1, Kramer JR, Troisi C, Bull L, Grimes CZ, Lyerla R, Alter MJ.	Cross-sectional	2000	2001	low-risk population	5282	Anti-HCV	Piercing	1108	8	Inclusion
PM-U109	Relationship of cosmetic procedures and drug use to hepatitis C and hepatitis B virus infections in a low-risk population.	Hwang, Lu-Yu and Kramer, Jennifer R and Troisi, Catherine and Bull, Lara and Grimes, Carolyn Z and Lyerla, Rob and Alter, Miriam J	Hwang LY1, Kramer JR, Troisi C, Bull L, Grimes CZ, Lyerla R, Alter MJ.	Cross-sectional	2000	2001	low-risk population	5282	Anti-HCV	Tattooing	1327	13	Inclusion
PM-U110	Hepatitis C virus infection among homeless men referred from a community clinic.	Nyamathi, Adeline M and Dixon, Elizabeth L and Wiley, Dorothy and Christiani, Ashley and Lowe, Ann	West J Nurs Res. 2006 Jun;28(4):475-88.	Case-control	2002	2003	Among Homeless Men Referred From a Community Clin	198	Anti-HCV	Intravenous drug use	24	21	Inclusion
PM-U111	Acute hepatitis C in a contemporary US cohort: modes of acquisition and factors influencing viral clearance.	Wang, Chia C and Krantz, Elizabeth and Klarquist, Jared and Krows, Meighan and McBride, Lanamarie and Scott, Edward P and Shaw-Stiffel, Thomas and Weston, Scott J and Thiede, Hanne and Wald, Anna	J Infect Dis. 2007 Nov 15;196(10):1474-82. Epub 2007 Oct 31	Cross-sectional	2003	2005	General population	67	Anti-HCV	Iatrogenic	10	6	Inclusion
PM-U111	Acute hepatitis C in a contemporary US cohort: modes of acquisition and factors influencing viral clearance.	Wang, Chia C and Krantz, Elizabeth and Klarquist, Jared and Krows, Meighan and McBride, Lanamarie and Scott, Edward P and Shaw-Stiffel, Thomas and Weston, Scott J and Thiede, Hanne and Wald, Anna	J Infect Dis. 2007 Nov 15;196(10):1474-82. Epub 2007 Oct 31	Cross-sectional	2003	2005	General population	67	Anti-HCV	Intravenous drug use	44	8	Inclusion
PM-U112	A longitudinal investigation into excess risk for blood-borne infection among young.	Miller, Cari L and Stratdee, Steffanie A and Li, Kathy and Kerr, Thomas and Wood, Robert and Weisfuse, Isaac B	Am J Drug Alcohol Abuse. 2007;33(4):527-										Exclusion
PM-U113	Low prevalence of hepatitis C virus antibody in men who have sex with men who do not inject drugs.	Buffington, Joanna and Murray, Paula J and Schlanger, Karen and Shih, Linda and Badsgard, Tracy and Hennessy, Robin R and Wood, Robert and Weisfuse, Isaac B	Public Health Rep. 2007;122 Suppl 2:63-7.	Case-control	1999	2003	Men Who Have Sex with Men Who Do Not Inject Drugs	5154	Anti-HCV	Sexual	1699	26	Inclusion

PM-U114	Individual and couple-level risk factors for hepatitis C infection among heterosexual drug users: a multilevel dyadic analysis.	McMahon, James M and Pouget, Enrique R and Tortu, Stephanie	J Infect Dis. 2007 Jun 1;195(11):1572-81. Epub 2007 Apr 16.	Cross-sectional	2001	2003	among Heterosexual Drug Users	530	Anti-HCV	Sexual	128	35	Inclusion
PM-U115	Hepatitis-C prevalence in an urban native-American clinic: a prospective screening study.	Neumeister, Amy S and Pilcher, LaVada E and Erickson, Judi M and Langley, Lora L and Murphy, Mary M and Haukaas, Nicole M and Mailliard, Mark E and Larsen,	J Natl Med Assoc. 2007 Apr;99(4):389-92.										Exclusion
PM-U116	Sexual and other noninjection risks for HBV and HCV seroconversions among noninjecting heroin users.	Neaigus, Alan and Gyarmathy, V Anna and Zhao, Mingfang and Miller, Maureen and Friedman, Samuel R and Des Jarlais, Don	J Infect Dis. 2007 Apr 1;195(7):1052-61. Epub 2007 Feb 23.										Exclusion
PM-U117	Injecting and sexual risk correlates of HBV and HCV seroprevalence among new drug injectors.	Neaigus, Alan and Gyarmathy, V Anna and Miller, Maureen and Frajzyngier, Vera and Zhao, Mingfang and Friedman, Samuel R and Des Jarlais, Don C	Drug Alcohol Depend. 2007 Jul 10;89(2-3):234-43. Epub 2007 Feb 7.	Cross-sectional	1999	2003	among new drug injectors	259	Anti-HCV	Intravenous drug use	167	48	Inclusion
PM-U118	Results of a general hepatitis C lookback program for persons who received blood transfusions in a neonatal intensive care unit between January 1975 and July 1992.	Cagle, Henry H and Jacob, Jack and Homan, Chriss E and Williams, James L and Christensen, Carol J and McMahon, Brian J	Arch Pediatr Adolesc Med. 2007 Feb;161(2):125-30.	Retrospective cohort	1975	1992	Persons Who Received Blood Transfusions in a Neonatal Intensive Care Unit	1797	Anti-HCV	Blood transfusion	151	6	Inclusion
PM-U119	Co-infection of hepatitis B and hepatitis C virus in human immunodeficiency virus-infected patients in New York City, United	Kim, Jong-Hun and Pseudos, George and Suh, Jin and Sharp, Victoria-Lee	World J Gastroenterol. 2008 Nov 21;14(43):6689-93.										Exclusion
PM-U120	Maternal neutralizing antibody and transmission of hepatitis C virus to infants.	Dowd, Kimberly A and Hershow, Ronald C and Yawetz, Sigal and Larussa, Philip and Diaz, Clemente and Landesman, Sheldon H and Paul, Mary E and Read, Jennifer S and Lu, Ming and Thomas, David L and Netski,	J Infect Dis. 2008 Dec 1;198(11):1651-5. doi: 10.1086/593067.	Case-control	1989	2005	Infants	63	Anti-HCV	Mother to child	16	5	Inclusion
PM-U121	Epidemiology of HCV infection.	Baldo, V and Baldovin, T and Trivello, R and Floreani, A	Curr Pharm Des. 2008;14(17):1646-54.										Exclusion
PM-U122	Sexual transmission is associated with spontaneous HCV clearance in HIV-infected	Shores, Nathan J and Maida, Ivana and Soriano, Vincent and NÁºnez, Marina	J Hepatol. 2008 Sep;49(3):323-8. doi:										Exclusion
PM-U123	Acute hepatitis C virus infections attributed to unsafe injection practices at an endoscopy clinic—Nevada, 2007.	Centers for Disease Control and Prevention (CDC), [Collective Name]	MMWR Morb Mortal Wkly Rep. 2008 May 16;57(19):513-7.	Case-control	2007	2007	People who had procedures at the endoscopy clinic	120	Anti-HCV	Iatrogenic	120	6	Inclusion
PM-U124	Risk of infections associated with improperly reprocessed transrectal ultrasound-guided prostate biopsy equipment.	Lessa, Fernanda and Tak, Sangwoo and Devader, Shannon R and Goswami, Rekha and Anderson, Mary and Williams, Ian and Gensheimer, Kathleen F and Srinivasan, Arjun	Infect Control Hosp Epidemiol. 2008 Apr;29(4):289-93. doi: 10.1086/533546	Case study	2003	2006	patients who had undergone prostate biopsies from January 30, 2003, through January 27,	409	Anti-HCV	Iatrogenic	409	2	Inclusion
PM-U125	A randomized intervention trial to reduce the lending of used injection equipment among injection drug users infected with hepatitis C.	Latka, Mary H and Hagan, Holly and Kapadia, Farzana and Golub, Elizabeth T and Bonner, Sebastian and Campbell, Jennifer V and Coady, Micaela H and Garfein, Richard S and Pu, Minya and	Am J Public Health. 2008 May;98(5):853-61. doi: 10.2105/AJPH.2007.113415. Epub 2008 Apr	Randomized trial	2002	2004	Injection Drug Users	222	Anti-HCV	Intravenous drug use	58	6	Inclusion
PM-U126	Greater drug injecting risk for HIV, HBV, and HCV infection in a city where syringe exchange and pharmacy syringe distribution are illegal.	Neaigus, Alan and Zhao, Mingfang and Gyarmathy, V Anna and Cisek, Linda and Friedman, Samuel R and Baxter, Robert C	J Urban Health. 2008 May;85(3):309-22. doi: 10.1007/s11524-008-9271-1. Epub 2008 Mar 14	Retrospective cohort	2004	2006	among drug injectors	526	Anti-HCV	Intravenous drug use	526	169	Inclusion
PM-U127	Traveling young injection drug users at high risk for acquisition and transmission of viral infections.	Hahn, Judith A and Page-Shafer, Kimberly and Ford, Jamye and Paciorek, Alan and Lum, Paula J	Drug Alcohol Depend. 2008 Jan 11;93(1-2):43-50. Epub 2007	Cross-sectional	2004	2006	Traveling young injection drug users	355	Anti-HCV	Intravenous drug use	178	56	Inclusion

PM-U128	Factors associated with prevalent hepatitis C infection among HIV-infected women with no reported history of injection drug use: the Women's Interagency HIV Study (WIHS).	Frederick, Toni and Burian, Pamela and Terrault, Norah and Cohen, Mardge and Augenbraun, Michael and Young, Mary and Seaberg, Eric and Justman, Jessica and Levine, Alexandra M and Mack, Wendy J	AIDS Patient Care STDS. 2009 Nov;23(11):915-23. doi: 10.1089/apc.2009.0111	Prospective Cohort	2001	2002	The women's Interagency HIV study	3636	Anti-HCV	Blood transfusion	167	33	Inclusion
PM-U129	Serosorting for hepatitis C status in the sharing of injection equipment among Seattle area injection drug users.	Burt, Richard D and Thiede, Hanne and Hagan, Holly	Drug Alcohol Depend. 2009 Dec 1;105(3):215-20. doi: 10.1016/j.drugalcdep.2009.07.005. Epub 2009	Cross-sectional	2005	2005	among Seattle area injection drug users.	337	Anti-HCV	Intravenous drug use	51	8	Inclusion
PM-U130	Risk behaviors after hepatitis C virus seroconversion in young injection drug users in San Francisco.	Tsui, Judith I and Vittinghoff, Eric and Hahn, Judith A and Evans, Jennifer L and Davidson, Peter J and Page, Kimberly	Drug Alcohol Depend. 2009 Nov 1;105(1-2):160-3. doi: 10.1016/j.drugalcdep.2009.07.005. Epub 2009										Exclusion
PM-U131	Transplantation of high-risk donor organs: a survey of US solid organ transplant center practices as reported by transplant infectious	Ison, Michael G and Stosor, Valentina	Clin Transplant. 2009 Nov-Dec;23(6):866-73. doi: 10.1111/j.1399-										Exclusion
PM-U132	Hepatitis C virus transmission at an outpatient hemodialysis unit--New York, 2001-2008.	Centers for Disease Control and Prevention (CDC), [Collective Name]	MMWR Morb Mortal Wkly Rep. 2009 Mar 6;58(8):189-94.	Cross-sectional	2001	2008	Hemodialysis patients	162	Anti-HCV	Hemodialysis	90	9	Inclusion
PM-U133	Risky sexual behavior, bleeding caused by intimate partner violence, and hepatitis C virus infection in patients of a sexually transmitted disease clinic.	Russell, Marcia and Chen, Meng-Jinn and Nocajski, Thomas H and Testa, Maria and Zimmerman, Scott J and Hughes, Patricia S	Am J Public Health. 2009 Apr;99 Suppl 1:S173-9. doi: 10.2105/AJPH.2007.126383. Epub 2009 Feb	Case-control	2001	2004	STD clinic patients	515	Anti-HCV	Blood transfusion	44	15	Inclusion
PM-U133	Risky sexual behavior, bleeding caused by intimate partner violence, and hepatitis C virus infection in patients of a sexually transmitted disease clinic.	Russell, Marcia and Chen, Meng-Jinn and Nocajski, Thomas H and Testa, Maria and Zimmerman, Scott J and Hughes, Patricia S	Am J Public Health. 2009 Apr;99 Suppl 1:S173-9. doi: 10.2105/AJPH.2007.126383. Epub 2009 Feb	Case-control	2001	2004	STD clinic patients	515	Anti-HCV	Intravenous drug use	133	111	Inclusion
PM-U133	Risky sexual behavior, bleeding caused by intimate partner violence, and hepatitis C virus infection in patients of a sexually transmitted disease clinic.	Russell, Marcia and Chen, Meng-Jinn and Nocajski, Thomas H and Testa, Maria and Zimmerman, Scott J and Hughes, Patricia S	Am J Public Health. 2009 Apr;99 Suppl 1:S173-9. doi: 10.2105/AJPH.2007.126383. Epub 2009 Feb	Case-control	2001	2004	STD clinic patients	515	Anti-HCV	Sexual	291	132	Inclusion
PM-U133	Risky sexual behavior, bleeding caused by intimate partner violence, and hepatitis C virus infection in patients of a sexually transmitted disease clinic.	Russell, Marcia and Chen, Meng-Jinn and Nocajski, Thomas H and Testa, Maria and Zimmerman, Scott J and Hughes, Patricia S	Am J Public Health. 2009 Apr;99 Suppl 1:S173-9. doi: 10.2105/AJPH.2007.126383. Epub 2009 Feb	Case-control	2001	2004	STD clinic patients	515	Anti-HCV	Tattooing	26	17	Inclusion
PM-U134	Rates of first infection following kidney transplant in the United States.	Snyder, Jon J and Israni, Ajay K and Peng, Yi and Zhang, Lin and Simon, Teresa A and Kasiske, Bertram L	Kidney Int. 2009 Feb;75(3):317-26. doi: 10.1038/ki.2008.580.										Exclusion
PM-U135	Prevalence of hepatitis C virus infection among health-care workers: A 10-year survey.	Marconi, Andrea and Candido, Saverio and Talamini, Renato and Libra, Massimo and Nicoletti, Ferdinando and Spandidos, Demetrios A and Stivala, Franca and	Mol Med Rep. 2010 Jul-Aug;3(4):561-4. doi: 10.3892/mmr.0000029										Exclusion
PM-U136	Epidemic of Sexually Transmitted Hepatitis C Virus Infection Among HIV-Infected Men.	Fierer, Daniel Seth	Curr Infect Dis Rep. 2010 Mar;12(2):118-25.										Exclusion
PM-U137	Hepatitis C virus: molecular and epidemiological evidence of male-to-female transmission.	Cavalheiro, Norma de Paula and La Rosa, Abel de and Elagin, Slava and Tengan, Fatima Mitiko and Barone, Antonio Alci	Braz J Infect Dis. 2010 Sep-Oct;14(5):427-32.										Exclusion
PM-U138	Management of hepatitis C virus infection in	Galoppo, Marcela and Galoppo, Cristina	Ann Hepatol. 2010;9										Exclusion
PM-U139	Is sexual contact a major mode of hepatitis C virus transmission?	Tohme, Rania A and Holmberg, Scott D	Hepatology. 2010 Oct;52(4):1497-505.										Exclusion
PM-U140	Current risks of occupational blood-borne viral infection.	Mohebati, Arash and Davis, John Mihran and Fry, Donald E	Surg Infect (Larchmt). 2010 Jun;11(3):325-31.										Exclusion
PM-U141	Hepatitis C virus risk behaviors within the partnerships of young injecting drug users.	Hahn, Judith A and Evans, Jennifer L and Davidson, Peter J and Lum, Paula J and Page, Kimberly	Addiction. 2010 Jul;105(7):1254-64. doi: 10.1111/j.1360-										Exclusion

PM-U142	Viral hepatitis and injection drug use in Appalachian Kentucky: a survey of rural health department clients.	Christian, W Jay and Hopenhayn, Claudia and Christian, Amy and McIntosh, Deana and Koch, Alvaro	<a href="#">Public Health Rep. 2010 Jan-Feb;125(1):121-8.</a>	Cross-sectional	2006	2007	Rural health department clients	92	Anti-HCV	Intravenous drug use	14	8	Inclusion
PM-U142	Viral hepatitis and injection drug use in Appalachian Kentucky: a survey of rural health department clients.	Christian, W Jay and Hopenhayn, Claudia and Christian, Amy and McIntosh, Deana and Koch, Alvaro	<a href="#">Public Health Rep. 2010 Jan-Feb;125(1):121-8.</a>	Cross-sectional	2006	2007	Rural health department clients	92	Anti-HCV	Piercing	5	1	Inclusion
PM-U142	Viral hepatitis and injection drug use in Appalachian Kentucky: a survey of rural health department clients.	Christian, W Jay and Hopenhayn, Claudia and Christian, Amy and McIntosh, Deana and Koch, Alvaro	<a href="#">Public Health Rep. 2010 Jan-Feb;125(1):121-8.</a>	Cross-sectional	2006	2007	Rural health department clients	92	Anti-HCV	Sexual	18	6	Inclusion
PM-U142	Viral hepatitis and injection drug use in Appalachian Kentucky: a survey of rural health department clients.	Christian, W Jay and Hopenhayn, Claudia and Christian, Amy and McIntosh, Deana and Koch, Alvaro	<a href="#">Public Health Rep. 2010 Jan-Feb;125(1):121-8.</a>	Cross-sectional	2006	2007	Rural health department clients	92	Anti-HCV	Tattooing	26	7	Inclusion
PM-U143	Retrospective review of serological testing of potential human milk donors.	Cohen, Ronald S and Xiong, Sean C and Sakamoto, Pauline	<a href="#">Arch Dis Child Fetal Neonatal Ed. 2010 Mar;95(2):F118-20. doi:10.1136/adc.2009.342101.</a>										Exclusion
PM-U144	Health care workers as source of hepatitis B and C virus transmission.	Carlson, Abigail L and Perl, Trish M	<a href="#">Clin Liver Dis. 2010 Feb;14(1):153-68; x.</a>										Exclusion
PM-U145	Infection control guidelines for prevention of health care-associated transmission of	Michelin, Angela and Henderson, David K	<a href="#">Clin Liver Dis. 2010 Feb;14(1):119-36; ix-x.</a>										Exclusion
PM-U146	Health care-associated transmission of hepatitis B & C viruses in dental care	Younai, Fariba S	<a href="#">Clin Liver Dis. 2010 Feb;14(1):93-104; ix.</a>										Exclusion
PM-U147	Notes from the field: risk factors for hepatitis C virus infections among young adults—Massachusetts, 2010.	Centers for Disease Control and Prevention (CDC), [Collective Name]	<a href="#">MMWR Morb Mortal Wkly Rep. 2011 Oct 28;60(42):1457-8.</a>	Cross-sectional	2010	2010	HCV patients	28	NA	Intravenous drug use		26	Inclusion
PM-U148	Surveillance snapshot: service members with hepatitis B, hepatitis C, and HIV-1, active component, U.S. Armed Forces.	Armed Forces Health Surveillance Center (AFHSC), [Collective Name]	<a href="#">MSMR. 2011 Aug;18(8):23.</a>										Exclusion
PM-U149	Sexual transmission of hepatitis C virus among HIV-infected men who have sex with men—New York City, 2005–2010.	Centers for Disease Control and Prevention (CDC), [Collective Name]	<a href="#">MMWR Morb Mortal Wkly Rep. 2011 Jul 22;60(28):945-50.</a>	Case-control	2005	2010	HIV-infected MSM	74	HCV RNA	Sexual	31	19	Inclusion
PM-U150	Maternal hepatitis B and hepatitis C carrier status and perinatal outcomes.	Connell, Laura E and Salihu, Hamisu M and Salemi, Jason L and August, Euna M and Weldelesasse, Hanna and Mbah, Alfred K	<a href="#">Liver Int. 2011 Sep;31(8):1163-70. doi:10.1111/j.1478-3223.2011.03597.x.</a>										Exclusion
PM-U151	Do rates of unprotected anal intercourse among HIV-positive MSM present a risk for hepatitis C transmission?	Stall, Ron and Wei, Chongyi and Raymond, H Fisher and McFarland, Willi	<a href="#">Sex Transm Infect. 2011 Aug;87(5):439-41. doi:10.1177/1368491311416112.</a>										Exclusion
PM-U152	Transmission of human immunodeficiency virus and hepatitis C virus from an organ donor to four transplant recipients.	Ison, M G and Llata, E and Conover, C S and Friedewald, J J and Gerber, S I and Grigoryan, A and Heneine, W and Millis, J M and Simon, D M and Teo, C-G and Kuehnert, M J and HIV-HCV Transplantation Transmission Investigation	<a href="#">Am J Transplant. 2011 Jun;11(6):1218-25. doi:10.1111/j.1600-6143.2011.03597.x.</a>	Case study	2007	2007	Recipients of organs from an HIV and HIV positive donor	4	HCV RNA	Organ transplantation		4	Inclusion
PM-U153	Estimated risk of human immunodeficiency virus and hepatitis C virus infection among potential organ donors from 17 organ procurement organizations in the United States.	Ellingson, K and Seem, D and Nowicki, M and Strong, D M and Kuehnert, M J and Organ Procurement Organization Nucleic Acid Testing Yield Project Team,	<a href="#">Am J Transplant. 2011 Jun;11(6):1201-8. doi:10.1111/j.1600-6143.2011.03518.x.</a>										Exclusion
PM-U154	Hepatitis C virus infection among adolescents and young adults: Massachusetts, 2002–2009.	Centers for Disease Control and Prevention (CDC), [Collective Name]	<a href="#">MMWR Morb Mortal Wkly Rep. 2011 May 13;60(18):551-4.</a>										Exclusion
PM-U155	Transmission of hepatitis C virus during myocardial perfusion imaging in an outpatient clinic.	Moore, Zack S and Schaefer, Melissa K and Hoffmann, Karen K and Thompson, Susan C and Xia, Guo-Liang and Lin, Yulin and Khudyakov, Yury and Maillard, Jean-Marie and Engel, Jeffrey P and Perz,	<a href="#">Am J Cardiol. 2011 Jul 1;108(1):126-32. doi:10.1016/j.amjcard.2011.03.010. Epub 2011 Apr 29.</a>	Case report	2007	2007	Myocardial Perfusion Imaging Patients	5	Anti-HCV	Iatrogenic		5	Inclusion
PM-U156	Patient-care practices associated with an increased prevalence of hepatitis C virus infection among chronic hemodialysis patients.	Shimokura, Gayle and Chai, Feng and Weber, David J and Samsa, Gregory P and Xia, Guo-Liang and Nainan, Omana V and Tobler, Leslie H and Busch, Michael P and	<a href="#">Infect Control Hosp Epidemiol. 2011 May;32(5):415-24. doi:10.1086/659407.</a>	Cross-sectional	2000	2001	Hemodialysis patients	2933	Anti-HCV	Hemodialysis	2933	294	Inclusion
PM-U157	Risk factors associated with Hepatitis C among female substance users enrolled in community-based HIV prevention studies.	Nurutdinova, Diana and Abdallah, Arbi B and Bradford, Susan and O'Leary, Catina C and Cottler, Linda B	<a href="#">BMC Res Notes. 2011 Apr 14;4:126. doi:10.1186/1756-0500-4-126.</a>	Cross-sectional	1998	2004	Substance abusing women	782	Anti-HCV	Intravenous drug use	153	112	Inclusion

PM-U157	Risk factors associated with Hepatitis C among female substance users enrolled in community-based HIV prevention studies.	Nurutdinova, Diana and Abdallah, Arbi B and Bradford, Susan and O'Leary, Catina C and Cottler, Linda B	<a href="#">BMC Res Notes. 2011 Apr;14:4:126. doi: 10.1186/1756-0500-14-126</a>	Cross-sectional	1998	2004	Substance abusing women	782	Anti-HCV	Sexual	378	104	Inclusion
PM-U158	Incidence and transmission patterns of acute hepatitis C in the United States, 1982–2006.	Williams, Ian T and Bell, Beth P and Kuhnert, Wendi and Alter, Miriam J	<a href="#">Arch Intern Med. 2011 Feb;171(3):242-8.</a>	Case report	1982	2006	HCV patients	2075	Anti-HCV	Blood transfusion		146	Inclusion
PM-U159	Incidence and transmission patterns of acute hepatitis C in the United States, 1982–2006.	Williams, Ian T and Bell, Beth P and Kuhnert, Wendi and Alter, Miriam J	<a href="#">Arch Intern Med. 2011 Feb;171(3):242-8.</a>	Case report	1982	2006	HCV patients	2075	Anti-HCV	Intravenous drug use		576	Inclusion
PM-U160	Screening for Hepatitis C Virus Infection in Adults	Chou, Roger and Cottrell, Erika Barth and Wasson, Ngoc and Rahman, Basmath and Guise, Jeanne-Marie	Rockville (MD): Agency for Healthcare Research and Quality										Exclusion
PM-U160	Transfusion transmission of HCV, a long but successful road map to safety.	Selvarajah, Suganya and Busch, Michael P	<a href="#">Antivir Ther. 2012;17(7 Pt B):1423-9. doi: 10.4161/1087-6045.10000</a>										Exclusion
PM-U161	A 25-year study of the clinical and histologic outcomes of hepatitis C virus infection and its modes of transmission in a cohort of initially asymptomatic blood donors.	Allison, Robert D and Conry-Cantilena, Cathy and Koziol, Deloris and Schechterly, Cathy and Ness, Paul and Gibble, Joan and Kleiner, David E and Ghany, Marc G and Alter, Harvey J	<a href="#">J Infect Dis. 2012 Sep 1;206(5):654-61. doi: 10.1093/infdis/jis410. Epub 2012 Jun 27.</a>	Prospective cohort	1990	1994	Blood donors	686	Anti-HCV	Blood transfusion		126	Inclusion
PM-U161	A 25-year study of the clinical and histologic outcomes of hepatitis C virus infection and its modes of transmission in a cohort of initially asymptomatic blood donors.	Allison, Robert D and Conry-Cantilena, Cathy and Koziol, Deloris and Schechterly, Cathy and Ness, Paul and Gibble, Joan and Kleiner, David E and Ghany, Marc G and Alter, Harvey J	<a href="#">J Infect Dis. 2012 Sep 1;206(5):654-61. doi: 10.1093/infdis/jis410. Epub 2012 Jun 27.</a>	Prospective cohort	1990	1994	Blood donors	686	Anti-HCV	Intravenous drug use		195	Inclusion
PM-U161	A 25-year study of the clinical and histologic outcomes of hepatitis C virus infection and its modes of transmission in a cohort of initially asymptomatic blood donors.	Allison, Robert D and Conry-Cantilena, Cathy and Koziol, Deloris and Schechterly, Cathy and Ness, Paul and Gibble, Joan and Kleiner, David E and Ghany, Marc G and Alter, Harvey J	<a href="#">J Infect Dis. 2012 Sep 1;206(5):654-61. doi: 10.1093/infdis/jis410. Epub 2012 Jun 27.</a>	Prospective cohort	1990	1994	Blood donors	686	Anti-HCV	Piercing		273	Inclusion
PM-U161	A 25-year study of the clinical and histologic outcomes of hepatitis C virus infection and its modes of transmission in a cohort of initially asymptomatic blood donors.	Allison, Robert D and Conry-Cantilena, Cathy and Koziol, Deloris and Schechterly, Cathy and Ness, Paul and Gibble, Joan and Kleiner, David E and Ghany, Marc G and Alter, Harvey J	<a href="#">J Infect Dis. 2012 Sep 1;206(5):654-61. doi: 10.1093/infdis/jis410. Epub 2012 Jun 27.</a>	Prospective cohort	1990	1994	Blood donors	686	Anti-HCV	Sexual		243	Inclusion
PM-U162	Evolving epidemiology of hepatitis C virus in the United States.	Klevens, R Monina and Hu, Dale J and Jiles, Ruth and Holmberg, Scott D	<a href="#">Clin Infect Dis. 2012 Jul;55 Suppl 1:S3-9.</a>										Exclusion
PM-U163	Health care-associated hepatitis C virus infections attributed to narcotic diversion.	Hellinger, Walter C and Bacalis, Laura P and Kay, Robyn S and Thompson, Nicola D and Xia, Guo-Liang and Lin, Yulin and Khudyakov, Yury E and Perz, Joseph F	<a href="#">Ann Intern Med. 2012 Apr 3;156(7):477-82. doi: 10.7326/0003-4819-156-7-</a>	Case study	2004	2010	Patients treated by an HCV-infected health care worker	3444	HCV RNA	Iatrogenic	3444	5	Inclusion
PM-U164	Transmission of hepatitis C virus infection through tattooing and piercing: a critical	Tohme, Rania A and Holmberg, Scott D	<a href="#">Clin Infect Dis. 2012 Apr;54(8):1167-78. doi: 10.1086/664420</a>										Exclusion
PM-U165	Burden of pediatric hepatitis C.	El-Shabrawi, Mortada Hassan and Kamal, Naglaa Mohamed	<a href="#">World J Gastroenterol. 2013 Nov 28;19(44):7880-8. doi: 10.3748/wjg.v19.i44.7880</a>										Exclusion
PM-U166	Sexual transmission of viral hepatitis.	Gorgos, Linda	<a href="#">Infect Dis Clin North Am. 2013 Dec;27(4):811-36. doi: 10.1016/j.id.2013.08.003</a>										Exclusion
PM-U167	Injection drug use and hepatitis C virus infection in young adult injectors: using evidence to inform comprehensive prevention.	Page, Kimberly and Morris, Meghan D and Hahn, Judith A and Maher, Lisa and Prins, Maria	<a href="#">Clin Infect Dis. 2013 Aug;57 Suppl 2:S32-8. doi: 10.1086/664420</a>										Exclusion
PM-U168	Hepatitis C virus screening and management of seroconversions in hemodialysis facilities.	Mbaeyi, Chukwuma and Thompson, Nicola D	<a href="#">Semin Dial. 2013 Jul-Aug;26(4):439-46. doi: 10.1007/s10020-013-9600-0</a>										Exclusion
PM-U169	The association between law enforcement encounters and syringe sharing among IDUs on skid row: a mixed methods analysis.	Wagner, Karla D and Simon-Freeman, Rebecca and Bluthenthal, Ricky N	<a href="#">AIDS Behav. 2013 Oct;17(8):2637-43. doi: 10.1007/s10461-013-1007-0</a>	Cross-sectional	2008	2009	Intravenous drug users	187	Self report	Intravenous drug use	187	81	Inclusion
PM-U170	Incident hepatitis C virus infection in men who have sex with men: a prospective cohort analysis, 1984–2011.	Witt, Mallory D and Seaberg, Eric C and Darilay, Annie and Young, Stephen and Badri, Sheila and Rinaldo, Charles R and Jacobson, Lisa P and Detels, Roger and	<a href="#">Clin Infect Dis. 2013 Jul;57(1):77-84. doi: 10.1093/cid/cit197. Epub 2013 Mar 26.</a>										Exclusion

PM-U171	Reducing risk for mother-to-infant transmission of hepatitis C virus: a systematic review for the U.S. Preventive	Cottrell, Erika Barth and Chou, Roger and Wasson, Ngoc and Rahman, Basmah and Guise, Jeanne-Marie	<a href="#">Ann Intern Med. 2013 Jan 15;158(2):109-13.</a>										Exclusion
PM-U172	Sexual transmission of hepatitis C virus among monogamous heterosexual couples: the HCV partners study.	Terrault, Norah A and Dodge, Jennifer L and Murphy, Edward L and Tavis, John E and Kiss, Alexi and Levin, T R and Gish, Robert G and Busch, Michael P and Reingold, Arthur L and Alter, Miriam J	<a href="#">Hepatology. 2013 March ; 57(3): 881-889. doi:10.1002/hep.26164.</a>	Cross-sectional	2000	2003	Monogamous heterosexual couples	1000	Anti-HCV	Sexual	500	20	Inclusion
PM-U173	Hepatitis C: prevalence, transmission, screening, and prevention.	Metts, Julius and Carmichael, Lesley and Kokor, Winfred and Scharffenberg, Robert	<a href="#">FP Essent. 2014 Dec;427:11-7.</a>										Exclusion
PM-U174	Transfusion-transmissible infections among U.S. military recipients of emergently transfused blood products, June 2006-	Ballard, Timothy and Rohrbeck, Patricia and Kania, Mindy and Johnson, Lucas A	<a href="#">MSMR Vol. 21 No. 11 November 2014</a>										Exclusion
PM-U175	Intimate injection partnerships are at elevated risk of high-risk injecting: a multi-level longitudinal study of HCV-serodiscordant	Morris, Meghan D and Evans, Jennifer and Montgomery, Martha and Yu, Michelle and Briceno, Alya and Page, Kimberly and	<a href="#">PLOS One. 2014 Oct 6:9(10):e109282. doi: 10.1371/journal.pone.0109282</a>										Exclusion
PM-U176	RISK FOR Hepatitis B and C virus transmission in nail salons and barbershops and state regulatory requirements to prevent such	Yang, Jun and Hall, Keri and Nuriddin, Azizah and Woolard, Diane	<a href="#">J Public Health Manag Pract. 2014 Nov-Dec;20(6):E20-20. doi: 10.1177/1084957614537002. Available from: http://jphm.sagepub.com/</a>										Exclusion
PM-U177	Concordance of risk behavior reporting within HCV serodiscordant injecting partnerships of young injection drug users in San Francisco.	Evans, Jennifer L and Morris, Meghan D and Yu, Michelle and Page, Kimberly and Hahn, Judith A	<a href="#">Drug Alcohol Depend. 2014 Sep 1;142:239-44. doi: 10.1016/j.drugalcdep.2014.07.010. Epub 2014 Aug 1.</a>										Exclusion
PM-U178	Injection and non-injection drug use and infectious disease in Baltimore City: differences by race.	Keen, Larry and Khan, Maria and Clifford, Lisa and Harrell, Paul T and Latimer, William W	<a href="#">Addict Behav. 2014 September ; 39(9): 1325-1328.</a>	Prospective cohort	NA	NA	Injecting and non-injecting drug use	482	Anti-HCV	Intravenous drug use	165	87	Inclusion
PM-U179	Hepatitis C virus infection among HIV-positive men who have sex with men: protocol for a systematic review and meta-analysis.	Hagan, Holly and Neurer, Joshua and Jordan, Ashly E and Des Jarlais, Don C and Wu, Jennifer and Dombrowski, Kirk and Khan, Bilal and Braithwaite, Ronald	<a href="#">Syst Rev. 2014 Mar 26;3:31. doi: 10.1186/2046-4053-3-31.</a>										Exclusion
PM-U180	Increasing hepatitis C prevalence and associated risk behaviors among incarcerated young adults.	McNamara, Blair C and Losikoff, Phyllis T and Huguenin, Linda and Macalino, Grace E and Rich, Josiah D and Gregory, Stephen H	<a href="#">J Urban Health. 2014 Apr;91(2):376-82. doi: 10.1007/s11524-013-9807-x.</a>	Cross-sectional	1998	2000	Incarcerated people in the Rhode Island Department of Corrections	68	Anti-HCV	Intravenous drug use	62	36	Inclusion
PM-U181	Low prevalence of hepatitis C co-infection in recently HIV-infected minority men who have sex with men in Los Angeles: a cross-sectional study.	Chew, Kara W and Blum, Martha L and Javanbakht, Marjan and Clare, Laurel E and Bornfleth, Lorelei D and Bolan, Robert and Bhattacharya, Debika and Gorbach,	<a href="#">BMC Infect Dis. 2015 Nov 20;15:538. doi: 10.1186/s12879-015-1279-z.</a>	Cross-sectional	2009	2012	Recently or newly HIV-infected MSM	185	HCV RNA	Sexual	6	3	Inclusion
PM-U182	Incidence of sexually transmitted hepatitis C virus infection in HIV-positive men who have	Hagan, Holly and Jordan, Ashly E and Neurer, Joshua and Cleland, Charles M	<a href="#">AIDS. 2015 Nov;29(17):2335-45.</a>										Exclusion
PM-U183	Factors Associated With Hepatitis C Infection Among HIV-Infected Men Who Have Sex With Men With No Reported Injection Drug Use in	Breskin, Alexander and Drobnik, Ann and Pathela, Preeti and Chan, Christine and Braunstein, Sarah and Bornschlegel,	<a href="#">Sex Transm Dis. 2015 Jul;42(7):382-6. doi: 10.1097/OLQ.0000000000000000.</a>										Exclusion
PM-U184	Assessment of cross-species transmission of hepatitis C virus-related non-primate hepacivirus in a population of humans at high risk of exposure.	Pfaender, Stephanie and Walter, Stephanie and Todt, Daniel and Behrendt, Patrick and Doerrbecker, Julianne and WÄllk, Benno and Engelmann, Michael and Gravemann, Ute and Seltsam, Axel and Steinmann, Joerg and Burbelo, Peter D and Klawonn, Frank and Feige, Karsten and Pietschmann, Thomas and Cavalleri,	<a href="#">J Gen Virol. 2015 Sep;96(9):2636-42. doi: 10.1099/vir.0.000208. Epub 2015 Jun 3.</a>										Exclusion
PM-U185	Drug use, hepatitis C, and service availability: perspectives of incarcerated rural women.	Staton-Tindall, Michele and Webster, J Matthew and Oser, Carrie B and Havens, Jennifer R and Leukefeld, Carl G	<a href="#">Soc Work Public Health. 2015;30(4):385-96. doi: 10.1080/1043861X.2015.1000000.</a>										Exclusion
PM-U186	Increases in hepatitis C virus infection related to injection drug use among persons aged 30 years – Kentucky, Tennessee, Virginia, and West Virginia, 2006–2012.	Zibbell, Jon E and Iqbal, Kashif and Patel, Rajiv C and Suryaprasad, Anil and Sanders, Kathy J and Moore-Moravian, Loretta and Serreccchia, Jamie and Blankenship, Steven and Ward, John W and Holtzman, Deborah and Centers for	<a href="#">MMWR Morb Mortal Wkly Rep. 2015 May 8;64(17):453-8.</a>										Exclusion

PM-U187	Transmission of Hepatitis C Virus From Organ Donors Despite Nucleic Acid Test Screening.	Suryaprasad, A and Basavaraju, S V and Hocevar, S N and Theodoropoulos, N and Zuckerman, R A and Hayden, T and Forbi, J C and Pegues, D and Levine, M and Martin, S I and Kuehnert, M J and Blumberg, E A and Organ Transplantation	Am J Transplant. 2015 Jul;15(7):1827-35. doi: 10.1111/ajt.13283. Epub 2015 May 5.	Prospective cohort	NA	NA	Organ recipients	12	HCV RNA	Organ transplantation	12	6	Inclusion
PM-U188	County-Level Vulnerability Assessment for Rapid Dissemination of HIV or HCV Infections Among Persons Who Inject Drugs, United States.	Van Handel, Michelle M and Rose, Charles E and Hallisey, Elaine J and Kolling, Jessica L and Zibbell, Jon E and Lewis, Brian and Bohm, Michele K and Jones, Christopher M and Flanagan, Barry E and Siddiqi, Azfar-E-Alam and Iqbal, Kashif and Dent, Andrew L and Mermin, Jonathan	J Acquir Immune Defic Syndr. 2016 Nov 1;73(3):323-331.										Exclusion
PM-U189	Increased Hepatitis C Virus (HCV) Detection in Women of Childbearing Age and Potential Risk for Vertical Transmission – United States and Kentucky, 2011–2014.	Koneru, Alaya and Nelson, Noelle and Hariri, Susan and Canary, Lauren and Sanders, Kathy J and Maxwell, Justine F and Huang, Xiaohua and Leake, John A D	Prevention Morbidity and Mortality Weekly Report Weekly / Vol. 65 / No. 28 July 22,										Exclusion
PM-U190	Prevention knowledge, risk behaviours and seroprevalence among nonurban injectors of southwest Connecticut.	Grau, Laurette E and Zhan, Weihai and Heimer, Robert	Drug Alcohol Rev. 2016 September ; 35(5): 628-636.	Prospective cohort	2008	2012	Injecting drug users	462	Anti-HCV	Intravenous drug use	462	193	Inclusion
PM-U191	Transplantation of "high-risk" donor hearts: Implications for infection.	Gaffey, Ann C and Doll, Stacey L and Thomasson, Arwin M and Venkataraman, Chantel and Chen, Carol W and Goldberg, Lee R and Blumberg, Emily A and Acker, Michael A and Stone, Francis and Atluri,	J Thorac Cardiovasc Surg. 2016 Jul;152(1):213-20. doi: 10.1016/j.jtcvs.2015.12.062. Epub 2016 Jan	Prospective cohort	2008	2014	Heart transplant recipients	55	Anti-HCV	Organ transplantation	55	1	Inclusion
PM-U192	Failure to Test and Identify Perinatally Infected Children Born to Hepatitis C Virus-Infected Women.	Kuncio, Danica E and Newbern, E Claire and Johnson, Caroline C and Viner, Kendra M	Clin Infect Dis. 2016 Apr;15(62(8):980-5. doi: 10.1093/cid/ciw026. Epub 2016 Jan 20.	Retrospective cohort	2011	2015	Children born to HCV positive mothers	84	HCV RNA	Mother to child	84	4	Inclusion
PM-U193	Notes from the Field: Hepatitis C Outbreak in a Dialysis Clinic—Tennessee, 2014.	Muleta, Daniel and Kainer, Marion A and Moore-Moravian, Loretta and Wiese, Andrew and Ward, Jennifer and McMaster, Sheila and Nguyen, Duc and Forbi, Joseph C and Mixson-Hayden, Tonya and Collier,	MMWR Morb Mortal Wkly Rep. 2016 Jan 1;64(50-51):1386-7. doi: 10.15585/mmwr.mm64	Retrospective cohort	2003	2012	Hemodialysis patients	62	HCV RNA	Hemodialysis	62	9	Inclusion
PM-U194	A Large Outbreak of Hepatitis C Virus Infections in a Hemodialysis Clinic.	Nguyen, Duc B and Gutowski, Jennifer and Ghiselli, Margherita and Cheng, Tabitha and Bel Hamdounia, Shadia and Suryaprasad, Anil and Xu, Fujie and Moulton-Meissner, Heather and Hayden, Tonya and Forbi, Joseph C and Xia, Guo-	Infect Control Hosp Epidemiol. 2016 Feb;37(2):125-33. doi: 10.1017/ice.2015.247. Epub 2015 Nov 17.	Retrospective cohort	2008	2013	Hemodialysis patients	66	HCV RNA	Hemodialysis	66	26	Inclusion
PM-U195	Hepatitis C Seroprevalence Among HIV-Infected Childbearing Women in New York State in 2006.	Ghazaryan, L and Smith, L and Parker, M and Flanigan, C and Pulver, W and Sullivan, T and Carrascal, A	Matern Child Health J. 2016 Mar;20(3):550-5. doi: 10.1007/s10995-										Exclusion
PM-U196	Increased Risk for Mother-to-Infant Transmission of Hepatitis C Virus Among Medicaid Recipients – Wisconsin, 2011–2015.	Watts, Theresa and Stockman, Lauren and Martin, Justin and Guilfoyle, Sheila and Vergeront, James M	MMWR / October 27, 2017 / Vol. 66 / No. 42										Exclusion
PM-U197	Utilization of increased risk for transmission of infectious disease donor organs in solid organ transplantation: Retrospective analysis of disease transmission and safety.	Irwin, Linda and Kotton, Camille N and Elias, Nahel and Palafox, Julie and Basler, Debra and Shao, Sarah H and Lester, William and Zhang, Xiaofeng and Kimball, Brendan and Trencher, Carrie and	Transpl Infect Dis. 2017 Dec;19(6). doi: 10.1111/tid.12791. Epub 2017 Nov 3.	Retrospective cohort	2011	2016	Organ transplant recipients	257	HCV RNA	Organ transplantation	257	0	Inclusion
PM-U198	Long-term outcomes and transmission rates in hepatitis C virus-positive donor to hepatitis C virus-negative kidney transplant recipients: Analysis of United States national data.	Gupta, Gaurav and Kang, Le and Yu, Jonathan W and Limkemann, Ashley J and Garcia, Victoria and Bandyopadhyay, Dipankar and Kumar, Dhiren and Fattah, Hasan and Levy, Marlon and Cotterell, Adrian H and Sharma, Amit and Bhati, Chandra and Reichman, Trevor and King,	Clin Transplant. 2017 Oct;31(10). doi: 10.1111/ctr.13055. Epub 2017 Aug 19	Retrospective cohort	1994	2014	Organ transplant recipients	421	Anti-HCV	Organ transplantation	421	64	Inclusion

PM-U199	Mechanisms and Prevention of Vertical Transmission in Chronic Viral Hepatitis.	Mavilia, Marianna G and Wu, George Y	<a href="#">J Clin Transl Hepatol. 2017 Jun 28(5):119-129. doi: 10.1111/jctb.13303</a>										Exclusion
PM-U200	Trends in HIV and HCV Risk Behaviors and Prevalent Infection Among People Who Inject Drugs in New York City, 2005–2012.	Neagius, Alan and Reilly, Kathleen H and Jenness, Samuel M and Hagan, Holly and Wendel, Travis and Gelpi-Acosta, Camila	<a href="#">J Acquir Immune Defic Syndr. 2017 Jul 1;75 Suppl 3:S325-S332.</a>										Exclusion
PM-U201	Risk factors for hepatitis C seropositivity among young people who inject drugs in New York City: Implications for prevention.	Eckhardt, Benjamin and Winkelstein, Emily R and Shu, Marla A and Carden, Michael R and McKnight, Courtney and Des Jarlais, Don C and Glesby, Marshall J and Marks, Kristen and Edlin, Brian R	<a href="#">PLOS One. 2017 May 19;12(5):e0177341. doi: 10.1371/journal.pone.0177341. eCollection 2017</a>	Cross-sectional	2005	2012	Injecting drug users	714	Anti-HCV	Intravenous drug use	714	343	Inclusion
PM-U202	State HCV Incidence and Policies Related to HCV Preventive and Treatment Services for Persons Who Inject Drugs – United States.	Campbell, Cecily A and Canary, Lauren and Smith, Nicole and Teshale, Eyasu and Ryerson, A Blythe and Ward, John W	<a href="#">MMWR Morb Mortal Wkly Rep. 2017 May 12;66(18):465-469. doi: 10.15585/mmwr.mm6618a1</a>										Exclusion
PM-U203	Hepatitis C Virus Infections Associated with Unsafe Injection Practices at a Pain Management Clinic, Michigan, 2014–2015.	Coyle, Joseph R and Goerge, Emily and Kacynski, Kathryn and Rodgers, Ruby and Raines, Patricia and Vail, Linda S and	<a href="#">Pain Med. 2017 Feb 1;18(2):322-329. doi: 10.1093/pain/pnw157</a>										Exclusion
PM-U204	A model to estimate the probability of human immunodeficiency virus and hepatitis C infection despite negative nucleic acid testing among increased-risk organ donors.	Annambhotla, Pallavi D and Gurbaxani, Brian M and Kuehnert, Matthew J and Basavaraju, Sridhar V	<a href="#">Transpl Infect Dis. 2017 Apr;19(2). doi: 10.1111/tid.12676. Epub 2017 Mar 27</a>										Exclusion
PM-U205	Shedding of Hepatitis C Virus Into the Rectum of HIV-infected Men Who Have Sex With Men.	Foster, Andrew L and Gaisa, Michael M and Hijdra, Rosanne M and Turner, Samuel S and Morey, Tristan J and Jacobson, Karen B and Fierer, Daniel S	<a href="#">Clin Infect Dis. 2017 Feb 1;64(3):284-288. doi: 10.1093/cid/ciw740</a>										Exclusion
PM-U206	Hepatitis C virus transmission in a skilled nursing facility, North Dakota, 2013.	Calles, Dinorah L and Collier, Melissa G and Khudyakov, Yury and Mixson-Hayden, Tonya and VanderBusch, Lindsey and Weninger, Sarah and Miller, Tracy K and North Dakota Hepatitis C Virus	<a href="#">Am J Infect Control. 2017 Feb 1;45(2):126-132. doi: 10.1016/j.ajic.2016.08.013. Epub 2016 Nov 2</a>										Exclusion
PM-U207	Prediction of HCV vertical transmission: what factors should be optimized using data mining computational analysis.	Elrakeb, Abd and Amer, Mohamed and El-Hawary, Bahaa and Salah, Altaher and Bhagavathula, Akshaya S and Alboraei, M	<a href="#">Liver Int. 2017 Apr;37(4):529-533. doi: 10.1111/liv.13146</a>										Exclusion
PM-U208	Hepatitis C Virus Screening Among Children Exposed During Pregnancy.	Chappell, Catherine A and Hillier, Sharon L and Crowe, David and Meyn, Leslie A and Bogen, Debra L and Krans, Elizabeth E	<a href="#">Pediatrics. 2018 Jun;141(6). pii: e20173273. doi: 10.1542/peds.2017-3273</a>	Retrospective cohort	2006	2014	Infants born to HCV positive mothers	83	HCV RNA	Mother to child	83	7	Inclusion
PM-U209	Potential geographic “hotspots” for drug-injection related transmission of HIV and HCV and for initiation into injecting drug use in New York City, 2011–2015, with implications	Des Jarlais, D C and Cooper, H L F and Arasteh, K and Feeleymer, J and McKnight, C and Ross, Z	<a href="#">PLOS One. 2018 Mar 29;13(3):e0194799. doi: 10.1371/journal.pone.0194799. eCollection 2018 Mar</a>	Cross-sectional	2011	2015	Injecting drug users seeking care	910	Anti-HCV	Intravenous drug use	910	564	Inclusion
PM-U210	Correlates of Injection Drug Use Among Rural Appalachian Women.	Staton, Michele and Ciciurkaite, Gabriele and Havens, Jennifer and Tillson, Martha and Leukefeld, Carl and Webster, Matthew and Oser, Carrie and Peteet, Bridgette	<a href="#">J Rural Health. 2018 Dec;34(4):31-41. doi: 10.1111/jrh.12256. Epub 2017 Jul 7</a>	Cross-sectional	2012	2015	Incarcerated Appalachian women	399	Anti-HCV	Intravenous drug use	301	207	Inclusion
PM-U211	Missed opportunities for prevention and treatment of hepatitis C among persons with	Millman, Alexander J and Luo, Qingwei and Nelson, Noelle P and Vellozzi, Claudia and	<a href="#">AIDS Care. 2019 Sep 23:1-9. doi: 10.1080/09540121.2019.1663000</a>										Exclusion
PM-U212	Screening HIV-positive men who have sex with men for hepatitis C re-infection risk: is a single question on condom-use enough? A sensitivity analysis.	KÄ¼nzler-Heule, Patrizia and Engberg, Sandra and Battegay, Manuel and Schmidt, Axel J and Fierz, Katharina and Nguyen, Huyen and Kocher, Agnes and NÄ¶stlinger, Christiana and Hampel, Benjamin and STÄ¶ckle, Marcel and BÄ©guelin, Charles and Delaloye, Julie and Schmid, Patrick and Flepp, Markus and Rougement, Mathieu and Braun, Dominique Laurent and Fehr, Jan and Nicca, Dunja and Swiss	<a href="#">BMC Infect Dis. 2019 Sep 18;19(1):821. doi: 10.1186/s12879-019-4456-7</a>										Exclusion

PM-U213	Age-Related Differences in Past or Present Hepatitis C Virus Infection Among People Who Inject Drugs: National Human Immunodeficiency Virus Behavioral Surveillance, 8 US Cities, 2015.	Abara, Winston E and Trujillo, Lindsay and Broz, Dita and Finlayson, Teresa and Teshale, Eyasu and Paz-Bailey, Gabriela and Glick, Sara and Al-Tayyib, Alia A and Robinson, William T and Masiello-Schuette, Stephanie and Sey, Ekow K and	<a href="https://doi.org/10.1093/infdis/iiz142">J Infect Dis. 2019 Jul 2;220(3):377-385. doi: 10.1093/infdis/iiz142</a>	Cross-sectional	2015	2015	Injecting drug users	4094	Anti-HCV	Intravenous drug use	4094	2258	Inclusion
PM-U213	Age-Related Differences in Past or Present Hepatitis C Virus Infection Among People Who Inject Drugs: National Human Immunodeficiency Virus Behavioral Surveillance, 8 US Cities, 2015.	Abara, Winston E and Trujillo, Lindsay and Broz, Dita and Finlayson, Teresa and Teshale, Eyasu and Paz-Bailey, Gabriela and Glick, Sara and Al-Tayyib, Alia A and Robinson, William T and Masiello-Schuette, Stephanie and Sey, Ekow K and	<a href="https://doi.org/10.1093/infdis/iiz142">J Infect Dis. 2019 Jul 2;220(3):377-385. doi: 10.1093/infdis/iiz142</a>	Cross-sectional	2015	2015	Injecting drug users	4094	Anti-HCV	Needle sharing	1356	832	Inclusion
PM-U213	Age-Related Differences in Past or Present Hepatitis C Virus Infection Among People Who Inject Drugs: National Human Immunodeficiency Virus Behavioral Surveillance, 8 US Cities, 2015.	Abara, Winston E and Trujillo, Lindsay and Broz, Dita and Finlayson, Teresa and Teshale, Eyasu and Paz-Bailey, Gabriela and Glick, Sara and Al-Tayyib, Alia A and Robinson, William T and Masiello-Schuette, Stephanie and Sey, Ekow K and	<a href="https://doi.org/10.1093/infdis/iiz142">J Infect Dis. 2019 Jul 2;220(3):377-385. doi: 10.1093/infdis/iiz142</a>	Cross-sectional	2015	2015	Injecting drug users	4094	Anti-HCV	Sexual	1085	530	Inclusion
PM-U214	Evidence-based and guideline-concurrent responses to narratives deferring HCV treatment among people who inject drugs.	Childs, Ellen and Assoumou, Sabrina A and Biello, Katie B and Biancarelli, Dea L and Drainoni, Mari-Lynn and Edeza, Alberto and Salhaney, Peter and Mimiaga,	<a href="https://doi.org/10.1186/s12954-019-0286-6">Harm Reduct J. 2019 Feb 11;16(1):14. doi: 10.1186/s12954-019-0286-6.</a>										Exclusion

No.	Information of paper			Study design	Study Period		Study subjects		Factor	subjects who has factor	
	Title	Description	Details		From	To	Subjects	Total N	Outcome	N	No. who was infected
IC-F12	血液Fibrinogen製剤によるHCV感染の検討	長谷川 泉 and 田中 靖人 and 折戸 悅朗 and 小笠 貴士 and 藤原 圭 and 桜井 万弓 and 鈴木 誠司 and 加藤 孝宣 and 大野 智義 and 上田 龍三 and 溝上 雅史	肝臓 (0451-4203) 44巻 Suppl. 2 Page A430 (2003. 09)	横断研究	1986	1987	Fibitinogen製剤が投与された患者	13	HCV-RNA	Fibrinogen製剤	13
IC-F14	非加熱血液凝固因子製剤の投与を疑われた患者のC型肝炎ウイルススクリーニング検査	豊田 尚子 and 梶村 克成 and 高木 基成 and 佐川 公矯	日本輸血学会雑誌 (0546-1448) 48巻6号 Page496-501 (2002. 12)	横断研究			非加熱血液凝固因子製剤の投与が疑われた患者	19	HCV抗体	非加熱血液凝固因子製剤	
IC-F15	フィブリノゲン製剤投与を受けた造血器腫瘍患者におけるC型肝炎ウイルスのgenotype	和泉 透 and 室井 一男 and 坂田 洋一 and 雨宮 洋一 and 小澤 敬也	日本輸血学会雑誌 (0546-1448) 45巻2号 Page236 (1999. 04)	横断研究			HCV-RNA陽性患者		HCV-RNA		
IC-F16	フィブリノゲン製剤投与を受けた急性白血病患者におけるC型及びG型肝炎ウイルス感染について	和泉 透	日本輸血学会雑誌 (0546-1448) 44巻2号 Page155 (1998. 04)	横断研究	1992	No mention	ALL、APL患者	38	HCV-RNA	Fibrinogen製剤投与	12 11
IC-F18	フィブリノーゲン製剤投与とC型肝炎ウイルス感染	和泉 透	日本輸血学会雑誌 (0546-1448) 43巻2号 Page198 (1997. 04)	横断研究	1992	No mention	ALL患者	20	HCV-RNA	Fibrinogen製剤投与歴	2
IC-F19	血液凝固因子製剤による非血友病HIV/HCV感染者全国調査成績	白幡 聰	日本未熟児新生児学会雑誌 (1347-8540) 7巻3号 Page480 (1995. 10)	横断研究							
IC-F20	フィブリノーゲン注による出産後のC型肝炎の集団発生	清野 義郎 and 松川 昌勝 and 佐々木 博海	市立三沢病院医誌 (0917-2521) 1巻1号 Page2-6 (1991. 10)	症例報告					HCV抗体	フィブリノゲン製剤	9
IC-F21	血友病及びその類縁疾患患者におけるC型肝炎ウイルス(HCV)抗体の検出	石本 盛治 and 藤村 吉博 and 福井 弘	日本輸血学会雑誌 (0546-1448) 37巻1号 Page1-6 (1991. 02)	横断研究			血友病及びその新縁疾患患者	167	HCV抗体	血液凝固因子製剤平均投与量	
IC-F22	熱処理フィブリノーゲン製剤によると思われる非A非B型肝炎の1例	堀之内 寿人	日本消化器病学会雑誌 (0446-6586) 85巻8号 Page1618 (1988. 08)	症例報告						熱処理フィブリノーゲン製剤	1
IC-F23	加熱処理フィブリノーゲン製剤(フィブリノーゲンHT(ミドリ))による非A非B型肝炎の5例	井上 憲昭	日本内科学会雑誌 (0021-5384) 78巻5号 Page726 (1989. 05)	症例報告						加熱処理フィブリノーゲン製剤	5 5

ID	Information of paper			Study design	Study Period		Study subjects		Outcome	Factor	subjects who has factor			
	Title	Description	Details		From	To	Country	Subjects	Total N		N	No. who was infected		
PM-F001	Correlation of Serum Soluble Fibrinogen-Like Protein 2 with Soluble FAS Ligand and Interferon Gamma in Egyptian Hepatitis C Virus-Infected Patients and Hepatocellular Carcinoma Patients.	El-Mesery, Mohamed and El-Mowafy, Mohammed and Elgaml, Abdelaziz and Youssef,	J Interferon Cytokine Res. 2017 Aug;37(8):342-347. doi: 10.1089/jir.2016.0128.										Exclusion	
PM-F002	Safety of fibrinogen concentrate: analysis of more than 27 years of pharmacovigilance data.	Solomon, C and Gröner, A and Ye, J and Pendrak, I	<a href="#">Thromb Haemost. 2015 Apr;113(4):759-71. doi: 10.1160/TH14-06-0514.</a>	Review of case reports	1986	2013	Worldwide	Patients with fibrinogen deficiency	106	Hepatitis C	Fibrinogen concentrate	106	15	Inclusion
PM-F003	Treatment of haemophilia patients in East Germany prior to and after reunification in 1990.	Lenk, Harald	Thromb Res. 2014 Nov;134 Suppl 1:S57-60.											Exclusion
PM-F004	[Historical consideration of the widespread infection of the hepatitis C virus in Japan and use of a fishbone diagram to investigate the cause].	Haga, Haruko and Fukushima, Noriko	<a href="#">Yakushigaku Zasshi. 2011;46(1):21-8.</a>											Duplicate
PM-F005	Estimating the pathogen safety of manufactured human plasma products: application to fibrin sealants and to thrombin.	Horowitz, Bernard and Busch, Michael	Transfusion. 2008 Aug;48(8):1739-53. doi: 10.1111/j.1537-											Exclusion
PM-F006	Risk of authoritarianism: fibrinogen-transmitted hepatitis C in Japan.	Yasunaga, Hideo	<a href="#">Lancet. 2007 Dec 15;370(9604):2063-7.</a>											Exclusion
PM-F007	[A preventive strategy for hepatitis C infection in Kobe City. Official announcement of medical facilities with past fibrinogen administration].	Shibutani, Yuhei	Nihon Koshu Eisei Zasshi. 2006 Jun;53(6):432-6.											Duplicate
PM-F008	Successful use of fibrin glue during 2 years of surgery at a university medical center.	Spotnitz, W D and Dalton, M S and Baker, J W and Nolan, S P	<a href="#">Am Surg. 1989 Mar;55(3):166-8.</a>	Cross-sectional	1985	1986	USA	Patients undergoing surgery	413	Non-A non B hepatitis	Fibrin glue	413	0	Inclusion
PM-F009	Randomized clinical trial of fibrin sealant in patients undergoing resternotomy or reoperation after cardiac operations. A multicenter study.	Rousou, J and Levitsky, S and Gonzalez-Lavin, L and Cosgrove, D and	J Thorac Cardiovasc Surg. 1989 Feb;97(2):194-203.	Randomized clinical trial	NA	NA	USA	Patients in USA	33	Non-A non B hepatitis	Fibrinogen concentrate	20	0	Inclusion
PM-F010	A simple autologous fibrinogen glue for otologic	Moretz, W H and Shea, J	<a href="#">Otolaryngol Head Neck</a>											Exclusion
PM-F011	[Clinical experience with fibrin gluing in general and thoracic surgery].	Waclawiczek, H W and Boeckl, O	Zentralbl Chir. 1986;111(1):16-24.											Exclusion
PM-F012	Cryoprecipitate-topical thrombin glue. Initial experience in patients undergoing cardiac operations.	Lupinetti, F M and Stoney, W S and Alford, W C and Burrus, G R and	<a href="#">J Thorac Cardiovasc Surg. 1985 Oct;90(4):502-5.</a>	Cross-sectional	1984	1984	USA	Patients undergoing cardiac surgery	26	Non-A non B hepatitis	Fibrin glue	26	0	Inclusion
PM-F013	Acute fulminant non-A, non-B hepatitis leading to chronic active hepatitis after treatment with	Lee, C A and Kernoff, P B and Karayannis, P and	Gut. 1985 Jun;26(6):639-41.	Case Report	NA	NA	England	Hemophilia Patient	1	Non-A non B hepatitis	Fibrinogen concentrate	1	1	Inclusion
PM-F014	[The use of fibrin glue in neurosurgical operations].	Fukumoto, T and Matsushima, Y and	<a href="#">No Shinkei Geka. 1985 Apr;13(4):367-73.</a>	Case report	1982	1983	Japan	Neurosurgical patients	22	Non-A non B hepatitis	Fibrin glue	22	0	Inclusion
PM-F015	Hepatitis B surface antigen (HBsAg)-fibrinogen interaction.	Vanstapel, M J and de Wolf-Peeters, C and de	Liver. 1984 Apr;4(2):148-55.											Exclusion

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PM-F016	Post-transfusion hepatitis and its association with pooled clotting factors.	Sugg, U and Frösner, G G and Lissner, R and Stunkat, R and	<a href="#">Eur J Clin Microbiol. 1983 Apr;2(2):135-40.</a>	Prospective cohort	1979	1979	Germany	Patients undergoing open heart surgery	97	Non-A non B hepatitis	Fibrinogen concentrate	12	12	Inclusion
PM-F017	Prospective study of posttransfusion hepatitis in cardiac surgery patients receiving only blood or also blood products.	Tremolada, F and Chiappetta, F and Noventa, F and Valfrà ,	<a href="#">Vox Sang. 1983;44(1):25-30.</a>	Prospective cohort	1980	1981	Italy	open-heart surgery patients	297	Hepatitis	Fibrinogen concentrate	18	4	Inclusion
PM-F018	Factor VIII cryoprecipitate and hepatitis risk.	Gabra, G S and	<a href="#">Lancet. 1982 Nov</a>											Exclusion
PM-F019	[Risk of hepatitis in fibrin adhesion (author's transl)].	Panis, R and Scheele, J	<a href="#">Laryngol Rhinol Otol</a>											Exclusion
PM-F020	Viruslike particles in a plasma fraction (fibrinogen) and in the circulation of apparently healthy blood donors capable of inducing non-A/non-B hepatitis in humans and chimpanzees.	Yoshizawa, H and Akahane, Y and Itoh, Y and Iwakiri, S and Kitajima, K and Morita,	<a href="#">Gastroenterology. 1980 Sep;79(3):512-20.</a>	Case report	NA	NA	Japan	Patients receiving purified fibrinogen preparation	2	Non-A non B hepatitis	Fibrinogen concentrate	2	2	Inclusion
PM-F021	Reducing hepatitis transmission from 125I-fibrinogen.	Jackson, G L	<a href="#">Pa Med. 1979</a>											Exclusion
PM-F022	[Hepatitis risk of human plasma-fraction concentrates of pooled plasma (author's transl)].	Ohlmeier, H and Dahmen, E and Hoppe, I	<a href="#">Dtsch Med Wochenschr. 1978 Oct</a>											Exclusion
PM-F023	Fibrinogen--is the benefit worth the risk?	Bove, J R	<a href="#">Transfusion. 1978 Mar</a>											Exclusion
PM-F024	Hepatitis following the use of fibrinogen.	Shaw, A E and Schiff, P	<a href="#">Med J Aust. 1971 Dec</a>											Exclusion
PM-F025	Post-transfusion hepatitis: a review and prospectus.	Polesky, H F	<a href="#">Hum Pathol. 1971 Sep;2(3):441-51.</a>	Case Review	1963	1970	USA	Hepatitis Patients	61	Hepatitis	Fibrinogen concentrate	23		Inclusion
PM-F026	Fibrinogen and hepatitis.	Croft, D	<a href="#">N Engl J Med. 1971 May</a>											Exclusion
PM-F027	Tagged fibrinogen and hepatitis.	Pendergrass, H P and	<a href="#">N Engl J Med. 1971 Apr</a>											Exclusion
PM-F028	Tagged fibrinogen and hepatitis.	Silberstein, E B	<a href="#">N Engl J Med. 1971 Feb</a>											Exclusion
PM-F029	[Occurrence of serum hepatitis following the administration of Cohn's fraction I or fibrinogen and antihemophilic globulin (AHG) respectively].	FĂjbryovĂj, L and Hrubisko, M	<a href="#">Vnitr Lek. 1970 Feb;16(2):123-6.</a>											Exclusion
PM-F030	Fibrinogen-transmitted hepatitis in the surgical patient.	Boeve, N R and Winterscheid, L C and Merendino, K A	<a href="#">Ann Surg. 1969 Nov;170(5):833-8</a>	Prospective cohort	NA	NA	USA	Patients undergoing open heart surgery	72	Hepatitis	Fibrinogen concentrate	32	10	Inclusion
PM-F031	[Relations among blood sedimentation rate, alpha-2 and gamma globulins and fibrinogen in acute viral hepatitis, cirrhosis and chronic hepatitis].	Nuhoglu, A and BolĂ¼koglu, M A and AkĂ¼ziz, O and Goksel, V	<a href="#">Rev Med Moyen Orient. 1967 May-Jun;24(3):220-5.</a>											Exclusion
PM-F032	Fibrinogen-transmitted hepatitis; a controlled study.	Mainwaring, R L and Brueckner, G G	<a href="#">JAMA. 1966 Feb 7;195(6):437-41.</a>	Case report	NA	NA	USA	Patients who received fibrinogen for bleeding following surgery or delivery	9	Hepatitis	Fibrinogen concentrate	9	5	Inclusion
PM-F033	TRANSMISSION OF HEPATITIS BY BLOOD AND BLOOD PRODUCTS.	MAYCOCK, W D	<a href="#">Proc R Soc Med. 1964 Nov;57:1077-80.</a>											Exclusion
PM-F034	Fibrinogen-transmitted hepatitis.	CRONBERG, S and BELFRAGE, S and NILSSON, I M	<a href="#">Lancet. 1963 May 4;1(7288):967-9.</a>	Case report	1957	1961	Sweden	Patients who received fibrinogen for bleeding following surgery or childbirth	15	Hepatitis	Fibrinogen concentrate		15	Inclusion
PM-F035	Homologous serum hepatitis following the administration of fibrinogen.	ZAINO, E C	<a href="#">Obstet Gynecol. 1960 Mar;15:404-5.</a>	Case report	NA	NA	USA	Pregnant Women	2	Hepatitis	Fibrinogen concentrate		2	Inclusion

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PM-F036	Hepatitis following therapy for afibrinogenemia; report of three cases.	RETTEW, P L and MEHARG, J G and BRUBAKER, E R	<a href="#">Obstet Gynecol. 1957 Aug;10(2):169-71.</a>	Case report	1954	1956	USA	Women undergoing obstetric procedure	3	Hepatitis	Fibrinogen concentrate		3	Inclusion
PM-F037	Serum hepatitis: occurrence following the use of human fibrinogen.	SKINNER, J S	Mo Med. 1957 Aug;54(8):740-4.	Cross-section	1954	1956	USA	Hepatitis Patients	17	Hepatitis	Fibrinogen concentrate	17	6	Inclusion
PM-F038	[Age-dependant and sexually dualistic behavior of fibrinogen in pneumonia and in epidemic hepatitis].	SCHULZ, F H and KIRSCH, K	<a href="#">Z Altersforsch. 1957 Jul;10(4):318-24.</a>											Exclusion
GR-F001	National Advisory Committee on Immunization (NACI). Statement on safety of immune globulin preparations		<a href="#">Can Dis Wkly Rep. 1988 Jun 18;14(24):103.</a>											Exclusion
GR-F002	FEIBA safety profile in multiple modes of clinical and home-therapy application	Luu H, Ewenstein B.	<a href="#">Haemophilia. 2004 Sep;10 Suppl 2:10-6.</a>											Exclusion
GR-F003	Reducing the risk of infection from plasma products: specific preventative strategies	Burnouf T, Radosevich M.	Blood Reviews (2000) 14, 94-110											Exclusion
GR-F004	The Safety of Plasma-Derived Versus Recombinant Concentrates	Mannucci P	Haemophilia. 2003											Exclusion
GR-F005	Viral safety evaluation of plasma-derived therapeutic products	Farshid, M	Dev Biol (Basel) 118: 11-5											Exclusion
GR-F006	The epidemiology of virus transmission by plasma derivatives: clinical studies verifying the lack of transmission of hepatitis B and C viruses and HIV type	Tabor E	<a href="#">Transfusion. 1999 Nov-Dec;39(11-12):1160-8.</a>											Exclusion
GR-F007	Specific inactivation of viruses which can potentially contaminate blood products	Horowitz B.	Dev Biol Stand. 1991;75:43-52.											Exclusion
GR-F008	Determination of adequate moisture content for efficient dry-heat viral inactivation in lyophilized factor VIII by loss on drying and by near infrared	Savage M, Torres J, Franks L, Masecar B, Hotta J.	<a href="#">Biologicals. 1998 Jun;26(2):119-24.</a>											Exclusion
GR-F009	Inactivation of viruses in labile blood derivatives	B. HOROWITZM, . E. WIEBE,A . LIPPINA. ND	Transfusion. 1985 Nov-Dec;25(6):516-22.											Exclusion
GR-F010	Viral safety of solvent-detergent treated blood	Horowitz B, Prince AM,	<a href="#">Dev Biol Stand. 1993;81:147-61.</a>											Exclusion
GR-F011	Virus safety of solvent/detergent-treated antihemophilic factor concentrate.	Horowitz MS1, Rooks C, Horowitz B, Hilgartner	Lancet. 1988 Jul 23;2(8604):186-9.											Exclusion
GR-F012	Hepatitis C infection in children with hemophilia A and B.	Blanchette VS, Vorstman E, Shore A, Wang E, Petric M, Jett BW, Alter HJ.	<a href="#">Blood. 1991 Jul 15;78(2):23</a>	Prospective cohort	1987	1989	Canada	Haemophilic children	22	Hepatitis C	Other clotting factors	25	23	Inclusion
GR-F013	Hepatitis C viral RNA in clotting factor concentrates and the development of hepatitis in recipients	Makris M, Garson JA, Ring CJ, Tuke PW,	Blood. 1993 Apr 1;81(7):1898-902.											Exclusion
GR-F014	Blood protein derivative viral safety: observations and analysis.	B. Horowitz	<a href="#">Yale J Biol Med. 1990 Sep-Oct; 63(5): 361-369</a>											Exclusion
GR-F015	Immunoglobulin transmits hepatitis C. True or false?	Piazza M.	Hepatology. 1999											Exclusion
GR-F016	The use of purified clotting factor concentrates in hemophilia. Influence of viral safety, cost, and supply on therapy.	Pierce GF, Lusher JM, Brownstein AP, Goldsmith JC, Kessler	<a href="#">JAMA. 1989 Jun 16;261(23):3434-8.</a>											Exclusion

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GR-F017	Sterilisation of hepatitis and HTLV-III viruses by exposure to tri(n-butyl)phosphate and sodium cholate	Prince AM, Horowitz B, Brotman B.	Lancet. 1986 Mar 29;1(8483):706-10.													Exclusion
GR-F018	The development of virus-free labile blood derivatives-a review.	Prince AM, Horowitz B, Horowitz MS, Zang E.	<a href="#">Eur J Epidemiol. 1987 Jun;3(2):103-18.</a>													Exclusion
GR-F019	Guidelines on viral inactivation and removal procedures intended to assure the viral safety of human blood plasma products	Horowitz B, Minor P, Morgenthaler JJ, Burnouf T, McIntosh R, Padilla A, Thorpe R, van Aken WG;	WHO Technical Report, Series No. 924, 2004													Exclusion
GR-F020	Transmission of non-A, non-B hepatitis by heat-treated factor VIII concentrate.	Colombo M, Mannucci PM, Carnelli V, Savidge GF, Gazengel C, Schimpf K.	<a href="#">Lancet. 1985 Jul 6;2(8445)</a>	Prospective cohort	1982	1984	Europe	Patients with haemophilia A who never received blood or blood products	13	Non-A non B hepatitis	Other clotting factors	13	11	Inclusion		
GR-F021	Prevalence of hepatitis C virus in plasma pools and the effectiveness of cold ethanol fractionation	Scheiblauer H1, Nübling M, Willkommen H, Löwer	Clin Ther. 1996;18 Suppl B:59-70.													Exclusion
GR-F022	Inactivation of viruses in labile blood derivatives. II. Physical methods.	Horowitz B, Wiebe ME, Lippin A, Vandersande J, Stryker MH.	<a href="#">Transfusion. 1985 Nov-Dec;25(6):523-7.</a>													Exclusion
GR-F023	RISK OF NON-A, NON-B HEPATITIS FROM INTRAVENOUS IMMUNOGLOBULIN	Walterspiel Juan N. M.D.; Finlayson, J. S. P.	The Pediatric Infectious Disease Journal: January													Exclusion
GR-F024	Serum and serum substitutes: virus safety by inactivation or removal.	Willkommen H, Scheiblauer H, Löwer J.	<a href="#">Dev Biol Stand. 1999;99:131-8.</a>													Exclusion
GR-F025	Detection and characterization of hepatitis C virus RNA in immune globulins	Yu, M. Y., B. L. Mason, et al.	Transfusion 34(7): 596-602.													Exclusion
RF-F001	Hepatitis and haemophilia therapy in Australia.	Rickard KA, Batey RG, Dority P, Johnson S,	<a href="#">Lancet. 1982 Jul 17;2(8290)</a>	Cross-sectional	1977	1981	Australia	Haemophilic patients	243	Non-A non B hepatitis	Fibrinogen concentrate	243	66	Inclusion		
RF-F002	Gyouko inshi seizai to jutsugo kanen no hassei nitsuite. [Plasma-derived coagulation factors and postoperative hepatitis.]	Yokoi Y, Mizuno A, Sudo K et al.	Jpn J Transfus Med 1984; 30: 370-71.	Case report	1981	1981	Japan	Patients undergoing cardiac surgery	83	Non-A non B hepatitis	Fibrinogen concentrate	14	8	Inclusion		
RF-F003	Kanetsu shori fibrinogen seizai niyoru hi A hi B gata kanen no go rei. [Five cases of non-A non-B hepatitis due to heated fibrinogen concentrate.]	Inoue N, Inoue A, Komatsu O, et al.	J Jpn Soc Intern Med 1989; 78: 726	Case report	NA	NA	Japan	Women undergoing obstetric procedure	5	Non-A non B hepatitis	Fibrinogen concentrate			5	Inclusion	
RF-F004	Ketsueki fibrinogen seizai niyoru HCV kansen no kentou. [HCV infection due to fibrinogen concentrate.]	Hasegawa I, Tanaka Y, Orito E, et al.	Kanzo 2003; 44 (suppl 2): A430	Case report	1986	1987	Japan	Patients treated with heated and unheated fibrinogen	13	Hepatitis C	Fibrinogen concentrate			13	Inclusion	
RF-F005	Non-A non-B hepatitis occurring in agammaglobulinaemic patients after intravenous immunoglobulin	A.M. L Lever, D Brown, A.D. B Webster, H.C Thomas	<a href="#">Volume 324, Issue 8411, 10 November 1984, Pages 1062-1064</a>	Cross-over trial	NA	NA	England	Patients with hypogammaglobulinaemia	12	Non-A non B hepatitis	Intravenous Immunoglobulin	12	1	Inclusion		

ID	Information of paper			Study Period	Study subjects			Blood product information		subjects who has factor	Abstract	
	Title	Description	Details	Study design	Subjects	Total N	Outcome	Factor	Deactivation	N	No.who was	
Animal-01	Transmission of non-A non-B hepatitis to chimpanzees by factor-IX concentrates after fatal complications in patients with chronic liver disease.	Wyke RJ and Tsiquaye KN and Thornton A and White Y and Portmann B and Das PK and Zuckerman AJ and Williams R	Lancet (London, England), 1979	Experimental	Chimpanzee	3	Non-A Non-B	Factor-IX concentrate (1500 units)	NA	2	2	6 cases of non-A non-B hepatitis which followed administration of four different batches of concentrates of coagulation factor IX from commercial and non-commercial sources are described. Of 17 patients who received the concentrate on account of chronic liver disease, 4 developed hepatitis, and in 3 of these the illness proved fatal. The incubation periods ranged from 42 to 103 days (mean 65 days). 3 chimpanzees were inoculated with concentrate from the same batch used on the above patients, a further commercial batch upon which no adverse reactions had been reported, and plasma from a known non-A non-B carrier. All developed hepatitis after 10 weeks' incubation. Liver biopsy when serum-aminotransferase was at its highest level showed features consistent with acute hepatitis. As in the patients, viral markers for hepatitis A and B, cytomegalovirus, and Epstein-Barr virus were unchanged.
Animal-01	Transmission of non-A non-B hepatitis to chimpanzees by factor-IX concentrates after fatal complications in patients with chronic liver disease.	Wyke RJ and Tsiquaye KN and Thornton A and White Y and Portmann B and Das PK and Zuckerman AJ and Williams R	Lancet (London, England), 1979	Experimental	Chimpanzee	3	Non-A Non-B	Plasma (NANBH carrier) (2ml)	NA	1	1	6 cases of non-A non-B hepatitis which followed administration of four different batches of concentrates of coagulation factor IX from commercial and non-commercial sources are described. Of 17 patients who received the concentrate on account of chronic liver disease, 4 developed hepatitis, and in 3 of these the illness proved fatal. The incubation periods ranged from 42 to 103 days (mean 65 days). 3 chimpanzees were inoculated with concentrate from the same batch used on the above patients, a further commercial batch upon which no adverse reactions had been reported, and plasma from a known non-A non-B carrier. All developed hepatitis after 10 weeks' incubation. Liver biopsy when serum-aminotransferase was at its highest level showed features consistent with acute hepatitis. As in the patients, viral markers for hepatitis A and B, cytomegalovirus, and Epstein-Barr virus were unchanged.
Animal-02	Viruslike particles in a plasma fraction (fibrinogen) and in the circulation of apparently healthy blood donors capable of inducing non-A/non-B hepatitis in humans and chimpanzees.	Yoshizawa H and Akahane Y and Itoh Y and Iwakiri S and Kitajima K and Morita M and Tanaka A and Nojiri T and Shimizu M and Miyakawa Y and Mayumi M	Gastroenterology. 1980 Sep;79(3):512-20.	Experimental	Chimpanzee	4	Non-A Non-B (Virus-like particles)	Fibrinogen	NA	4	4	Two patients who had received a fibrinogen preparation contracted hepatitis of non-A/non-B etiology 3 and 8 wk after the injection. A chimpanzee inoculated with the same preparation developed hepatitis 11 wk later, with an increase in SGPT and a liver pathology compatible with acute viral hepatitis. His preacute serum containing the presumptive etiologic agent induced hepatitis in another chimpanzee. Electron microscopic observation of the liver of these chimpanzees biopsied during preacute and acute stages revealed peculiar tubular structures composed of two unit membranes with electron-opaque material in between. Using the serum obtained from infected chimpanzees at convalescence as an antibody reagent, viruslike particles were identified in the fibrinogen preparation by immune electron microscopy. When the serum of 100 apparently healthy blood donors with SGPT value of 80 Karmen units/ml or higher was tested for viruslike particles, eight were found to be positive. Furthermore, one of these sera, when a 5-ml amount was injected into each of two chimpanzees, induced hepatitis with viruslike particles in the circulation and characteristic tubular changes in the liver. On the basis of the results obtained, the viruslike particles in the fibrinogen preparation, as well as in the circulation of apparently healthy donors, were capable of inducing hepatitis of non-A/non-B category with a liver pathology characterized by tubular structures. The detection of non-A/non-B viral particles, especially when refined to routine laboratory tests, may open the way for the specific diagnosis, exclusion of contaminated blood from transfusion, and eventual prophylaxis by vaccination.
Animal-03	Non-A/non-B hepatitis in experimentally infected chimpanzees: cross-challenge and electron microscopic studies.	Bradley DW and Maynard JE and Cook EH and Ebert JW and Gravelle CR and Tsiquaye KN and Kessler H and Zuckerman AJ and Miller MF and Ling C and Overby LR	Journal of medical virology	Experimental	Chimpanzee	8	Non-A Non-B	Factor VIII	NA	2	2	Inoculation of eight chimpanzees with factor VIII, factor IX, or "H" strain plasma resulted in enzymatic and histopathologic evidence of non-A/non-B hepatitis in all eight animals. Challenge of two chimpanzee convalescent from factor VIII-induced disease with either factor IX or "H" strain plasma resulted in non-A/non-B hepatitis only in the animal inoculated with factor IX materials. Reciprocal cross-challenge of a chimpanzee convalescent from factor IX-induced disease with factor VIII also produced unequivocal enzymatic and histopathologic evidence of non-A/non-B hepatitis. Cross-challenge of a chimpanzee convalescent from "H" strain-induced non-A/non-B hepatitis with factor VIII did not cause a second bout of non-A/non-B hepatitis. These findings suggest the factor VIII materials and "H" strain plasma used in these studies.
Animal-03	Non-A/non-B hepatitis in experimentally infected chimpanzees: cross-challenge and electron microscopic studies.	Bradley DW and Maynard JE and Cook EH and Ebert JW and Gravelle CR and Tsiquaye KN and Kessler H and Zuckerman AJ and Miller MF and Ling C and Overby LR	Journal of medical virology	Experimental	Chimpanzee	8	Non-A Non-B	Factor IX	NA	1	1	Inoculation of eight chimpanzees with factor VIII, factor IX, or "H" strain plasma resulted in enzymatic and histopathologic evidence of non-A/non-B hepatitis in all eight animals. Challenge of two chimpanzee convalescent from factor VIII-induced disease with either factor IX or "H" strain plasma resulted in non-A/non-B hepatitis only in the animal inoculated with factor IX materials. Reciprocal cross-challenge of a chimpanzee convalescent from factor IX-induced disease with factor VIII also produced unequivocal enzymatic and histopathologic evidence of non-A/non-B hepatitis. Cross-challenge of a chimpanzee convalescent from "H" strain-induced non-A/non-B hepatitis with factor VIII did not cause a second bout of non-A/non-B hepatitis.

Animal-03	Non-A/non-B hepatitis in experimentally infected chimpanzees: cross-challenge and electron microscopic studies.	Bradley DW and Maynard JE and Cook EH and Ebert JW and Gravelle CR and Tsiquaye KN and Kessler H and Zuckerman AJ and Miller MF and Ling C and Overby LR	Journal of medical virology	Experimental	Chimpanzee	8	Non-A Non-B	"H" strain	NA	1	1	Inoculation of eight chimpanzees with factor VIII, factor IX, or "H" strain plasma resulted in enzymatic and histopathologic evidence of non-A/non-B hepatitis in all eight animals. Challenge of two chimpanzee convalescent from factor VIII-induced disease with either factor IX or "H" strain plasma resulted in non-A/non-B hepatitis only in the animal inoculated with factor IX materials. Reciprocal cross-challenge of a chimpanzee convalescent from factor IX-induced disease with factor VIII also produced unequivocal enzymatic and histopathologic evidence of non-A/non-B hepatitis. Cross-challenge of a chimpanzee convalescent from "H" strain-induced
Animal-04	Clinical aspects of non-A, non-B hepatitis infection.	Wyke RJ and Williams R	<a href="#">J Virol Methods</a> 1980 Dec;2(1-2):17-29. doi: 10.1016/0166-0934(80)90036-1.	Experimental	Chimpanzee	3	Non-A Non-B	Factor IX concentrate	NA	3	3	Although non-A, non-B hepatitis is usually a mild subclinical illness, 40% of cases of fulminant viral hepatitis are attributed to infection by this agent. The administration of coagulation factor IX concentrates before liver biopsy in 17 patients with chronic liver disease was followed by the development of hepatitis in four, which proved fatal in three cases. The diagnosis was confirmed by transmission in chimpanzees, and further studies demonstrated the existence of two types of non-A, non-B hepatitis with different incubation periods and specific ultrastructural changes in the hepatocytes. The progression of 40% of cases of acute viral hepatitis to chronic liver disease and the development of chronic liver disease in renal and hepatic transplant recipients is very disturbing. It is likely that this type of hepatitis is an aetiological factor in some cases of hepatitis B surface antigen-negative chronic active hepatitis.
Animal-06	Factor VIII concentrate from cold sterilized human plasma.	Stephan W and Prince AM and Kotitschke R	Dev Biol Stand. 1983;54:491-5.	Experimental	Chimpanzee	4	Non-A Non-B	Factor VIII concentrate	$\beta$ propionol acetone and UV irradiation	2	0	Beta-Propiolactone (beta-PL) in combination with UV irradiation (UV) is an established method for the sterilization of factor IX concentrate or stabilized human serum. Because of the extreme sensitivity of factor VIII to beta-PL, the standard beta-PL/UV procedure cannot be used to obtain hepatitis-safe factor VIII concentrate. It has been shown in chimpanzees that from a cryoprecipitate containing hepatitis non-A, non-B viruses in addition to hepatitis B viruses a factor VIII concentrate (160 U/10 ml) can be prepared by a modified beta-PL/UV procedure, which induces neither hepatitis B nor hepatitis non-A, non-B in experimental animals; the non-sterilized original cryoprecipitate proved to be infectious
Animal-07	Transmission of agent of post-transfusion non-A, non-B hepatitis by cryoprecipitate prepared from plasma of symptomless chronic carrier.	Tabor E and Snoy P and Gerety RJ and Wickerhauser M and Menache D and Seeff LB	DOI: <a href="https://doi.org/10.1016/S0140-6736(83)91591-X">https://doi.org/10.1016/S0140-6736(83)91591-X</a>	Experimental	Chimpanzee	1	Non-A Non-B	Cryoprecipitate	NA	1	1	This study shows that the NANB hepatitis agent transmitted by blood is not excluded from cryoprecipitate, and hence may also be present when cryoprecipitate is processed further into FVIII concentrate. The reconstituted cryoprecipitate had a concentration ten times that of the cryoprecipitate in the starting plasma; commercial preparations often have 100-fold concentration. The infectious titre of the agent in the cryoprecipitate was not determined. Some evidence suggests an inverse relation between the concentration of this NANB hepatitis agent and the length of the incubation period. If so, the 8 week incubation period seen in this chimpanzee, compared with the 2-4 week range for incubation periods in chimpanzees inoculated with the starting plasma suggests that only some of the infectious agent was in the cryoprecipitate. Centrifugation alone, at the force used in this study, would not be expected to sediment this agent from the supernatant fluid to the cryoprecipitate. The infectivity of the

Animal-08	Reduction in risk of hepatitis transmission by heat-treatment of a human Factor VIII concentrate.	Hollinger FB and Dolana G and Thomas W and Gyorkey F	<a href="#">J Infect Dis</a> , 1984 Aug;150(2):250 -62. doi: 10.1093/infdis/150.2.250.	Experimental	Chimpanzee	6	Non-A Non-B	Factor VIII concentrate	Heating (60 degrees Celsius for more than 10 hours)	4	0	A human Factor VIII concentrate containing both a non-A, non-B hepatitis agent and 300 or 30,000 chimpanzee infectious doses of added hepatitis B virus (HBV) was heated to 60 C in the lyophilized state for more than 10 hr. None of the four test chimpanzees that received the heated concentrate developed biochemical or ultrastructural evidence of non-A, non-B hepatitis, whereas both control animals receiving unheated product acquired the disease four to five weeks after infusion. In one of these animals the alanine aminotransferase level remained elevated, a finding indicating unresolved or persistent liver disease. Challenge inoculations with unheated Factor VIII base product (without HBV) resulted in the development of non-A, non-B hepatitis in one of two chimpanzees that previously received the heated product. Hepatitis B infection developed in the control animal that resolved its non-A, non-B hepatitis infection but not in the non-A, non-B hepatitis carrier chimpanzee. Both chimpanzees receiving the heated Factor VIII containing 300 chimpanzee infectious doses of HBV failed to develop hepatitis B until 32 and 40 weeks postinoculation, whereas the two chimpanzees that received heated concentrate containing 30,000 infectious doses of HBV became infected within the expected time. Product characterization and human safety trials have revealed no significant difference between the heated and unheated Factor VIII lots and recovery of product has been exceptionally good.
Animal-10	Evaluation of two viral inactivation methods for the preparation of safer factor VIII and factor IX concentrates.	Heldebrant CM and Gomperts ED and Kasper CK and McDougal JS and Friedman AE and Hwang DS and Muchmore E and Jordan S and Miller R and Sergis-Davenport E and et al.	Transfusion. Nov-Dec 1985;25(6):510-5.	Experimental	Chimpanzee	7	Non-A Non-B	Factor VIII concentrate	Heating (60 degrees Celsius for 20 hours or 98 degrees Celsius for more than 30 minutes)	6	0	We report here the results of our evaluation of two procedures to eliminate viruses in factor VIII and factor IX coagulation factor concentrates. Both procedures were equally effective in the in vitro destruction of marker viruses. However, in a controlled infectivity test in chimpanzees, treatment at 60 degrees C for 20 hours inactivated greater than 500 and less than 10,000 chimpanzee infectious doses (CID) of hepatitis B virus, while treatment at 98 degrees C for 30 minutes inactivated less than 500 CID. Both methods were successful in preventing infection with an undetermined amount of an indeterminate non-A, non-B hepatitis agent. The 60 degrees C, 20-hour treatment method rendered 5.25 logs of the putative acquired immune deficiency syndrome virus, human T-cell lymphotropic virus III/lymphadenopathy virus, added to factor VIII or factor IX concentrates, undetectable. Heat-treated factor VIII and factor IX complex concentrates prepared by these methods were tested against corresponding untreated control lots. There was no significant difference in the plasma recovery or plasma half-life of the factor (p greater than 0.05). The treated concentrates were equivalent to the control concentrates with respect to vital signs, clinical laboratory studies, and adverse reactions. The heat-treated concentrates appeared bioequivalent to the untreated concentrates with the additional benefit of inactivation of potentially present infectious viruses.

Animals I-12	Selective transmission of hepatitis C virus genotypes and quasispecies in humans and experimentally infected chimpanzees.	Nainan OV and Lu L and Gao FX and Meeks E and Robertson BH and Margolis HS	<a href="#">J Gen Virol 2006 Jan;87(Pt 1):83-91. doi: 10.1099/vir.0.1268-0.</a>	Experimental	Chimpanzee	5	HCV RNA	Factor VIII concentrate	NA	5	5	This study determined whether selective transmission of hepatitis C virus (HCV) species occurred among human and chimpanzee recipients of contaminated blood products or plasma containing multiple genotypes, subgenotypes and quasispecies. Commercially prepared factor VIII concentrate (lot D056), produced prior to HCV testing and inactivation, was subsequently found by direct cloning to contain the following subgenotypes: 1a and 1b (73 % of clones), 2a (13 % of clones), 2b (11 % of clones) and 3a (4 % of clones). A patient transfused with factor VIII concentrate D056 was diagnosed with clinical non-A, non-B hepatitis and subsequently found to be infected with HCV subgenotype 1b. Among five chimpanzees inoculated experimentally with the same factor VIII concentrate, two were infected only with HCV subgenotype 1a and three were infected with approximately equivalent clonal proportions of subgenotypes 1a and 1b. HCV hypervariable region 1 (HVR1) quasispecies analysis of the D056 factor VIII concentrate and a serum specimen from the single chimpanzee that developed a chronic HCV infection following inoculation with D056 showed 0-56 % nucleotide variation. However, specimens from chimpanzees infected in the second to fourth passages of the D056 inoculum had 0-8 % HVR1 quasispecies nucleotide variation. The high HVR1 quasispecies variation in the factor VIII concentrate and its first passage in chimpanzees indicates the presence of multiple HCV isolates, whereas the low variation in the second to fourth chimpanzee passages suggests transmission of a single HCV isolate. These findings strongly suggest selective transmission of HCV isolates during experimental chimpanzee infection and among humans exposed to multiple HCV species.
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## 2. システマティックレビュー結果

ID	IC-J004
Authors	下山 哲夫(埼玉医科大学総合医療センター), 堀江 憲夫, 小宮山 一雄, 茂呂 周
Title	地域基幹病院歯科口腔外科受診患者のC型肝炎ウイルス感染について
Journal	日本口腔科学会雑誌
Issue	(0029-0297)47巻3号Page385-391(1998.07)
Year	1998.7
Study design	横断研究
Assay	EIA法 RT-PCR法
Sample size	525
Study setting	埼玉医科大学総合医療センター
Characteristics of study subjects (Gender, age, …)	入院患者 224名(入院採血者) 外来患者 301名(外来採血者)
Sampling method	
Outcome	HCV抗体
Data collection method	採血
Results	HCV抗体陽性率は入院採血者 12.9%, 外来採血者 5.6%で, 陽性者は 50歳代, 60歳代に高率であった. 3) HCV抗体陽性者で GOT, GPT が基準値を上まわる者は外来採血ではそれぞれ 64.7%, 70.6%, 入院採血者ではそれぞれ 31.0%, 34.5%であった. 4) HCV抗体陽性者の感染経路は感染経路不明のものが 39.2%, ついで輸血 28.3%, 輸血の既往は明らかでないが手術の既往のあるもの 17.4%の順であった. 5) 初診時の外来採血者 HCV抗体保有申告率は 52.9%で, HCV罹患の自覚のない者も多数認めた
Comments	今回は、血液検査を受けた人を対象にしている。いかにして非採血者から HCV抗体陽性者を確認するかが重要である。

ID	IC-J005
Authors	Xiong Shu Kang(獨協医科大学 産婦人科), Okajima Yuko, Ishikawa Kazuaki, 他
Title	C型肝炎ウイルスの垂直感染 リスク因子及び児の予後について
Journal	The Journal of Obstetrics and Gynaecology Research
Issue	(1341-8076)24巻1号Page57-61
Year	1998.02
Study design	横断研究
Assay	RT-PCR
Sample size	1941
Study setting	獨協大学
Characteristics of study subjects (Gender, age, …)	1941人の妊娠
Sampling method	
Outcome	HCV-RNA, 抗HCV
Data collection method	採血
Results	全妊娠中のHCV保因者は3.5%(68/1941)であった。垂直感染のリスク因子を検索した結果、母体の血清アラニンアミノトランスフェラーゼ(ALT)値の上昇が有意に関与していることが明らかとなった。HCV垂直感染の頻度は6.2%、乳幼児の保因者の内、約1/2はHCV-RNAが陰性となることが判った。
Comments	HCV保因率3.5%は、日本の女性献血者の約3倍の結果である

ID	IC-J006
Authors	今村 真哉(小高町立病院), 大戸 斎, 山口 富子, 他
Title	一般妊婦におけるC型肝炎ウイルス母児感染に関する検討
Journal	産婦人科治療
Issue	75巻2号 Page212-216
Year	1997.08
Study design	コホート研究
Assay	ELISA法 PCR法
Sample size	11794
Study setting	医療施設
Characteristics of study subjects (Gender, age, …)	非HIV感染の妊婦
Sampling method	
Outcome	HCV抗体,HCV-RNA
Data collection method	採血
Results	対象症例(非HIV感染)11794名中,HCV抗体陽性者は54名であった。分娩を終えたHCV抗体陽性妊婦47名中HCV-RNA陽性者は27名であった。HCV-RNA陽性母体より出生した児29名の内2名にHCV-RNA陽性が持続的に認められた。HCV-RNA陽性であった2名の児の母親のHCV-RNA濃度は $10^6$ , $10^7$ コピー/mlと有意に高値を示した。
Comments	本研究にもあるように、感染が生じた児の長期的なフォローアップが重要である。

ID	IC-J007
Authors	鈴木 憲治(東京慈恵会医科大学附属柏病院 総合内科), 石川 智久, 内藤 嘉彦, 他
Title	針事故を契機に発症をみたC型急性肝炎の1例
Journal	肝臓(0451-4203)
Issue	39巻1号 Page13-17
Year	1998.01
Study design	症例報告
Assay	DNA probe法
Sample size	1
Study setting	総合内科病院
Characteristics of study subjects (Gender, age, …)	女性、看護師、51歳
Sampling method	
Outcome	HCV-RNA
Data collection method	採血
Results	6週間にわたるIFN治療後に再燃化を認めた針事故によるC型急性肝炎の興味ある51歳女性例。初期の十分量のIFN治療の重要性と医療従事者の事故予防を再考する上で示唆に富む例
Comments	シーケンス解析により遺伝子レベルにおいて感染経路が明らかになった針事故によるC型急性肝炎の症例

ID	IC-J010
Authors	村田 一素(南勢町立病院), 国吉 幹夫, 白木 克哉, 他
Title	非 A 非 B 型肝炎多発地域における血清疫学的調査
Journal	肝臓(0451-4203)
Issue	36巻8号 Page458-462
Year	1995.08
Study design	横断研究
Assay	RPHA 法, ELISA 法, PHA 法
Sample size	1985名
Study setting	住民検診
Characteristics of study subjects (Gender, age, …)	男 60名, 女 1,235名: 平均年齢 57±11歳
Sampling method	
Outcome	HBs 抗原, HBs 抗体, HCV 抗体, HCV-RNA
Data collection method	採血, 問診
Results	三重県 N 町での 40 歳以上を対象とした住民検診にて肝炎ウイルスマーカーを測定した結果, S 地区において anti-HCV core 陽性率(10.0%, 11/110)が, 対照地区の平均陽性率(1.0%, 17/1785)に比して有意に高率を示した. anti-HCV core 陽性であった 28 例に対して HCV-RNA の測定を施行したところ S 地区の 1 例を除き, 27 例が陽性であった. 2) S 地区の anti-HCV core 陽性者は必ずしも輸血歴や手術歴とは相關せず, また 50 歳以上に集中していた
Comments	本研究から、輸血以外の感染経路の存在が疑われる

ID	IC-J012
Authors	野田 智恵子(大阪府立母子保健総合医療センター), 矢原 健, 宮野 章, 他
Title	C 型肝炎ウイルスの母子感染についての検討
Journal	日本性感染症学会誌(0917-0324)
Issue	7巻1号 Page126-130
Year	1996.07
Study design	コホート研究
Assay	PHA 法, AM-PLICOR HCV-RNA, SepaGene
Sample size	11
Study setting	母子保健センター
Characteristics of study subjects (Gender, age, …)	HCV 抗体陽性妊婦 11 例
Sampling method	
Outcome	HCV 抗体, HCV-RNA
Data collection method	採血, 問診
Results	HCV 抗体陽性の妊婦とその児について HCV-RNA, 肝機能, HCV 抗体を prospective に調べ C 型肝炎ウイルスの母子感染について検討した. HCV 抗体陽性妊婦 11 例のうち, HCV-RNA 陽性者は 9 例であった. 2) 11 例の児では, 脇帯血中の HCV 抗体は全例陽性であったが, HCV-RNA は全例陰性であり, 子宮内感染であると断定できる症例はなかった. 3) 11 例の児のうち追跡中に 2 例に HCV-RNA が検出され, 現在(12カ月, 6カ月)も持続している. 4) HCV-RNA が検出されなかった児 9 例の母親の血清中の HCV-RNA 量は 9 例中 8 例が $10^{6.6}$ copies/ml 以下に属していた. 5) 母乳中に HCV-

	RNA が検出された症例が 2 例認められ,1 例で児より HCV-RNA が検出された
Comments	対照群のない研究である。HIV など他の感染症の共感染なども考慮するべきである。

	RNA, HIV-RNA は共に陰性.授乳は禁止した.生後 5 カ月,児の HCV-RNA は陽性,母親及び児の血中 HCV の遺伝子型は共に HCV 亜型 2 を共有していた.12 カ月後,児の抗 HCV 抗体は消失.又児は娩出時 HIV 抗体陽性なるも 12 カ月後には HIV 抗体も消失,HIV 抗原の存在も証明されていない
Comments	HIV と HCV の重感染の妊婦からの母児感染例の報告である。HIV の重感染が HCV 感染のリスクになり得るという報告

ID	IC-J013
Authors	Koseki Satoshi(横浜市立大学 医 産婦人科), Taga Michiyoshi, Aoyama Mika, 他
Title	HIV の同時感染を認める母親での C 型肝炎ウイルスの母児感染(英語)
Journal	The Journal of Obstetrics and Gynaecology Research(1341-8076)
Issue	22 卷 2 号 Page139-142
Year	1996.04
Study design	症例報告
Assay	Bio-Rad Laboratories、RIA 法、RT-nested PCR
Sample size	1
Study setting	
Characteristics of study subjects (Gender, age, …)	23 歳、妊婦、薬物使用者、HIV 感染者
Sampling method	
Outcome	HCV 抗体、HCV-RNA
Data collection method	採血、問診
Results	HCV 及び HIV 両者の感染を認める妊婦において HCV の垂直感染をみた症例を経験した.患者は 23 歳の 1 回経妊,0 回産.静脈内薬物注射の常習者.妊娠 21 週,抗 HIV 抗体陽性で当科に紹介される.2 世代 RIA テストにより HCV-RNA も陽性,しかし B 型 S 抗原は陰性.妊娠中 AIDS の症状は全くなく,児の発育も正常.血中 CD4/CD8 比は妊娠 32 週での 42 に低下,妊娠 36 週で児への HIV 感染予防の為帝王切開を施行.臍帯血の抗 HCV 抗体は陽性.しかし HCV-

ID	IC-J014
Authors	稻葉 憲之(千葉大学 産婦人科), 清水 久美子, 池田 和則, 他
Title	C型肝炎ウイルスの母子感染に関する検討
Journal	産婦人科治療(0558-471X)
Issue	69巻1号 Page111
Year	1994.07
Study design	コホート研究
Assay	PHA法, Nested PCR
Sample size	59人
Study setting	産科施設
Characteristics of study subjects (Gender, age, …)	HCV関連抗体陽性, HCV-RNA陽性のキャリア妊婦より生まれた出生児
Sampling method	
Outcome	HCV抗体, HCV-RNA
Data collection method	採血
Results	経過観察児59名5名(8.5%)、が血中HCV-RNA陽性を呈し、残り54名(91.5%)は陰性のまま経過した。PCR陽性児5名中4例では母子間のgenotypeは一致したが、一例(症例5)のみ母I型、出生児I+II型となった。出生直後より、フォローアップ可能であった症例1,3ではPCR陽性が持続したがその後陰性化し、生後24カ月まで16カ月間陰性が確認された。
Comments	本研究では、母児感染率は、8.5%であり概ね10%前後である他の報告と近い値である。感染児は、HCV-RNA持続陰性となり抗体のみ陽性となることもあり長期的なフォローアップが必要となる。

ID	IC-J015
Authors	Uehara Shigeki(東北大学 産婦人科), Abe Yuya, Saito Tsukuru, 他
Title	C型肝炎ウイルスの垂直感染の頻度
Journal	The Tohoku Journal of Experimental Medicine(0040-8727)
Issue	171巻3号 Page195-202
Year	1993.11
Study design	横断研究
Assay	RT-PCR, ELISA
Sample size	2015名
Study setting	産科施設
Characteristics of study subjects (Gender, age, …)	妊婦
Sampling method	
Outcome	HCV抗体, HCV-RNA
Data collection method	採血
Results	抗-HCV抗体血清陽性妊娠については、分娩時末梢血および乳汁中のHCV-RNAを検索した。その結果2015名の妊娠中12名が抗-HCV抗体陽性であった。この12名中7名がHCV-RNAが陽性であった。7名のHCV-RNA血清陽性妊娠のうち3名の臍帯血のHCV-RNAが陽性であった。3名HCV-RNA陽性新生児においては、生後1カ月以内に末梢血のそれは消失した。7名のHCV-RNA陽性妊娠のうち2名に乳汁中のHCV-RNAは陽性であった。出生後10カ月の時点で1名の児が乳汁を介した感染を疑わせる成績が認められた。
Comments	本研究では、血清のHCV-RNA陽性母親の半数以上がHCVの垂直感染の可能性のあることが推測される

ID	IC-J016
Authors	阿部 祐也(公立気仙沼総合病院), 岡村 州博, 上原 茂樹, 他
Title	新生児をめぐる最近の話題 C型肝炎と垂直感染
Journal	産婦人科治療(0558-471X) 1994.01
Issue	68巻1号 Page73-78
Year	1994.01
Study design	横断研究
Assay	
Sample size	2001
Study setting	産科施設
Characteristics of study subjects (Gender, age, …)	妊婦
Sampling method	
Outcome	HCV抗体, HCV-RNA
Data collection method	採血
Results	総分娩数は、2001例であり、第2世代抗HCV抗体陽性妊婦は13例(0.65%)、HCV-RNA陽性妊婦は、8例(0.4%)となり、HCV-RNA陽性妊婦から生まれた児は3例であり、母児感染率は、38%となった。
Comments	サンプリングや検査の手順などの記載がない 母児感染は、移行抗体の存在が垂直感染の有無の判定をさらに複雑にしている。

ID	IC-J017
Authors	真田 光博(国立吳病院), 内藤 博之, 村上 順子, 他
Title	HCV母子感染の検討
Journal	医療(0021-1699)
Issue	47巻6号 Page449-453
Year	1993.06
Study design	コホート研究
Assay	EIA法, PHA法, nested PCR法, RPHA法
Sample size	278例
Study setting	産科施設
Characteristics of study subjects (Gender, age, …)	妊婦(平均年齢: 28.5歳)
Sampling method	
Outcome	HCV抗体, HBs抗原, HCV-RNA
Data collection method	採血
Results	278例の妊婦のスクリーニングを行い、HCV抗体陽性率が278例中3例(1.1%)、HCV-RNAの検出された妊婦は1例より出生した児の臍帯血ならびに生後6ヶ月後のHCV抗体は移行抗体と考えられ、母子感染例は認められなかった。HCV母子感染の検討にはHCV抗体値の推移とHCV-RNAの検出および十分な経過観察が重要である。
Comments	今回の調査では、母子感染はみられなかったが、これまでの報告より、HCV感染に母子感染はある。母子感染をみる場合、HCV抗体値の推移を観察する必要があると考えられる。

ID	IC-J019
Authors	柏木 征三郎(九州大学病院 総合診療), 林 純, 中島 孝哉, 他
Title	C型肝炎の感染経路について 疫学調査よりの考察
Journal	日本医事新報
Issue	(0385-9215)3613号 Page43-46(1993.07)
Year	1993
Study design	
Assay	
Sample size	記載なし (福岡市 HCV 抗体陽性率調査) 1295(沖縄県八重山地区 HCV 抗体陽性率調査) 418(透析患者における HCV 抗体陽性率調査) 1769(ハイリスクグループにおける HCV 抗体陽性率調査) 203(HCV 抗体陽性者を持つ家族の調査)
Study setting	福岡市、沖縄県八重山地区、九州大学病院
Characteristics of study subjects (Gender, age, …)	一般住民、透析患者、血友病患者、特殊浴場従業員、刺青者、医療従事者、HCV 抗体陽性者を持つ家族
Sampling method	
Outcome	HCV 抗体、HCV-RNA
Data collection method	採血、問診
Results	血液透析患者 418 例中 127 (30.4%)、血友病患者 43 例中 39 (90.7%)、特殊浴場従業員 604 例中 61 (10.1%)、刺青者 25 例中 20 (80.0%)、医療従事者 1097 例中 11 (1.0%)、HCV 抗体陽性者の中 203 (109 家族) 例中 18 (8.9%) であった。
Comments	調査方法、サンプリング方法は明記されていない。血友病患者、刺青もののように対象者の特性によって HCV 抗体陽性率が異なることを提示している。

ID	IC-J020
Authors	安達 公美子(福島県立医科大学 産婦人科), 鈴木 りか, 荒木 壮, 他
Title	C型肝炎の母児感染に関する検討
Journal	日本産婦人科・新生児血液学会誌
Issue	(0916-8796)2巻 2号 Page138-139(1992.05)
Year	1992
Study design	
Assay	ELISA PCR
Sample size	3212
Study setting	福島県立医大を含めた福島県内 5 病院
Characteristics of study subjects (Gender, age, …)	妊婦 3193 名及び HCV 抗体陽性妊婦 22 名より出征した 19 名児
Sampling method	
Outcome	HCV 抗体、HCV RNA
Data collection method	採血、臍帯血
Results	HCV 抗体陽性率は 0.7%(22/3193)。陽性者のうち輸血歴は 36.4%(8/22)。22 名中 18 名の HCV RNA を測定し、HCV RNA 陽性率は 61.1%(11/18)。18 名の妊婦から出征した 19 名の児のうち、HCV 抗体を測定した 8 名について、臍帯血では 75%(6/8)、生後 1 ヶ月以降の検査では 37.5%(3/8) であった。HCV RNA の陽性率は臍帯血で検査を行った 9 名の陽性率は 11.1%(1/9) (再検査で陰性であったため母体血のコンタミネーションと判断した)、生後 1 ヶ月以降の 16 名の検査では 6.3%(1/16) であった。HCV RNA 陽性の児を母児感染と判断した。低頻度ではあるが母児感染が起こることが確認された。
Comments	福島県内 5 病院を受診した 3,193 人の妊婦を対象とした C 型肝炎の垂直感染に関する研究である。HCV 抗体陽性妊婦の児の生後 1 ヶ月後の検査において HCV 抗体率を算出している。

ID	IC-J022
Authors	大森 浩之(重井医学研究所附属病院), 有元 克彦, 荒木 俊江, 他
Title	血液透析患者の HCV 感染 Retrospective study による感染経路の検討を中心
Journal	日本透析療法学会雑誌
Issue	(0911-5889)24巻9号 Page1253-1258(1991.09)
Year	1991
Study design	症例対象研究
Assay	ELISA
Sample size	102
Study setting	重井医学研究付属病院
Characteristics of study subjects (Gender, age, …)	透析患者(男性 62 名、女性 40 名)平均年齢 54.9 歳平均透析期間 64 か月
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	C型肝炎ウイルス(HCV)抗体を測定した結果、血液透析患者 102 名中 24 名(23.5%)が HCV 抗体陽性であった。凍結保存血清を用いた検索にて、陽性者 24 名中 11 名は当院透析開始(以後、開始)時にはすでに陽性で、13 名は開始後陽性化していたことが判明した。開始後陽性化群 13 名と持続陰性群 77 名との比較では透析期間は陽性化群が有意に長かったが、輸血歴および輸血量に関しては両者に有意差はなかった。開始時陽性者は陰性者に比して、開始前輸血歴を有する者が有意に多かったが、開始後陽性化者と持続陰性者との間には輸血歴に関して有意差はなかった。開始後陽性化した 13 名中 3 名には関連輸血歴はなく、開始後輸血歴のない全患者 15 名の 20%にあたり、わが国の供血者の陽性率より高率であった。以上、透析患者は HCV 感染の high risk group である。その感染経路は輸血によるもののが多かったものの、開始後に輸血以外の感染経路も存在することが示唆された。
Comments	血液透析患者 102 例のうち HCV 抗体陽性化した 13 例と HCV

	抗体陰性持続 77 例の有意差検定を行い、2 群間で透析期間と肝障害の有無が有意な差が認められ、輸血歴・輸血量は有意な差が認められなかった。(残り 12 例は開始時から HCV 抗体陽性である)。陽性化群の透析開始後の関連輸血率が我が国の供血者の HCV 抗体陽性率より高いことから、透析が high risk group であり感染経路が輸血によるものとしているが、統計解析は行なっていない。
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ID	IC-J023
Authors	村上 良子(兵庫県立西宮病院), 羽場 敏文, 安部 治郎, 他
Title	身近なウイルス感染症 母子水平感染が疑われた C 型肝炎の 1 例
Journal	小児科臨床(0021-518X)46巻 6号 Page1318-1320(1993.06)
Issue	46巻 6号 Page1318-1320
Year	1993.06
Study design	症例報告
Assay	C-100 抗体検査キット
Sample size	1
Study setting	
Characteristics of study subjects (Gender, age, …)	母 27 歳、輸血歴なし、出産前肝機能検査異常なし
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	母親は分娩直後に弛緩出血のため濃厚赤血球と凍結血漿を輸注され、その後約 2 カ月後に肝機能障害が出現した。HCV 抗体が陽性であったことより輸血後 C 型肝炎と診断された。児は母乳にて哺育されており生後 3 カ月より検査を行っていたが、HCV 抗体は陰性で、生後 4 カ月の検査で肝機能異常と HCV 抗体の陽転化が確認された。母親は分娩前には肝機能異常を指摘されたことはなく、以上の経過から分娩後の水平感染が想定された
Comments	分娩後に輸血後肝炎を発症した妊婦からの水平感染が疑われた症例。感染時期が離乳食開始時期前だったことより、唾液等による経口感染より、母乳等の関与が疑われる

ID	IC-J025
Authors	道堀 浩二郎(愛媛大学 第3内科), 堀池 典生, 太田 康幸
Title	C 型肝炎ウイルス感染の実態に関する調査研究
Journal	臨床病理
Issue	(0047-1860)39巻 6号 Page586-591(1991.06)
Year	1991
Study design	横断研究
Assay	ELISA
Sample size	136
Study setting	伊予市
Characteristics of study subjects (Gender, age, …)	家族内に HBs 抗原陽性者のいる家計を対象に実施している肝炎健診を受診した者
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	1) 受診者の HCV 抗体陽性率は 136 名中 13 名 (9. 6%) であった。2) GOT, GPT 異常を示したのは HBs 抗原陽性者では 29%, HCV 抗体陽性者では 54% であった。3) 20 歳未満には H : CV 抗体陽性者はなく、加齢に伴い HCV 抗体陽性率は増加傾向を示した。4) 10 家系中 2 家系で H : CV 抗体陽性者をそれぞれ 2 認め、1 家系では父子、1 家系では夫婦が陽性であった。5) HBs 抗原、H : CV 抗体陽性の女性が 2 名認められ、その子供 3 名は全員 HBs 抗原陽性、HCV 抗体陰性であった。6) HCV 抗体陽性率は、輸血歴のある例で 25.0%・ない例で 8.9%，バリ治療歴のある例で 18.7%，ない例で 8.6% であった。以上より、輸血以外に家族内感染、バリ治療も HCV の感染経路となり得る可能性が示唆された

Comments	家族内に HBs 抗原陽性者のいる家系の肝炎検診受した 136 名が対象である。家系内での陽性者を確認し、陽性者のハリ治療・輸血歴などの曝露率を提示している。有意差検定は行なっていない。
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ID	IC-J026
Authors	
Title	
Journal	
Issue	
Year	
Study design	
Assay	
Sample size	
Study setting	
Characteristics of study subjects (Gender, age, …)	
Sampling method	
Outcome	
Data collection method	
Results	
Comments	

ID	IC-J027
Authors	Maniwa H, Miyake Y, Oda T, Li R, Yokoyama T, Sugiyama K.
Title	Second generation hepatitis C virus antibody-positive rate in children: investigation of the route of hepatitis C virus infection in children with no history of transfusion.
Journal	Acta Paediatrica Japonica
Issue	39(5):550-555
Year	1997
Study design	Cross-sectional study
Assay	ELISA PCR
Sample size	1864
Study setting	
Characteristics of study subjects (Gender, age, …)	Under 15 years children who did not have a history of transfusion
Sampling method	
Outcome	HCV antibody, HCV RNA
Data collection method	venipuncture
Results	Two of the 1864 children were positive for serum HCV RNA. They had no history of transfusion, no episodes of horizontal transmission, but the mother in each case was positive for serum HCV RNA, implying mother-to-infant infection. Eleven children who were positive for HCV antibody with low values and negative for serum HCV RNA were classified as belonging to the high bovine milk (composed primarily of casein)-specific IgG4 value group. This suggested that many of the children who were falsely positive for HCV antibody using ELISA had antibodies to casein.
Comments	HCV 抗体、HCV RNA 測定により母子感染の可能性を報告した研究である。

ID	IC-J028
Authors	小島 俊行(東京大学医学部附属病院分院 産婦人科), 山中 竜宏
Title	HCV 抗体陽性妊婦からみた C 型肝炎ウイルスの感染経路に関する研究
Journal	日本産科婦人科学会雑誌
Issue	(0300-9165)46巻 7号 Page573-580(1994.07)
Year	1994
Study design	横断研究
Assay	ELISA、EIA II、Nested RT-PCR
Sample size	2,654
Study setting	焼津市立総合病院と他施設
Characteristics of study subjects (Gender, age, …)	病院で分娩した妊婦、抗体陽性と診断された妊婦と配偶者、このうちで HCV 抗体陽性であった妊婦の親戚・新生児
Sampling method	
Outcome	HCV 抗体、HCV RNA
Data collection method	採血、問診
Results	分娩した妊婦の HCV 抗体陽性率は、1.19% (30/2528) であった。第一世代 HCV 抗体の陽性率は 1.08% (18/1659)、第二世代 HCV 抗体では 1.38% (12/869) で両者間に有意差を認めなかった。HCV 抗体陽性妊婦の HCV RNA 陽性率は 56.3% (18/32) であった。夫の HCV 抗体陽性率は、23.1% (6/26) であり、抗体陽性者中 83.3% (5/6) に HCV RNA を検出した。同様に妊婦の母親の HCV 抗体陽性率と HCV RNA 陽性率はそれぞれ 19.0% (4/21) と 100% (3/3)、父親は、54.5% (6/11) と 83.3% (5/6) であった。臍帯血の HCV RNA 陽性率は 6.7% (2/30) であった。HCV RNA 陽性の妊婦 18 例から生まれた 29 例の児のうち 4 例 (13.3%) に HCV RNA が検出された。当院の妊婦の HCV 抗体陽性率は 1.19% で一般人口と有意差を認めず、陽性妊婦中 HCV RNA 陽性率は 56.3% であったこと、HCV 抗体陽性の家族内集積性が認められたこと、HCV 抗体陽性妊婦から生まれた児の 7.1% (4/56) に HCV RNA が検出されたこと、HCV RNA 陽性の妊婦 18 例から生まれた 29 例の児の

	うち 4 例 (13.8%) に HCV RNA が検出され, HCV の母子染の頻度は 5 ~15% と推定されたことが示された。
Comments	分娩した妊婦 2528 例を対象とした研究。HCV 抗体陽性であった母親の児童及びその家族の HCV 抗体、HCV RNA を最大 3 年間追跡して検査している。夫婦・母子の HCV RNA の Genotype を解析して Genotype が一致したことを確認し母子感染の可能性を提示している。

ID	IC-J029
Authors	夏山 真理子(済生会京都府病院), 河瀬 昌司, 岡野 創造, 他
Title	母子間の水平感染によると考えられた C 型肝炎の 1 例
Journal	小児科臨床(0021-518X)
Issue	45 卷 2 号 Page301-304
Year	1992.02
Study design	症例報告
Assay	N/A
Sample size	1
Study setting	焼津市立総合病院と他施設
Characteristics of study subjects (Gender, age, …)	
Sampling method	N/A
Outcome	HCV 抗体、
Data collection method	採血、問診
Results	4 歳女児の C 型肝炎ウイルスによる急性肝炎を経験した。既往歴に輸血歴なく、偶然の機会に肝機能異常を発見された。肝機能異常は一峰性の経過で、発症 1 ル月後に正常化した後 12 ル月を経過した現在まで正常である。HCV 抗体は入院時陰性だったが、発症後約 2 ル月に陽性化、OD 値はその後緩やかに低下して発症後 6 ル月には抗体は陰性化した。母親は輸血、肝機能異常の既往はなかったが、HCV 抗体陽性で無症候性キャリアーであると考えられ、患児への感染経路として、母親からの水平感染が考えられた。
Comments	初診時、HCV 抗体陰性であったが 2 ヶ月後に HCV 陽性となり経過を追った。無症候性キャリアの母親からの水平感染と考えられた

ID	IC-J032
Authors	斎藤 淳(横浜市立総合保健医療センター), 奥平 謙一, 飯塚 博史, 他
Title	肝機能障害が認められた覚せい剤乱用者と HCV 抗体
Journal	アルコール依存とアディクション
Issue	(0916-8257)9巻3号 Page235-241(1992.09)
Year	1992
Study design	横断研究
Assay	
Sample size	20
Study setting	
Characteristics of study subjects (Gender, age, …)	肝機能障害がある覚せい剤乱用経験者
Sampling method	
Outcome	HCV 抗体陽性率
Data collection method	
Results	肝機能障害がある(過去にあった症例も含む)覚せい剤の乱用経験者の HCV 抗体を検索した。その結果, 20 例中 14 例で陽性で, 陽性率は 70% であった。2) 覚せい剤の経静脈的使用が HCV 感染の重大な感染経路となる。3) 覚せい剤の第一次, 第二次乱用期にわたる覚せい剤の乱用者は相当数になり, したがって, HCV 感染者もかなりの数にのぼる。4) 覚せい剤の乱用歴があり, アルコール問題をもつ慢性 C 型肝炎の症例を呈示し, アルコールが C 型肝炎の進展に悪影響を及ぼす可能性がある
Comments	肝機能障害がある覚せい剤乱用経験者という特性を持つ 20 名の HCV 抗体陽性率の報告である。

ID	IC-J033
Authors	寺田 総一郎(香川医科大学 中央検査), 河西 浩一
Title	C 型慢性肝炎の感染経路と患者体液からの C 型肝炎ウイルス RNA の検出(原著論文)
Journal	いづみ
Issue	(0021-339X)39巻9号 Page22-23
Year	1992.11
Study design	横断研究
Assay	ELISA 法
Sample size	7
Study setting	病院
Characteristics of study subjects (Gender, age, …)	C 型慢性肝炎患者(男性のみ、平均年齢 46.1 歳)
Sampling method	
Outcome	抗 HCV/HCV-RNA
Data collection method	問診、体液採取(血清、唾液、精液、尿)
Results	C 型慢性肝炎患者(男性のみ、平均年齢 46.1 歳)より、同意を得て、体液採取(血清、唾液、精液、尿)をした。結果は、対象症例全例 c100-3 抗体陽性であり、血清中の HCV-RNA が検出された。患者 7 例中、輸血歴は 4 例(57.1%)に認められた。
Comments	症例数が少なく、対象群を設けてない研究

ID	IC-J037
Authors	池田 恵理子(長崎みなとメディカルセンター市民病院 消化器内科), 三馬 聰, 高橋 洋一, 木下 梨華子, 峯 彩子, 本吉 康英, 赤星 浩, 植原 亮平, 本田 徹郎, 入江 準二, 市川 辰樹
Title	夫婦間感染が明らかとなった C 型急性肝炎の一例
Journal	肝臓(0451-4203)
Issue	58巻2号 Page131-134
Year	2017.02
Study design	症例報告
Assay	PCR 法
Sample size	1
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	47歳、女性
Sampling method	
Outcome	抗 HCV/HCV-RNA
Data collection method	問診、採血
Results	47歳女。嘔気、腹痛、食欲不振および全身倦怠感が出現し、血液検査で肝機能障害を認め入院となった。血清学的検査で C 型肝炎ウイルス(HCV)抗体は陰性であったが、HCV RNA が高値を示し、急性 C 型肝炎と診断した。肝生検を施行し、病理組織は C 型急性肝炎として矛盾しない所見であった。安静のみで肝機能障害は改善し、入院後 16 日に退院となった。その後、外来通院で経過観察を行ったが、半年が経過しても軽度肝機能障害、HCV RNA 陽性が持続し、慢性 C 型肝炎と診断した。HCV の感染経路は不明であったが、後に患者の夫が C 型慢性肝炎で通院中であることが判明した。カミソリ刃やブラシなど日用品の共用などはなく、夫とは 1 年半前から交際が始まったとのことであり、感染経路として夫婦間の性交渉が考えられた。HCV Core 領域と NS5A 領域の遺伝子学的解析を行い、系統樹解析で夫婦間感染であることが判明した。
Comments	遺伝子学的解析を行い、夫婦間の性交渉が感染経路と強くい違われる報告

ID	IC-J039
Authors	朝井 靖二(労働者健康福祉機構東京労災病院 消化器内科), 和久井 紀貴, 西中川 秀太, 小山 洋平, 團 宣博, 武田 悠希, 植木 紳夫, 大塚 隆文, 大場 信之, 児島 辰也, 住野 泰清, 杉山 真也, 溝上 雅史
Title	C 型肝硬変の夫の創傷手当が感染契機と思われる C 型急性肝炎の 1 例
Journal	肝臓(0451-4203)
Issue	56巻4号 Page144-149
Year	2015.04
Study design	症例報告
Assay	N/A
Sample size	1
Study setting	消化器内科病院
Characteristics of study subjects (Gender, age, ...)	夫が C 型肝硬変患者である 63 歳女性
Sampling method	
Outcome	HCV 抗体、HCV-RNA
Data collection method	問診、採血
Results	症例は 63 歳の女性。全身倦怠感と食欲不振が出現し当院を受診し、肝障害を指摘され入院した。その後の検査で HCV 抗体中力価陽性、HCV RNA 陽性および他のウイルスマーカー陰性であったため C 型急性肝炎と診断された。輸液と安静による治療が開始されたが肝障害が遷延したため第 66 病日からペグインターフェロン $\alpha$ 180 $\mu$ g/週が使用された。これによりトランスマニナーゼは改善し、第 88 病日に退院した。退院後、第 93 病日には HCV-RNA の陰性化が得られた。感染源の検索のため詳細に病歴を聴取したところ、発症約 3 カ月前に C 型肝硬変の夫が喧嘩で怪我をしその手当てをする際、夫の血液に濃厚に接触する機会があったことが判明した。両者の血清を用いて分枝系統樹解析を行ったところ 98.1% の相同性を認めたことから同一の HCV 株と結論された。
Comments	分枝系統樹解析により、夫婦間感染が確認された報告

ID	IC-J041
Authors	尾内 一信(済生会下関総合病院), 金原 洋治, 森岡 均
Title	母児感染とその対策 C型肝炎の母児感染(原著論文)
Journal	産婦人科治療
Issue	(0558-471X)67巻2号 Page149-153
Year	1993.08
Study design	横断研究
Assay	PCR 法
Sample size	1496 人
Study setting	産婦人科
Characteristics of study subjects (Gender, age, ...)	妊婦
Sampling method	
Outcome	HCV-RNA
Data collection method	採血、問診
Results	妊婦 1496 人に対し、HCV 抗体を測定したところ、16 人 (1.1%) が陽性であり、16 人中 12 人 (75%) が PCR 法で血中 HCV-RNA が検出された。16 例中、母児感染の確証となる血中 HCV-RNA を検出できたのは 1 症例のみであった。
Comments	筆者は、母児感染予防を講じるうえで、感染時期は胎内か出生児か出生後なのか、HIV 感染以外に母児感染を起こしやすいハイリスク妊婦はどのようなものかの解明の必要性を述べている

ID	IC-J042
Authors	荒瀬 康司(国家公務員共済組合連合会虎の門病院), 熊田 博光
Title	C型肝炎 HCV の感染経路(原著論文)
Journal	臨床消化器内科
Issue	(0911-601X)7巻12号 Page2025-2031
Year	1992.11
Study design	横断研究
Assay	
Sample size	
Study setting	医療施設
Characteristics of study subjects (Gender, age, ...)	妊婦
Sampling method	
Outcome	HCV 抗体
Data collection method	採血
Results	第一世代 HCV 抗体陽性の発端者が母親、計 130 例の児の HCV 抗体を検討したところ 8 例 (6.2%) で陽性であった。
Comments	C型肝炎の感染ルートとして医療行為による感染も考えられるため、この値すべてが母児感染によるものとは限らない

ID	IC-J043
Authors	渡辺 徹(東京都立築地産院), 小林 信一, 小川 隆吉, 他
Title	妊婦 C 型肝炎スクリーニングと児の追跡調査(原著論文)
Journal	産婦人科の実際
Issue	(0558-4728)43巻 6号 Page853-857
Year	1994.05
Study design	横断研究
Assay	PHA 法
Sample size	3162
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	妊婦
Sampling method	
Outcome	抗 HCV,HCV-RNA
Data collection method	採血、問診
Results	妊婦 3162 例を対象に HCV スクリーニング検査を行った。3162 例中 20 例(0.63%)が陽性であった。陽性 20 例のうち、HCV-RNA が検出されたのが、15 例(75%)であった。追跡可能な 10 例のキャリア妊婦より出生した同胞を含む 13 例の児の追跡で感染成立の証明された例はなかった。
Comments	追跡可能な症例数に限りがあったので、追跡可能な症例数を増やした検討が必要である

ID	IC-J044
Authors	相川 達也(相川内科病院), 小島 真樹, 宮本 久仁子, 上野 ちさと, 高橋 雅春, 岡本 宏明
Title	結婚 40 年後の配偶者間性行為感染が疑われた C 型急性肝炎の 1 例
Journal	肝臓(0451-4203)
Issue	49巻 8号 Page352-361
Year	2008.08
Study design	症例報告
Assay	N/A
Sample size	1
Study setting	内科病院
Characteristics of study subjects (Gender, age, ...)	妻が C 型慢性肝炎患者である 67 歳男性
Sampling method	
Outcome	HCV-RNA,HCV 抗体
Data collection method	採血、問診
Results	C 型肝炎ウイルス(HCV)RNA が高力価陽性(>5,000 KIU/ml)であった。両者の HCV 遺伝子型はともに 1b 型で、NS5B 領域の 1,087 塩基長の配列において 99.7% の一致率を示した。それに對し、これまでに報告されている HCV_1b 株との一致率は最高でも 96.7% に過ぎなかった。分子系統樹解析によつても、夫婦の持つ HCV 株は一つのクラスター(bootstrap 値: 100%)を形成し、同一株である可能性が強く示唆された。詳細な病歴聴取を行つたが、性交渉(月 1, 2 回)以外の感染経路はいずれも否定された。高齢夫婦間の感染には加齢に伴う生側因子が関与していると
Comments	分子系統樹解析によつて、夫婦間の性感染が確認された報告

ID	IC-J046
Authors	加藤 秀章(豊川市民病院 消化器科), 折戸 悅朗, 西 祐二, 大山 展, 中村 誠, 近藤 豊, 菅内 文中, 田中 靖人, 溝上 雅史
Title	C型慢性肝炎にて通院中の患者からの感染が証明されたC型急性肝炎の1例
Journal	肝臓(0451-4203)
Issue	47巻2号 Page105-112
Year	2006.02
Study design	症例報告
Assay	RT-PCR
Sample size	1
Study setting	市民病院消化器科
Characteristics of study subjects (Gender, age, ...)	男性、32歳
Sampling method	
Outcome	HCV-RNA
Data collection method	採血、問診
Results	32歳男性。患者は黄疸、褐色尿を主訴に、精査にてC型急性肝炎と診断された。著者らの施設へ入院後、安静と高カロリー食低脂肪高蛋白食、補液を行ったところ、次第に肝機能は改善した。その後、HCVの持続感染が確認され、インターフェロン治療を開始した。感染源検索のため詳細に病歴を聴取したところ、患者の友人が慢性C型肝炎にて通院中で、その友人と注射器を共用していたことが判明した。両者の血清中HCVについて、遺伝子配列を検討した結果、E1およびNS5B領域の遺伝子配列は100%一致し、C型慢性肝炎にて慢性通院中の友人からのHCV水平感染が証明された。尚、遺伝子型は2a型に分類された。
Comments	薬物常用者の院内での患者教育が重要である

ID	IC-J047
Authors	矢倉 道泰(国立病院機構東京病院 消化器科), 田中 晃久, 時田 元, 上司 裕史, 原田 英治
Title	結婚50年後に感染したHCV夫婦間感染の1例
Journal	肝臓(0451-4203)
Issue	46巻1号 Page19-25
Year	2005.01
Study design	症例報告
Assay	PCR
Sample size	1
Study setting	
Characteristics of study subjects (Gender, age, ...)	男性、77歳
Sampling method	
Outcome	HCV抗体、HCV-RNA
Data collection method	問診、採血
Results	77歳男(夫)。1975年、飲酒による肝機能障害を指摘され、1981年から糖尿病で通院していた。2000年、C型肝炎と診断され、肝生検、インターフェロン(INF)投与のため入院した。2003年の生検は軽度の脂肪沈着を認めるalcoholic fibrosis with hemosiderosisの所見で、INF-α8MUを週2回投与し、HCV-RNA陰性となった。72歳女(妻)。1955年出産時に輸血し、1989年初めて肝機能異常を指摘された。1992年以来各種INF投与を試みたが無効であった。夫婦のHCV NS5B領域339塩基を増幅し、PCR産物をダイレクトシークエンスにより塩基配列した結果、夫婦間の配列は共にHCV genotype 1bで99.1%の高い相同性が得られた。系統樹解析でも有意なクラスターを形成しており、夫婦間感染が強く示唆された。夫のHCV抗体価はHCV-RNA陰性化の後に上昇したことから、妻から夫への初感染と診断した。
Comments	感染経路は性交渉によるものと推測され、高齢化に伴う免疫力の低下や性器粘膜の萎縮等が感染成立に関与している可能性がある

ID	IC-J048
Authors	中川 勇人(三井記念病院 内科), 三瀬 直文, 清水 英樹, 西 隆博, 田川 一海, 多川 斎, 杉本 徳一郎
Title	維持血液透析中に顕性 C 型肝炎が急性発症した 1 例 HCV-RNA の塩基配列同定による感染源の特定
Journal	日本透析医学会雑誌(1340-3451)
Issue	37 巻 8 号 Page1659-1663
Year	2004.08
Study design	症例報告
Assay	
Sample size	
Study setting	1
Characteristics of study subjects (Gender, age, ...)	女性、52 歳
Sampling method	
Outcome	HCV 抗体、HCV-RNA
Data collection method	問診、採血
Results	52 歳女.9 年前, 半月体形成性腎炎のため持続携行式腹膜透析導入となり, 5 カ月前, 計画的に血液透析(HD)に移行した. 今回, 血液検査で著しい肝機能障害を認め, HCV 抗体が陰性, HCV-RNA が陽性であったため急性 C 型肝炎と診断した. 透析医療行為による感染を疑い, 過去 4 カ月間に当院で HD を受けた HCV 抗体陽性患者全員の HCV genotype を検索したところ, 本例と同じ 1b の患者が 9 名抽出された. そこで, 本例を含めた 10 名について HCV RNA E1 領域中の 400 の塩基配列を調査した結果, 1 カ月前に 5 回の透析を本例と同一日に受けている 1 名の塩基配列が本例と 98.8% の相同性をもっており, 感染源と判明した.
Comments	透析医療行為での感染が疑われる報告である

ID	IC-J051
Authors	藤沢 知雄(防衛医科大学校 小児科)
Title	C型肝炎ウイルスの母子感染(原著論文)
Journal	BIO medica
Issue	8巻7号 Page578-582
Year	1993.06
Study design	横断研究
Assay	EIA法 nested-PCR
Sample size	12
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	HCV抗体陽性妊婦
Sampling method	
Outcome	HCV抗体,HCV-RNA
Data collection method	採血、問診
Results	HCV抗体陽性の母親12例中、1例が臍帯血でHCV-RNAが陽性であった。
Comments	12例を前向き群と後ろ向き群に分けており、後ろ向き群の出生兒は、生後11ヶ月から検討している

ID	IC-J059
Authors	佐田 通夫(久留米大学 第2内科), 中野 均, 谷川 久一
Title	肝障害多発地区および覚醒剤常用者からみたC型肝炎ウイルスの感染経路の検討(原著論文)
Journal	犬山シンポジウム
Issue	17回 Page50-55
Year	1992.06
Study design	横断研究
Assay	
Sample size	144
Study setting	
Characteristics of study subjects (Gender, age, ...)	覚醒剤常用者(全員男性、平均年齢34歳)
Sampling method	
Outcome	HCV抗体
Data collection method	採血、問診
Results	覚醒剤常用者144名中、HCV抗体陽性者は、C100-3抗体は、69名(47.9%)、第2世代のHCV抗体は125名(86.8%)と高率であった。
Comments	覚醒剤常用者のHCV感染率がかなり高い結果となった。経静脈的な血液を介する感染率ははるかに高く、今回の結果は、経静脈的な感染も考えられる。また、針治療、刺青だけでなく、医療行為を介する感染経路も考えられる。

ID	IC-J060
Authors	池田 綾子(獨協医科大学), 西川 正能, 岡崎 隆行, 庄田 亜紀子, 大島 教子, 田所 望, 岡島 祐子, 深澤 一雄, 渡辺 博, 稲葉 憲之
Title	HCV 母子感染リスク因子 特に G 型肝炎ウイルス母子感染と比較して(原著論文)
Journal	日本産婦人科感染症研究会学術講演会記録集
Issue	(0918-4031)22 号 Page49-54
Year	2004.12
Study design	横断研究
Assay	EIA 法, RIA 法, RT-PCR 法
Sample size	妊婦 102 名 出生児 119 名
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	妊婦健診時に確認された HCV および HGV キャリア妊婦(紹介妊婦を含む)各々78名、24名とキャリアからの出生児各々105名,14名
Sampling method	
Outcome	抗 HCV,HCV-RNA
Data collection method	採血
Results	母児垂直感染発生率は、HCV で 9.5%(10/105)、HGV で 64.3%(9/14)であり、抗原陽転時期はいずれも 3ヶ月以内であった。HCV ではキャリア化児の 57.1%(4/7)が脱キャリア化したが、HGV では現在まで最長出生後 44ヶ月までキャリア化は認められていない。
Comments	HCV と HGV の母児感染を比較した研究であり、経産分娩が母子感染のリスクファクターとなり得るとも述べている

ID	IC-J061
Authors	阿部 祐也(公立気仙沼総合病院), 上原 茂樹, 岡村 州博, 他
Title	C 型肝炎の垂直感染に関する検討(原著論文)
Journal	日本産科婦人科学会雑誌
Issue	(0300-9165)45巻 3号 Page263-266
Year	1993.03
Study design	横断研究
Assay	EIA 法, RIA 法
Sample size	421
Study setting	産婦人科
Characteristics of study subjects (Gender, age, ...)	1991 年 8 月より、1992 年 3 月までの間に分娩した産婦
Sampling method	
Outcome	抗 HCV 抗体,HCV-RNA
Data collection method	採血
Results	対象とした 421 例のうち、抗 HCV 抗体(C100-3 抗体)陽性妊婦は 7 例(1.7%)であった。そのうち乳児に HCV-RNA 又は、抗 HCV 抗体が持続的に認められ、垂直感染が疑われたのは 3 例で、抗 HCV 抗体陽性妊婦に対しては、43%、全分娩数に対しては 0.7% と考えられた
Comments	今回の結果の母児感染率は 43% と高率であるが、報告によって大きな開きがある。これは、抗 HCV 抗体の種類、検査法、HIV 感染者の割合、母集団の違いなどが考えられる。

ID	IC-J063
Authors	寺澤 総介(岐北総合病院(厚生連)), 加藤 善一郎, 福富 悅, 近藤 直実
Title	HCV 母児感染の prospective Study で HCV 感染した症例の臨床的背景の検討
Journal	日本小児栄養消化器病学会雑誌
Issue	12巻2号 Page143-148
Year	1998.10
Study design	症例報告
Assay	RIA 法、RT-PCR 法
Sample size	64
Study setting	
Characteristics of study subjects (Gender, age, …)	HCV 抗体陽性かつ HCV-RNA 陽性の母より生まれた児の 64 例 (男 33 例, 女 31 例)、年齢は生後 6 ヶ月～5 歳。
Sampling method	
Outcome	HCV 抗体, HCV-RNA
Data collection method	採血
Results	HCV-RNA 陽性の母親より生まれた児 64 例 (男 34 例, 女 31 例) を prospective に 1～5 年経過観察した。64 例中 7 例 (10.9%) に母子感染が見られた。児の臨床経過では一過性感染が 4 例, HCV キャリア化が 3 例あった。
Comments	本研究より、母子感染の危険因子として、切迫流産や妊娠中毒症があると児に HCV 感染しやすくなることが示唆された。

ID	IC-J066
Authors	高瀬 修二郎(金沢医科大学 消化器内科), 佐藤 育子, 沢田 信, 他
Title	C 型肝炎ウイルス感染の家族内集積、特に母児間垂直感染についての検討
Journal	肝臓(0451-4203)
Issue	34巻8号 Page683-684
Year	1993.08
Study design	横断研究
Assay	第 2 世代測定キット、PCR 法
Sample size	4
Study setting	
Characteristics of study subjects (Gender, age, …)	HCV 抗体陽性の母親から生まれた新生児
Sampling method	
Outcome	HCV 抗体、HCV-RNA
Data collection method	採血
Results	HCV 抗体陽性の母親から生まれた新生児 4 例から生まれた新生児の、全例で HCV 抗体陽性であった。しかし、HCV-RNA は 2 例でのみ陽性で、他の 2 例では陰性であった。
Comments	本研究は、症例数が少ない研究である。

ID	IC-J068
Authors	小島 俊行(焼津市立総合病院), 仁科 秀則, 五十嵐 敏雄, 他
Title	C型肝炎ウイルスの垂直感染に関する検討
Journal	日本産婦人科・新生児血液学会誌(0916-8796)
Issue	2巻2号 Page136-137
Year	1992.05
Study design	横断研究
Assay	PCR法
Sample size	妊婦 1589名、出生児 24名
Study setting	
Characteristics of study subjects (Gender, age, ...)	HCV抗体陽性妊婦(17名)の児 24名
Sampling method	
Outcome	HCV-RNA
Data collection method	臍帯血
Results	HCV抗体陽性妊婦は、1589例中17例(1.07%)であった。陽性妊婦より生まれた新生児の臍帯血12例中11例(91.7%)であったが、HCV-RNA陽性率は0%(0/10)であった。
Comments	本研究は、母子感染のアウトカムをHCV-RNAとしており、母子感染はみられなかった。

ID	IC-J069
Authors	本吉 美代子(堺温心会病院), 下野 あき子, 甲斐 鈴香, 他
Title	血液透析症例におけるHCV陽性者の看護
Journal	大阪透析研究会会誌(0912-6937)
Issue	9巻2号 Page263-267
Year	1991.09
Study design	横断研究
Assay	
Sample size	130
Study setting	
Characteristics of study subjects (Gender, age, ...)	慢性透析患者 104例(男64例、女40例)、透析スタッフ26名(男8、女18:医師4、看護師18、臨床工学技士1、看護助手3)
Sampling method	
Outcome	HCV抗体
Data collection method	採血
Results	HD症例104例中HCV抗体陽性者は34例(33.7%)。また透析スタッフ28名中陽性者は2名(7.1%)。HCVの感染経路は過去の輸血であろうと考えられたが、長期の透析が感染の機会を増加させていると思われた。
Comments	透析スタッフの陽性率が他の医療従事者の報告に比べ高い結果となった。他の医療従事者と違った対応が必要と考える

ID	IC-J070
Authors	甲田 徹三(国立吳病院), 田村 健久夫, 市村 宏, 他
Title	血液透析患者と HCV 感染
Journal	感染症学雑誌(0387-5911)
Issue	66巻1号 Page66-69
Year	1992.01
Study design	横断研究
Assay	ELISA 法
Sample size	903
Study setting	
Characteristics of study subjects (Gender, age, ...)	透析患者 393 例(平均透析期間:79.3 ヶ月)、健常者 510 例
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、カルテからの情報
Results	血液透析患者の HCV 抗体陽性率(393 例中 70 例:17.8%)は、健常者(510 例中 3 例:0.6%)に比べて有意に高かった。透析患者の HCV 抗体陽性率は透析期間並びに輸血量の増加と共に高くなつた。しかし、輸血歴の無い透析患者でも抗体陽性率は 87 例中 8 例(9.2%)であり、健常者の陽性率 0.6%に比べて有意に高い。
Comments	本研究より、透析患者輸血以外の HCV 感染経路の存在が考えられた。

ID	IC-J071
Authors	権藤 和久(福岡県立柳川病院 内科), 神代 龍吉, 江森 啓悟, 松山 幸弘, 古賀 研志, 今村 賢一郎, 佐田 通夫
Title	若年者に発生した覚醒剤乱用が原因と考えられる C 型肝炎
Journal	日本消化器病学会雑誌(0446-6586)
Issue	99巻10号 Page1240-1242
Year	2002.10
Study design	症例報告
Assay	
Sample size	10
Study setting	
Characteristics of study subjects (Gender, age, ...)	外来受診者(男性 8 名、女性 2 名、16~20 歳)
Sampling method	
Outcome	
Data collection method	採血、問診
Results	症例は 16~20 歳の男性 8 例、女性 2 例で、外来受診日の 24 カ月から 5 カ月前より覚醒剤の回し打ちをしていた。全員顔見知りで、9 例に症例間での同一注射器の使用がみられた。今回の若年者にみられた C 型肝炎には交友関係や発症時期などから覚醒剤の回し打ちが関連していることが疑われ、医療従事者はこのような新たな患者発生の解析と適切な治療を通じて C 型肝炎の撲滅に努めるべきだと考えられた
Comments	注射の回し打ちは若年者に多く、年代別に分けた対策の必要性が示唆される

ID	IC-J072
Authors	飯島 敏彦(順天堂大学医学部附属浦安病院 内科), 金子 和弘, 小町谷 恒平, 他
Title	C型肝炎ウイルスの感染経路に関する研究 sexually transmitted diseases ハイリスク集団の調査から
Journal	肝臓(0451-4203)
Issue	34巻4号 Page345-346
Year	1993.04
Study design	横断研究
Assay	ELISA
Sample size	473
Study setting	
Characteristics of study subjects (Gender, age, ...)	ソープランドで働く女性 203名、20～39歳(平均27.5歳) 看護婦 270名、20～39歳(平均25.8歳)
Sampling method	
Outcome	抗HCV
Data collection method	採血
Results	対象群では、203例中8例(3.9%)、対照群では270例中2例(0.7%)であり、これは、対象群で有意( $p<0.05$ )に高率であった。
Comments	感染経路は、主に輸血だが、STDによる感染の対策の重要性が示唆される

ID	IC-J073																		
Authors	Toshiyuki Iitsuka, Jun Murakami, Ikuo Nagata, Susumu Kanzaki and Kazuo Shiraki																		
Title	Epidemiological survey of Japanese children infected with hepatitis B and C viruses																		
Journal	Hepatology Research																		
Issue	40: 878-886																		
Year	2010																		
Study design	Cross-sectional																		
Assay	Not mentioned																		
Sample size	114																		
Study setting	636 medical institutions in Japan in 2007																		
Characteristics of study subjects (Gender, age, ...)	Children under 20 years of age, who were infected with either HBV or HCV. Males:60, Age range:0-19 years																		
Sampling method																			
Outcome	Anti-HCV and HCV RNA																		
Data collection method	Questionnaire																		
Results	Transmission rate of HCV by year of infection <table border="1"> <tr> <th></th> <th>1983-1989</th> <th>1990-2005</th> </tr> <tr> <td>Mother to child transmission</td> <td>14%</td> <td>89%</td> </tr> <tr> <td>Intra-familial</td> <td>0%</td> <td>2%</td> </tr> <tr> <td>Blood transfusion</td> <td>76%</td> <td>4%</td> </tr> <tr> <td>Other</td> <td>4%</td> <td>0%</td> </tr> <tr> <td>Unknown</td> <td>7%</td> <td>5%</td> </tr> </table>		1983-1989	1990-2005	Mother to child transmission	14%	89%	Intra-familial	0%	2%	Blood transfusion	76%	4%	Other	4%	0%	Unknown	7%	5%
	1983-1989	1990-2005																	
Mother to child transmission	14%	89%																	
Intra-familial	0%	2%																	
Blood transfusion	76%	4%																	
Other	4%	0%																	
Unknown	7%	5%																	
Comments	The questionnaire was sent by mail to 636 institutions and the response rate was only 42%.																		

ID	IC-J074				
Authors	Mizuochi T, Takano T, Yanagi T, Ushijima K, Suzuki M, Miyoshi Y, Ito Y, Inui A, Tajiri H				
Title	Epidemiologic features of 348 children with hepatitis C virus infection over a 30-year period: a nationwide survey in Japan.				
Journal	J Gastroenterol				
Issue	53:419-426				
Year	2018				
Study design	Cross-sectional				
Assay	Real-time PCR (COBAS Ampliprep/COBAS TaqMan HCV test, Roche) in 90% of subjects Amplicor HCV monitor (COBAS Amplicor HCV Monitor test v 2.0, Roche) in 8% Branched DNA probe (Quantiplex HCV RNA 2.0, Bayer) in 2%.				
Sample size	348				
Study setting	Sixty-five pediatric centers in Japan from 2012 to 2016				
Characteristics of study subjects (Gender, age, …)	Children born from 1986 to 2015. Males=154 Mean age= $37.7 \pm 45.2$ months				
Sampling method					
Outcome	HCV RNA				
Data collection method	Medical records				
Results	Transmission rate of HCV by year of infection				
	Total	1986-1995	1996-2005	2006-2015	
Mother to child transmission	314	30(61%) (90%)	161(92%)	123(99%)	

	Horizontal	2(1%)	0	2(1%)	0
	Blood transfusion	17(5%)	17(5%)	0	0
	Unknown	15(4%)	2(4%)	12(7%)	1(1%)
Comments	Retrospective nature of data may constitute information bias				

ID	IC-J075
Authors	梶原 英二(新日本製鐵八幡製鐵所病院), 牧野 百合子, 東 晃一, 他
Title	妊娠中に HCV 針事故後発症した C 型急性肝炎の 1 症例
Journal	肝臓(0451-4203)
Issue	36 卷 10 号 Page584-588
Year	1995.10
Study design	症例報告
Assay	
Sample size	1
Study setting	病院内科
Characteristics of study subjects (Gender, age, ...)	31 歳、看護師
Sampling method	
Outcome	HCV 抗体、HCV-RNA
Data collection method	問診、採血
Results	31 歳、看護婦、妊娠 25 週で C 型肝硬変患者の採血針を誤刺、その後 42 日後(妊娠 31 週)に嘔気、嘔吐が出現、入院。誤刺時のトランスマニーティゼは正常、HCV 抗体は陰性。入院時 T.Bil 2.6mg/dl, GOT 1,012KU, GPT 1,005KU, HCV-RNA は陽性。HCV 抗体(2nd)は 4 週目までは陰性、8 週目に陽転化した。発症 23 週目の肝生検は急性肝炎の回復期の所見。以上より C 型急性肝炎と診断した。IFN 投与終了後よりトランスマニーティゼは正常値を持続し、投与終了後 6 カ月目の HCV-RNA は陰性。1 年目の HCV-RNA は陰性で、母子感染はなかった。妊娠中に発症した誤刺による C 型急性肝炎の症例は現在まで報告されてなく、貴重な症例と考えられた。
Comments	妊娠中の、針刺し事故による感染が確認された報告

ID	IC-J076
Authors	稻葉 憲之(千葉大学 産婦人科), 清水 久美子, 清水 文七, 他
Title	C型肝炎ウイルス母児垂直感染に関するプロスペクティブ検討
Journal	千葉医学雑誌(0303-5476)
Issue	69巻2号 Page67-72
Year	1993.04
Study design	横断研究
Assay	ELISA
Sample size	12
Study setting	
Characteristics of study subjects (Gender, age, ...)	10人のC型肝炎キャリア妊娠より生まれた出生児12例
Sampling method	
Outcome	HCV抗体
Data collection method	採血、カルテからの情報
Results	10人のC型肝炎ウイルスキャリア妊娠より生まれた12人の児を出生より経時的に経過観察し、8人(67.0%)でHCV抗体陽性であった。胎内感染の起こり得ること、および乳幼児肝炎が生じる得る事をプロスペクティブに証明した。
Comments	胎内感染だけでなく、水平感染、医療行為による感染も考慮する必要がある

ID	IC-J078
Authors	Same as PM-J079
Title	
Journal	
Issue	
Year	
Study design	
Assay	
Sample size	
Study setting	
Characteristics of study subjects (Gender, age, ...)	
Sampling method	
Outcome	
Data collection method	
Results	
Comments	

ID	IC-J079
Authors	Same as PM-J080
Title	
Journal	
Issue	
Year	
Study design	
Assay	
Sample size	
Study setting	
Characteristics of study subjects (Gender, age, ...)	
Sampling method	
Outcome	
Data collection method	
Results	
Comments	

ID	IC-J080
Authors	斎藤 悅(横浜市立総合保健医療センター), 奥平 謙一, 飯塚 博史, 他
Title	覚せい剤乱用者とHCV抗体
Journal	神奈川県精神医学会誌
Issue	(0288-9617)42号 Page61-65
Year	1992.12
Study design	横断研究
Assay	
Sample size	47
Study setting	保健医療センター
Characteristics of study subjects (Gender, age, ...)	・男性 27例 女性 6例 ・31歳未満が6例、31歳以上41歳未満が17例、41歳以上が16例
Sampling method	
Outcome	HCV抗体
Data collection method	採血、問診
Results	1991年10月～1992年2月までの間にせりがや病院を受診した覚せい剤乱用者47例でHCV抗体を検索した。HCV抗体陽性率は70.2%と、わが国のHCV抗体推定陽性率1.41%をはるかに越えた値を示した。
Comments	感染経路として、覚醒剤の経静脈的乱用が最も考えられる。覚醒剤常用者にアルコール依存者が多いことが、アルコール依存者のHCV抗体が高率に陽性であることの原因の一端を担っている可能性がある

ID	IC-J081
Authors	吉江 崇宏(諏訪赤十字病院), 田村 泰夫, 山村 伸吉, 他
Title	透析患者における HCV 抗体の検討
Journal	長野県人工透析研究会誌
Issue	(0910-2329)14巻1号 Page22-25
Year	1991.07
Study design	横断研究
Assay	ELSA 法
Sample size	12249
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	・透析患者 63 例(男性 39 例、女性 24 例) ・透析医療従事者 16 例 ・一般献血者 12170 例
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	一般献血者の HCV 抗体陽性率は、146/12170(1.2%)であり、透析患者は、10/63(15.9%)と、一般献血者に比べて高い値を示した。透析医療従事者は、0/16(0%)であった。透析患者における HCV 抗体陽性群と陰性群の比較で、女性に有意に HCV 抗体が多くかった。また、HCV 抗体陽性群に透析期間が長い、輸血量が多い人が有意に多かった。
Comments	透析患者の HCV 感染のリスクを報告した論文である。透析患者の中には、輸血歴がない患者もあり、夫婦間感染など、輸血以外の感染が考えられる。HCV また、本研究では、透析医療従事者は全例陰性であったが、針刺し等による医療従事者の感染にも注意が必要である。

ID	IC-J082
Authors	千住 雅博(伊万里市立市民病院), 高尾 雅己, 下口 和矩, 他
Title	C 型肝炎に関する臨床的検討 当院における現況とその感染経路
Journal	長崎医学会雑誌(0369-3228)
Issue	67巻4号 Page261-266
Year	1992.12
Study design	横断研究
Assay	
Sample size	73
Study setting	内科病院
Characteristics of study subjects (Gender, age, ...)	C 型肝炎患者 73 例
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	対象 73 例のうち明らかに輸血歴を有するものは、38 例(52.1%)であった。明らかに輸血歴を有しないものが 35 例であった。35 例のうち、刺青あるいは薬物乱用が 4 例、夫婦間感染 3 例、針刺し事故 2 例、鍼治療 1 例であった。これらのいずれにも属していないものが対象 73 例中 25(34.2%)認められた。25 例中男性は 16 例を占め、このうち何らかの手術(非輸血)の既往を有するものが 8 例であった。
Comments	C 型肝炎患者の感染経路を探索した報告である。輸血以外の感染経路に関して、アルコールと HCV の相乗効果による発癌作用の危険性を示唆している。

ID	IC-J084
Authors	杉谷 武彦(相川内科病院), 相川 達也, 千葉 俊也
Title	肝疾患症例およびその配偶者, 医療従事者, 心身障害者施設入所者での C 型肝炎ウイルスの感染経路の検討と抗 HCV-core 抗体の意義
Journal	つくばシンポジウム(0912-5795)
Issue	9 巻 Page15-21
Year	1993.12
Study design	横断研究
Assay	EIA 法, PCR 法
Sample size	751
Study setting	内科病院
Characteristics of study subjects (Gender, age, ...)	・抗 HCV 陽性の肝疾患患者 160 例(男 87 例) ・心身障害者施設入所者 484 名 ・C 型慢性肝疾患有する 107 名
Sampling method	
Outcome	HCV 抗体, HCV-RNA
Data collection method	採血、問診
Results	病歴の詳細な聴取により C 型肝疾患における HCV の感染経路として症例の 50% で輸血, 手術などの医療行為が認められた。刺青, 薬物濫用が男では 23%, 女では 9.4% に見られ, 予想される感染経路の全く不明なものは 8.8% にすぎなかった。心身障害者施設入所者は HBV マーカー, HCV マーカーとも若年群が高率を示し, 加齢による増加を認めなかった。医療従事者にあっては医師, 看護婦での HCV マーカーの陽性者は汚染事故経験者が多く, 他の職種は輸血などの既往によるものであった。C 型慢性肝疾患の配偶者の 19.5% が抗 HCV 抗体または抗 HCV-core 抗体陽性であり, 配偶者間の HCV 感染の可能性を示唆した。抗 HCV-core 抗体の高値例は HCV キャリアを, 低値例は HCV の一過性感染を示すものとみられた
Comments	問診を中心とした感染経路の検討であり, 情報バイアスを考慮しなければならない

ID	IC-J085
Authors	稲葉 憲之(獨協医科大学 産婦人科学 教室), 大島 教子, 西川 正能, 庄田 亜紀子
Title	【OB/GYN ウィルス感染症 外来診療マニュアル 2003】C 型肝炎ウイルス 母子感染としての HCV
Journal	産婦人科の実際(0558-4728)
Issue	52 巻 7 号 Page901-906
Year	2003.07
Study design	コホート研究
Assay	Nested RT-PCR
Sample size	82
Study setting	産婦人科病院
Characteristics of study subjects (Gender, age, ...)	キャリア妊娠 60 名の出生児 82 名
Sampling method	
Outcome	HCV-RNA
Data collection method	採血、問診
Results	1365 名の妊娠の HCV 抗体検査を行い, 9 名の陽性者を得た。これに他施設からのキャリア妊娠 51 名を加えた。キャリア妊娠 60 名の出生児 82 名を定期的にフォローアップし, HCV 感染の状況を調査した。フォローアップ期間は 6 ~ 72 カ月間で, 6 名 (7.3%) が HCV RNA 陽性となり, 少なくとも 6 カ月間 HCV RNA 陽性が持続し, 母子間における HCV genotype は全ペアで一致をみた。その陽転時期は臍帯血から月齢 3 カ月に及んだ。これらのキャリア化児はすべて経産分娩で出生した。キャリア化児は healthy carrier ではなく, 一過性に肝機能異常が 6 名中 4 名にみられた。キャリア妊娠の分娩時肝炎発症は chemical hepatitis でさえ HCV 母子感染のリスクファクターになり得ることが示唆された。
Comments	母子感染率 7.3% の報告である。本研究が 8 つの論文のまとめた結果より, HIV との co-carrier や IVDU でなければ母子感染率は平均 5.4% であり, 本研究の報告と近い。

ID	IC-J087
Authors	野口 有三(横浜市衛生研究所 検査研究課), 宇宿 秀三, 折井 まさ江, 佐々木 一也
Title	平成 17 年度基本健康診査における肝炎ウイルス検査の年度集計
Journal	横浜市衛生研究所年報(0912-2826)
Issue	45 号 Page79-82
Year	2006.12
Study design	横断研究
Assay	PA 法,R-PHA 法
Sample size	2846
Study setting	福祉保健センター
Characteristics of study subjects (Gender, age, ...)	満 40~70 の HCV,HBV の検査を希望した受診者
Sampling method	
Outcome	HCV 抗体,HBs 抗原
Data collection method	採血、問診
Results	本年度の基本健診における肝炎ウイルス(HCV、HBV)検査の総受診者数は 2846 人(男 494 人、女 2330 人、不明 22 人)で、HCV の陽性者率は 1.2%(男 2.4%、女 1.0%)、HBV の陽性者率は 0.7%(男 1.2%、女 0.6%)であった。陽性者についてリスク要因調査(輸血・手術歴の調査)を行った結果、HCV、HBV とも男性の陽性者において「手術歴あり」者の割合が「手術歴なし」者より高かった。
Comments	本結果は、対象年齢が 40~70 歳であること、検診を希望する健康新たに心ある集団であることを考慮することが考えられる

ID	IC-J088
Authors	田尻 仁(大阪大学 医 小児科), 澤田 敦, 古座岩 宏輔, 他
Title	小児 C 型慢性肝炎における C 型肝炎ウイルス関連抗体の臨床的意義 特に nonstructural 5 について
Journal	日本小児科学会雑誌(0001-6543)
Issue	99 卷 10 号 Page1751-1755
Year	1995.10
Study design	横断研究
Assay	EIA 法、ELISA 法、RT-PCR 法
Sample size	72
Study setting	小児科病院
Characteristics of study subjects (Gender, age, ...)	非 A 非 B 型慢性肝炎患者
Sampling method	
Outcome	HCV,抗体,HCV-RNA
Data collection method	採血、問診
Results	小児非 A 非 B 型慢性肝炎 72 例の 45 例に HCV の関与を認めた。HCV 感染者 45 例の感染経路は、輸血が 40 例と最も多かった。
Comments	本研究より、小児 HCV 感染者の感染経路では、輸血が最も多かった。

ID	IC-J089
Authors	杉山 幸八郎(名古屋市立大学 小児科), 三宅 能成, 小田 高也, 他
Title	C型肝炎ウイルス抗体陽性の母親から生まれた児における母児感染の検討
Journal	日本小児科学会雑誌(0001-6543)
Issue	99巻4号 Page871-872
Year	1995.04
Study design	コホート研究
Assay	Nested PCR
Sample size	21
Study setting	小児科病院
Characteristics of study subjects (Gender, age, ...)	妊娠中にHCV抗体が判明していた母親から出生した21例の児 ・母親の既往歴は、4例が輸血歴あり ・2例の母親は、それぞれ人工授精および夫の白血球を用いた免疫療法を受けていた ・5例の母親は輸血関連非A非B肝炎の既往 ・4例の母親は、肝機能異常(GPT40U/l以上)を認める
Sampling method	
Outcome	HCV-RNA
Data collection method	採血、カルテからの情報
Results	妊娠中にHCV抗体が判明していた母親から出生した21例の児のHCVゲノムをみると、分娩時および1ヶ月時に一過性がそれぞれ1例と、4,5,6,7,8ヶ月時および、4,6,12ヶ月時と何れも3～5回連続して検出された3例である。
Comments	サンプルサイズが少ない報告である。母親の既往や現病歴を考慮した解析も行うべきと考える

ID	IC-J090
Authors	Michitaka Kojiro(愛媛大学 医 第3内科), Onji Morikazu, Horiike Norio, 他
Title	本邦におけるC型肝炎ウイルス(HCV)の家族内伝播
Journal	Gastroenterologia Japonica(0435-1339)
Issue	26巻5号 Page619-622
Year	1991.10
Study design	横断研究
Assay	第2世代HCV抗体
Sample size	114
Study setting	重症心身障害者病棟
Characteristics of study subjects (Gender, age, ...)	114例 ・男53例、女61例 ・年齢3～51歳(平均24.6歳)
Sampling method	
Outcome	HCV抗体
Data collection method	採血、病院カルテからの情報収集
Results	入院中の114名のGPT及び第2世代HCV抗体を測定し、抗体陽性例については病歴及びHCV-RNAサブタイプを検討し、感染経路を推定した。HCV抗体陽性率は4.4%であり、健常人に比し高頻度であった。HCV抗体陽性の5例のうち4例(80%)に輸血歴があった。
Comments	感染者どうしのサブタイプが違うことから、今回の感染は、院内感染及び集団感染は否定され、血液製剤を介した感染が考えられる

ID	IC-J091
Authors	Michitaka Kojiro(愛媛大学 医 第3内科), Onji Morikazu, Horiike Norio, 他
Title	本邦におけるC型肝炎ウイルス(HCV)の家族内伝播
Journal	Gastroenterologia Japonica(0435-1339)
Issue	26巻5号 Page619-622
Year	1991.10
Study design	横断研究
Assay	ELISA
Sample size	36
Study setting	内科病院
Characteristics of study subjects (Gender, age, ...)	陽性慢性肝疾患患者 16例の家族メンバー36名
Sampling method	
Outcome	HCV抗体
Data collection method	採血、病院カルテからの記録
Results	HCVの家族内伝播状況をしらべるために、抗HCV(anti-C 100-3)陽性慢性肝疾患患者 16例の家族メンバー36名について、ELISAにより抗HCVを測定した。16家族中2家族(12.5%)で多数の抗HCV陽性者が発見された。35名の家族メンバー中、輸血の既往のない4例(11.4%)で抗HCVが陽性であった。HCV陽性女性の子供 17名中2名(11.8%)で抗HCV陽性であったが、5名の配偶者中1名(20.0%)で抗HCV陽性であった。
Comments	家族内伝播がHCV感染経路の一つであることが示唆されたが、HCV以外感染症の重感染や手術歴などの項目の配慮も必要と考える

ID	IC-J092
Authors	板倉 敬乃(埼玉医科大学総合医療センター), 小俣 真, 小川 雄之亮, 上里 忠之
Title	C型肝炎母児感染についての調査(第1報)
Journal	埼玉県医学会雑誌(0389-0899)33
Issue	巻3号 Page377-379
Year	1999.01
Study design	横断研究
Assay	記載なし
Sample size	16
Study setting	小児科病院 2施設
Characteristics of study subjects (Gender, age, ...)	HCV抗体陽性の妊婦からの出生児
Sampling method	
Outcome	HCV—RNA
Data collection method	採血、問診
Results	平成9年12月末迄の15ヵ月間でHCV陽性妊婦から出生した児は16例あった。母体の感染経路は輸血4例、祖母からの感染5例、夫からの感染と思われる症例1例で、その他6例は不明であった。肝機能障害を認めた児はなかったが、16例中1例(6.25%)が生後1ヵ月でRNA陽性となった。母親がRNA陽性で、かつウイルス量の多い症例であった。一般に、HCV感染についての認識が乏しく、調査の協力が得られない症例もあった
Comments	大学病院のような合併疾患有する妊婦や不妊治療後の妊婦が多いような病院は、児の疾患に対して協力的な母親が多いため、調査に協力してくれやすい。そのような調査対象の妊婦の背景も考慮する必要がある

ID	IC-J094
Authors	相川 達也(相川内科医院), 平山 牧彦, 石渡 千恵子, 他
Title	医療職員における B 型肝炎ウイルスおよび C 型肝炎ウイルス感染の実態調査 特に抗 HCV-core 抗体の測定を中心として
Journal	日本医師会雑誌(0021-4493)
Issue	107巻4号 Page679-687
Year	1992.02
Study design	横断研究
Assay	EIA 法
Sample size	2168
Study setting	検査センター
Characteristics of study subjects (Gender, age, ...)	検診受診者の医療機関の職員 1084 名と対照群(献血者および健常妊婦)1084 名
Sampling method	
Outcome	HCV-core 抗体
Data collection method	採血、問診
Results	抗 HBc 抗体, 抗 HCV-core 抗体の測定によって幅広く HCV 感染者を把握できた。抗 HCV-core 抗体の陽性率は医療従事者で対照群より高かった。HBV, HCV の年間の抗体陽転率に差をみなかった。両者の感染経路あるいは感染機会は共通する面もあるとみられた。肝障害を示す医療従事者の 27%, 約 1/4 は HCV の感染と関連があるとみられた。医療従事者群から発見された一見健康な HCV 感染者を含む集団は、非 A 非 B 型肝炎あるいは C 型肝炎と認定されている疾患群とは感染経路や契機を異にするとみなされた
Comments	医療従事者の HCV のリスクについて報告。医療従事者の中でも、病棟や専門疾患ごとの分類が必要と考える

ID	IC-J103
Authors	星野 潮(松江市立病院), 堤 貴司, 大東 恭子, 河野 通盛, 吉村 複二, 山田 稔, 佐藤 方則, 小林 淳子, 山本 寛子, 石飛 誠一, 原田 賢一, 法正 恵子, 周防 武昭, 川崎 寛中
Title	非輸血例における C 型肝炎ウイルスの感染経路に関する検討
Journal	松江市立病院医学雑誌(1343-0866)
Issue	1巻1号 Page1-4
Year	1997.03
Study design	横断研究
Assay	EIA 法
Sample size	423
Study setting	
Characteristics of study subjects (Gender, age, ...)	C 型慢性肝疾患患者 202 例と性、年齢を一致させた HCV 抗体陰性の対照者 221 例
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	C 型慢性肝疾患患者の HCV 感染経路について、患者からの聞き取り調査を行った。対照との比較で、HCV の感染経路として輸血が最も多く、次いで静脈注射、手術歴、家族歴が関与しているものと考えられた。特に非輸血例の感染経路として HCV に汚染された注射器具による静脈注射が重要であり、C 型慢性肝疾患患者多発地区形成に関与している可能性が示唆された
Comments	肝疾患患者多発地域について注射等の感染経路の危険性が述べられており、地域単位での対策が必要である。

ID	IC-J110
Authors	荒井 啓次(山形市立病院済生館), 川田 元司, 大江 雅宏, 他
Title	当院血液透析患者における C 型肝炎ウイルス抗体についての検討
Journal	山形市立病院済生館医学雑誌(0385-1184)
Issue	17巻1号 Page95-102
Year	1992.08
Study design	横断研究
Assay	EIA 法
Sample size	80
Study setting	内科病院
Characteristics of study subjects (Gender, age, ...)	血液患者 80 例
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	当院血液透析患者 80 例に対し HCV (C 100-3)抗体を測定した結果、陽性率は 21.3% であり、透析年数、輸血歴、輸血量で有意差が認められた。しかし、輸血以外の感染経路も否定出来なかった。
Comments	透析患者の HCV のリスクについての報告である。輸血以外のリスクも考慮した解析が必要と考える

ID	IC-J111
Authors	森田 修行(富山県衛生研究所), 中山 喬, 佐竹 伸一郎, 他
Title	C 型肝炎ウイルスの母子間感染に関する研究
Journal	富山県衛生研究所年報(0917-0707)1
Issue	9号 Page97-101
Year	1996.10
Study design	横断研究
Assay	RT-PCR 法
Sample size	16
Study setting	産婦人科医院
Characteristics of study subjects (Gender, age, ...)	HCV-RNA 陽性の妊婦より生まれた出生児
Sampling method	
Outcome	HCV-RNA
Data collection method	採血、問診
Results	産婦人科の外来を受診した健康な妊婦を対象に、民間検査機関の検査で C 型肝炎ウイルス(HCV)抗体陽性と判定された場合、新たに採血した血清で、受身赤血球凝集反応(PHA)を用いた第 2 世代の HCV 診断キットを使用して抗体価を測定したその結果、全て

	の新生児の血清に HCV RNA は検出されず,その後追跡し得た 3 例の乳児でも HCV 感染を確認することはできなかった
Comments	母子感染が 1 例もみられなかった報告である。サンプルサイズを増やし、妊婦の病歴など様々な要因を考慮に入れた解析が必要である

ID	IC-J112
Authors	市川 啓子(奈良県衛生研究所), 福岡 裕恭, 谷 直人, 他
Title	奈良保健所管内東部山間住民の HCV 抗体保有状況
Journal	奈良県衛生研究所年報(0911-1670)
Issue	28 号 Page111-112
Year	1994.12
Study design	横断研究
Assay	PA 法
Sample size	1024
Study setting	
Characteristics of study subjects (Gender, age, ...)	検診受診者 1024
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	奈良県民の C 型肝炎ウイルス抗体保有率を知るため,平成 5 年 7 月から 9 月の間に奈良保健所管内山間部 2 村(T 村・Y 村)の住民を対象として血液検査を実施した。抗体保有者のうち,手術歴の有る者は 60%,輸血歴の有る者は 20%となり,手術歴や輸血歴が感染経路の一つとなる可能性がある
Comments	地域での抗体率の違いは、輸血以外の感染経路の検討が必要と考える

ID	GR-J001
Authors	吉田精市, 清沢研道, 田中栄司, 袖山健, 清水恵
Title	非 A 非 B 型肝炎患者家族の HCV 抗体の測定
Journal	厚生省非 A 非 B 型肝炎研究 平成元年度 研究報告書
Issue	p38-40
Year	1989
Study design	横断研究
Assay	EIA 法
Sample size	
Study setting	
Characteristics of study subjects (Gender, age, ...)	HCV 抗体陽性の妊婦とその出生児
Sampling method	
Outcome	HCV 抗体
Data collection method	採血
Results	HCV 抗体陽性の母親発端者 12 例（内 4 例は出産前に輸血歴または肝機能障害が存在することが確認された：これに対する子は 5 例）に対する子 20 例と HCV 抗体陰性の母親発端者 2 例（内 1 例は出産前に輸血歴または肝機能障害が存在することが確認された：これに対する子は 1 例）に対する子 4 例につき検討可能であったが、いずれも HCV 抗体陰性であった。HCV の母児間感染と考えられる症例はみられなかった。
Comments	今回の母児感染は 0 件であったが、HCV の母児感染は報告によりばらつきが大きい

ID	GR-J002
Authors	清水勝, 高本滋, 田中彗, 高梨美乃子, 高橋純生
Title	医療機関内における抗 HCV 抗体陽性率についての検討
Journal	厚生省非 A 非 B 型肝炎研究 平成元年度 研究報告書
Issue	p40-42
Year	1989
Study design	横断研究
Assay	EIA キット
Sample size	692
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	病院職員（男性 186 人、女性 505 人）
Sampling method	
Outcome	抗 HCV 抗体
Data collection method	採血、問診
Results	病院一般職員の検診時に 692 検体を調査した。692 例中 2 例（0.29%）の抗 HCV 抗体陽性者を認めた。抗 HCV 抗体陽性者は、医師（男性、40 歳台）と看護師（女性、30 歳台）であった。
Comments	本研究は、医療従事者の抗体保有率が低いこと、および 30 歳未満の若い層に抗体陽性例が認められなかつことなどから、HBV と異なり HCV は院内感染としての危険性の少なさを示唆

ID	GR-J003
Authors	吉澤浩司, 三井健宏, 野尻徳行, 青山憲一, 金光公浩
Title	供血者のリスク別 HCV 抗体陽性率
Journal	厚生省非 A 非 B 型肝炎研究 平成元年度 研究報告書
Issue	p47-50
Year	
Study design	横断研究
Assay	EIA 法
Sample size	供血者 34432 例、1357 例、透析患者 355 例
Study setting	
Characteristics of study subjects (Gender, age, ...)	
Sampling method	
Outcome	HCV 抗体
Data collection method	採血
Results	静岡県下、供血者 34432 例のうち、384 例 (1.12%) が HCV 抗体陽性であった。八王子赤十字血液センター供血者 1357 例のうち 23 例 (1.7%) が HCV 抗体陽性であった。また、透析患者 355 例中 73 例 (20.6%) で HCV 抗体陽性となり高い値を示した。
Comments	献血者の HCV スクリーニング開始後に、輸血後肝炎は大幅に減少した

ID	GR-J004
Authors	南谷幹夫
Title	特殊浴場従業女性の HCV 抗体保有状況
Journal	厚生省非 A 非 B 型肝炎研究 平成元年度 研究報告書
Issue	p50-52
Year	
Study design	横断研究
Assay	
Sample size	290
Study setting	
Characteristics of study subjects (Gender, age, ...)	特殊浴場従業女性
Sampling method	
Outcome	HCV 抗体
Data collection method	採血
Results	HCV 抗体検査を行った特殊浴場従業女性 290 例中 21 例 (7.24%) が陽性であった。その内訳は 20 歳以下 10 例は全例陰性、21~30 歳 198 例中 15 例 (7.58%) が陽性であり、31~40 歳 74 例中 6 例 (8.11%) が陽性であった。また、41~50 歳の 6 例ならびに年齢不詳の 2 例はいずれも陰性であった。
Comments	本研究より、特殊浴場従業は HCV のリスク要因であることが示唆された。

ID	GR-J005
Authors	白木和夫, 長田郁夫, 岡田隆好, 谷本要
Title	Anti-HCV による非 A 非 B 型肝炎母児垂直感染の検討
Journal	厚生省非 A 非 B 型肝炎研究 平成元年度 研究報告書
Issue	P52-55
Year	1989
Study design	横断研究
Assay	
Sample size	47
Study setting	
Characteristics of study subjects (Gender, age, ...)	乳児非 A 非 B 型肝炎と診断した 27 例（男性 20 例、女性 17 例） 検査の可能であった母親 20 例
Sampling method	
Outcome	GPT
Data collection method	採血
Results	非 A 非 B 型肝炎と診断され、抗 HCV 陽性と診断された母親から生まれた児 7 名のうち全例に肝機能障害がみられた、
Comments	アウトカムが肝機能障害

ID	GR-J006
Authors	守屋尚, 小宮裕, 熊谷純子, 片山恵子, 田中純子, 賴岡徳在
Title	慢性血液透析医療機関における C 型肝炎ウイルス感染の実態調査
Journal	非 A 非 B 型肝炎の予防、疫学に関する研究 平成 11 年度報告書
Issue	p69-73
Year	1999
Study design	横断研究
Assay	PHA 法
Sample size	1665
Study setting	血液透析医療機関
Characteristics of study subjects (Gender, age, ...)	慢性血液透析患者（男性 990 例、女性 675 例、平均年齢 60.3 歳）
Sampling method	
Outcome	HCV 抗体
Data collection method	採血
Results	慢性血液透析患者 1665 例を対象とし、HCV 抗体の測定を行うと、369 例（22.2%）が HCV 抗体陽性であった。
Comments	輸血用血液の HCV 抗体スクリーニング検査が実施されても、本結果であるため、輸血以外の感染経路も考えられる

ID	GR-J007
Authors	和田清, 分島徹, 黒木規巨, 中村亮介, 石橋正彦, 伊波真理雄, 前岡邦彦, 岡島和夫, 津久江一郎, 飯田信夫,
Title	薬物依存者-特に覚醒剤依存者および注射による薬物依存者-の血清疫学調査：HBV, HCV 暴露率に関する全国調査
Journal	非 A 非 B 型肝炎の予防、疫学に関する研究 平成 10 年度報告書
Issue	p50-56
Year	1998
Study design	横断研究
Assay	
Sample size	精神科医療施設に入院した覚醒剤依存・精神病患者 334 人、医療機関を受診していない薬物依存・精神病患者 35 人
Study setting	
Characteristics of study subjects (Gender, age, ...)	精神科医療施設に入院した覚醒剤依存・精神病患者 334 人（男性 279 人・女性 76 人、平均年齢 33）、医療機関を受診していない薬物依存・精神病患者 35 人（男性 25 人・女性 11 人、平均年齢 30）
Sampling method	
Outcome	HCV 抗体
Data collection method	採血
Results	精神科医療施設に入院した覚醒剤依存・精神病患者 334 人のうち HCV 抗体陽性者は、177 人（53.0%）と高い結果となった。また、医療機関を受診していない薬物依存・精神病患者 35 人のうち HCV 抗体陽性者は 9 人（25.7%）となり、精神科医療施設に入院した覚醒剤依存・精神病患者よりは低い結果となった。
Comments	薬物依存者のリスクの高さ、特にシリンジ/針の共用のリスクの高さを示唆

ID	GR-J008
Authors	大林明, 上司裕史, 矢倉道泰, 原田英治, 木村泰, 和田照子, 清水弘
Title	輸血歴をもつ肺結核後遺症患者群における HCV 感染
Journal	厚生省非 A 非 B 型肝炎研究 平成 6 年度 研究報告書
Issue	p30-36
Year	1994
Study design	横断研究
Assay	EIA 法
Sample size	肺結核手術後遺症患者 228 名
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	
Sampling method	
Outcome	HCV 抗体
Data collection method	採血
Results	輸血歴のある肺結核手術後遺症患者 228 名のうちの 50%、113 名に HCV 抗体が検出された。これに対して、輸血歴のなかった 15 名では HCV 抗体陽性は 2 例、13% であった。輸血歴のある対象患者を輸血を受けた時代別にみると過半数が壳血時代（1952～1964）での輸血であり、前後の時代に比べて有意に高率であった。
Comments	本研究より、壳血時代の輸血が HCV 感染を多大に蔓延させたことを示唆している

ID	GR-J009
Authors	白木和夫, 長田郁夫, 飯塚俊之, 梶俊策
Title	HCV 母子感染に関する研究
Journal	厚生省非 A 非 B 型肝炎研究 平成 6 年度 研究報告書
Issue	p37-40
Year	1994
Study design	コホート研究
Assay	PHA 法, bDNA 法
Sample size	10703
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	妊婦
Sampling method	
Outcome	HCV 抗体, HCV-RNA
Data collection method	採血
Results	妊婦 10691 人に HCV 抗体スクリーニングを行い、見いだされた HCV-RNA 陽性例の児のうち追跡調査を行った症例は 37 例であったが、このうち HCV の母子感染は 3 例 (8.1%) で成立した。また、スクリーニング以外で見いだされた HCV-RNA 妊婦は 9 例で児の追跡調査を行った症例は 12 例であったが、このうち母子感染は 1 例 (8.3%) に成立した。
Comments	今回、母乳投与は禁止しておらず、母乳を与えられてた児のなかで感染例と非感染例がいたことより HCV の母乳による感染の可能性は低いと示唆される

ID	GR-J010
Authors	吉澤浩司, 守屋尚, 田中純子, 佐々木富美子, 水井正明, 毛利久夫, 大野尚文
Title	HCV の母子感染成立頻度および感染成立の要因に関する調査・研究
Journal	厚生省非 A 非 B 型肝炎研究 平成 6 年度 研究報告書
Issue	p41-42
Year	1994
Study design	コホート研究
Assay	PHA 法, bDNA probe assay 法
Sample size	16714
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	妊婦
Sampling method	
Outcome	抗 HCV, HCV-RNA
Data collection method	採血, 問診
Results	妊婦健診 16714 例の妊婦のうち HCV 抗体スクリーニング結果は、163 例 (0.98%) が陽性となった。133 例のうち 100 例 (74.6%) に HCV-RNA が検出された。そのうち、追跡可能であった 85 例の妊婦から生まれた 88 例の児について、生後 6 ヶ月以上の追跡が可能であり、このうちの 2 例 (2.3%) に HCV-RNA が検出された
Comments	本研究は、出産時の HCV-RNA 量により感染する場合と感染しない場合があり今後の検討が必要であると記載

ID	GR-J011
Authors	真弓忠
Title	透析患者における C 型肝炎ウイルス感染の実態と特徴
Journal	厚生省非 A 非 B 型肝炎研究 平成 5 年度 研究報告書
Issue	p22-23
Year	1993
Study design	横断研究
Assay	EIA 法, PCR 法
Sample size	543
Study setting	透析センター
Characteristics of study subjects (Gender, age, ...)	543 人 男性：280 人（55±12 歳）女性：263 人（56±13 歳）
Sampling method	
Outcome	HCV 抗体, HCV-RNA
Data collection method	採血、問診
Results	対象透析患者 543 人のうち、HCV 抗体は 543 人中 142 人（26%）に認めた。HCV-RNA は、117 人（22%）に検出された。そのうち、4 人(4%)のキャリアで HCV 抗体陰性であった。543 人中、輸血歴があるのは 365 人（67%）であった。
Comments	本研究は、HCV 持続感染でありながら、HCV 抗体陰性が認められる HCV 感染対策を考慮すべき透析患者での HCV 感染の特徴と記載

ID	GR-J013
Authors	清水勝, 長田広司
Title	循環器外科手術症例における輸血後肝炎追跡調査
Journal	厚生省非 A 非 B 型肝炎研究 平成 5 年度 研究報告書
Issue	p36-39
Year	1993
Study design	横断研究
Assay	PHA 法, RT-nested-PCR 法
Sample size	442
Study setting	
Characteristics of study subjects (Gender, age, ...)	輸血実施手術症例 442 例、男性 213 例・女性 177 例、平均年齢 37.9 歳・中央値 50 歳
Sampling method	
Outcome	HCV 抗体, HCV-RNA
Data collection method	採血、問診
Results	検討症例 390 例中、HCV 抗体が陽性者は、24 例（6.2%）であった。輸血歴ありの PTH 発症率は 75 例中 7 例（9.3%）で、輸血歴なしの 315 例中 23 例（7.3%）であり輸血歴の有無で PTH の発症率に有意差は見られなかった。
Comments	本研究より、輸血歴による輸血後肝炎発症率に差は見られなかった。輸血歴は情報バイアスの考慮が必要である。

ID	GR-J014
Authors	清澤研道, 田中栄司, 袖山健
Title	C型肝炎多発地域の疫学的研究-感染リスクのロジスティックモデルによる多変量解析による検討-
Journal	厚生省非A非B型肝炎研究 平成5年度 研究報告書
Issue	p82-85
Year	1993
Study design	横断研究
Assay	RIBA2法
Sample size	1978
Study setting	
Characteristics of study subjects (Gender, age, ...)	肝炎多発地区 435人、肝炎非多発地域 1543人
Sampling method	
Outcome	HCV抗体
Data collection method	採血、問診
Results	肝炎多発地区的HCV抗体者は、141/435（32.4%）、肝炎非多発地区では、35/1543（2.3%）であった。肝炎多発地区的HCV感染のリスクとして、加齢、家族歴、民間療法があげられ、非肝炎多発地区では、輸血歴、男性、手術歴であった。
Comments	問診時の思い出しバイアスを考慮する必要がある。

ID	GR-J015
Authors	Fujiwara S, Kusumi S, Cologne J, Akahoshi M, Kodama K, Yoshizawa H.
Title	Prevalence of anti-hepatitis C virus antibody and chronic liver disease among atomic bomb survivor.
Journal	Radiat Res.
Issue	154(1):12-9.
Year	2000
Study design	Adult Health Study Survey
Assay	PHA, Abbott HCV-PHA 2 <sup>nd</sup> Generation, Dynabott, Tokyo.
Sample size	6121
Study setting	Adult Health Study Survey
Characteristics of study subjects (Gender, age, ...)	2112 men, 4009 women, 3252 Hiroshima and 2369 Nagasaki
Sampling method	
Outcome	Anti-HCV
Data collection method	
Results	<ul style="list-style-type: none"> <li>- Having had blood transfusion had a higher prevalence of anti-HCV (Relative Prevalence 2.54, 95% CI 2.18-2.96, <math>P&lt;0.001</math>)</li> <li>- No evidence of association was found between anti-HCV positive and acupuncture (Relative Prevalence 1.00, 95% CI 0.88-1.14, <math>P=0.77</math>)</li> </ul>
Comments	Some people could not recall the history of have blood transfusion. Recall bias is also be in consideration.

ID	GR-J016
Authors	Hino K, Moriya T, Ohno N, Takahashi K, Hoshino H, Ishiyama N, Katayama K, Yoshizawa H, Mishiro S.
Title	Mother-to-infant transmission occurs more frequently with GB virus C than hepatitis C virus.
Journal	Arch Virol.
Issue	143: 65–72
Year	1998
Study design	N/A
Assay	5'UTR-based RT-PCR
Sample size	107
Study setting	N/A
Characteristics of study subjects (Gender, age, ...)	Hepatitis C virus (HCV)-infected pregnant women
Sampling method	N/A
Outcome	HCV-RNA
Data collection method	N/A
Results	A total of 107 hepatitis C virus (HCV)-infected pregnant women were screened for GB virus C (GBV-C) RNA in their sera, and 11 (10.3%) were positive. Among 11 infants born to these HCV=GBV-C co-infected mothers, GBV-C RNA was detected in 7 (63.6%) while HCV RNA was found in 1 (9.1%) within 1 year after birth: this difference was statistically significant ( $p=0.023$ ).
Comments	These results suggest that GBV-C is more easily transmitted from mother to infant than HCV, although hepatitis is not caused thereby.

ID	PM-J001
Authors	Sun, Hsin-Yun and Uemura, Haruka and Wong, Ngai-Sze and Chan, Denise P-C and Wong, Bonnie C-K and Lin, Pi-Han and Su, Li-Hsin and Hung, Chien-Ching and Oka, Shinichi and Chang, Sui-Yuan and Lee, Shui-Shan
Title	Molecular epidemiology of acute HCV infection in HIV-positive patients from Hong Kong, Taipei, Tokyo.
Journal	Liver Int.
Issue	39(6):1044-1051
Year	2019
Study design	Cross-sectional
Assay	PCR
Sample size	38
Study setting	AIDS Clinical Center, Tokyo, 2010-2016
Characteristics of study subjects (Gender, age, …)	Male HIV-HCV patients, mean age 40.5±6.9
Sampling method	Convenience
Outcome	HCV RNA
Data collection method	Standardized data form
Results	Based on the percentage of concurrent STDs (78.9%) and the homogeneity of the predominance of genotype 1b, transmission was assumed to be sexual (male-to-male)
Comments	No control group. Transmission route was based on the prevalence of other sexual transmitted diseases.

ID	PM-J005
Authors	Murakami, Jun and Nagata, Ikuo and Iitsuka, Toshiyuki and Okamoto, Manabu and Kaji, Shunsaku and Hoshika, Tadataka and Matsuda, Ryu and Kanzaki, Susumu and Shiraki, Kazuo and Suyama, Akihiko and Hino, Shigeo
Title	Risk factors for mother-to-child transmission of hepatitis C virus: Maternal high viral load and fetal exposure in the birth canal.
Journal	Hepatol Res
Issue	42(7):648-57
Year	2012
Study design	Cross sectional
Assay	Nested RT-PCR (from June 1992 to December 1998) Amplicor HCV Monitor 2.0, Roche Diagnostics, NJ, USA (from January 1999 to March 2006)
Sample size	106
Study setting	Tottori Prefecture (June 1992 to March 2006)
Characteristics of study subjects (Gender, age, …)	Children born to HCV positive mothers
Sampling method	
Outcome	Anti HCV
Data collection method	Pregnancy registries and lab reports
Results	In 106 children born to anti-HCV antibody-positive mothers, 75 was breastfed and 6 were infected. The incidence of premature rupture of the membranes was significantly higher in infected cases than in uninfected cases ( $P < 0.001$ ). This may be due to a sampling bias because the absence of premature rupture may not be specified in every chart. However,
Comments	Different RNA detection systems were used and this may constitute a classification bias

ID	PM-J007
Authors	Nishimura, Naoyuki and Isoda, Norio and Higashizawa, Toshihiko and Otake, Toshiya and Tsukui, Mamiko and Nagashima, Shigeo and Takahashi, Masaharu and Okamoto, Hiroaki and Sugano, Kentaro
Title	A case of acute hepatitis C caused by interspousal transmission after 30 years of marriage.
Journal	Clin J Gastroenterol.
Issue	3(1):50-6.
Year	2010
Study design	Case report
Assay	RT-PCR (SuperScript II RNase H- reverse-transcriptase; Invitrogen, Tokyo, Japan)
Sample size	1
Study setting	Shimotsuke, Tochigi (2009)
Characteristics of study subjects (Gender, age, …)	60-year old man, spouse of HCV positive woman.
Sampling method	NA
Outcome	HCV RNA
Data collection method	Blood samples and interview
Results	Analysis of the samples of the couple showed 98.7% similarity in the partial NS5B sequence of 1087 nt (99.4% at the amino acid level).
Comments	The couple had regular sexual intercourse once a month, without protective measures during intercourse and no other transmission route has been identified. Therefore, it is most likely that sexual intercourse was the route of infection.

ID	PM-J008
Authors	Ohto, Hitoshi and Ishii, Tsutomu and Kitazawa, Junichi and Sugiyama, Seiji and Ujiie, Niro and Fujimori, Keiya and Ariga, Hiromichi and Satoh, Tomoko and Nollet, Kenneth E and Okamoto, Hiroaki and Hoshi, Tanji
Title	Declining hepatitis C virus (HCV) prevalence in pregnant women: impact of anti-HCV screening of donated blood.
Journal	Transfusion
Issue	50(3):693-700.
Year	2010
Study design	Observational Study
Assay	ELISA; Ortho HCV Version 1.0 ELISA test
Sample size	22664
Study setting	Fifteen clinics in Fukushima Prefecture, in northeastern Japan, participated in this observational study. The target cohort was pregnant women in their first trimester, from whom informed consent was obtained to test for hepatitis
Characteristics of study subjects (Gender, age, …)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	blood samples, Interview
Results	Anti-HCV-reactive rates declined significantly by two measures. First, among women known to have been transfused, rates fell from 14.8% to 3.1% with the implementation of anti-HCV screening ( $p < 0.01$ ). Nevertheless, this is 10 times higher than the 0.3% reactive rate seen in a similar cohort of non-transfused women. Second, rates fell from 1.8% among women born in 1955 or before to 0.3% for women born in 1966 or later ( $p <$

	0.01). Among 103 anti-HCV- reactive women, 31 (30%) had been transfused and another 17 (17%) had other identifiable risk factors. The remaining 55 (53%) had no clear risk factor. Blood transfusion accounted for 19% of anti-HCV acquisition, by path analysis. Only one infant in this cohort was vertically infected with HCV.
Comments	Anti-HCV screening of donated blood and hygienic improvements have markedly decreased HCV infection of pregnant women with a transfusion history; however, 70% of anti-HCV-reactive women were deemed to be infected via routes other than transfusion.

ID	PM-J009
Authors	Ohsawa, Masaki and Kato, Karen and Itai, Kazuyoshi and Tanno, Kozo and Fujishima, Yosuke and Konda, Ryuichiro and Okayama, Akira and Abe, Koichi and Suzuki, Kazuyuki and Nakamura, Motoyuki and Onoda, Toshiyuki and Kawamura, Kazuko and Sakata, Kiyomi and Akiba, Takashi and Fujioka, Tomoaki
Title	Standardized prevalence ratios for chronic hepatitis C virus infection among adult Japanese hemodialysis patients.
Journal	J Epidemiol.
Issue	20(1):30-9
Year	2010
Study design	Cross-sectional
Assay	Second- generation assay (Architect HCV, Abbott, Japan)
Sample size	23688
Study setting	Population-based (Iwate prefecture) from June 2003 to March 2004
Characteristics of study subjects (Gender, age, …)	Haemodialysis patients and population-based control subjects aged 22-95. Number of males was 8429
Sampling method	
Outcome	Anti HCV
Data collection method	Questionnaire, review of medical records and blood tests
Results	The prevalence of anti-HCV antibody was considerably higher in haemodialysis patients than in controls. The Standardized Prevalence Ratio (95% CI) for anti-HCV antibody was 8.39 (6.72-10.1) in male haemodialysis patients and 5.42 (3.67-7.17) in female haemodialysis patients.
Comments	Included haemodialysis patients represented 80% of all total patients in the study area. Controls are selected among people who underwent annual health check-ups (possible selection bias) History of blood transmission was not taken into account

ID	PM-J010
Authors	Toda, Takayuki and Mitsui, Takehiro and Tsukamoto, Yukie and Ebara, Takeshi and Masuko, Kazuo and Takahashi, Masaharu and Okamoto, Hiroaki.
Title	No evidence for patient-to-patient transmission of hepatitis C virus during upper gastrointestinal endoscopy: molecular studies on three acute hepatitis C patients.
Journal	Digestive Endoscopy
Issue	21(3):147-53
Year	2009
Study design	Cross-sectional Study
Assay	Abbott HCV EIA 2nd Generation
Sample size	60
Study setting	All patients who underwent UGIE on the same days at the same unit
Characteristics of study subjects (Gender, age, ⋯)	N/A
Sampling method	All
Outcome	Anti-HCV
Data collection method	Endoscopy unit records, Serum samples
Results	Among a total of 60 candidate patients who underwent UGIE earlier than the index patients, 14 were positive for anti-HCV, of whom 12 had detectable HCV-RNA (1b, n = 9; 2a, n = 1; 2b, n = 2) on sera collected during each UGIE. Shared identity within the 1087-nt NS5B sequence was less than 95.0% between index patients and HCV/1b-infected candidates (n = 3, 1 and 5, respectively). None of the remaining 46 candidates who were negative for anti-HCV at UGIE examination tested positive for HCV-RNA, nor seroconverted to anti-HCV on their sera, which most

	likely excludes the possibility of HCV viremia despite the anti-HCV negative serology at UGIE examination.
Comments	The present study suggests that patient-to-patient transmission of HCV during UGIE is infrequent

ID	PM-J013
Authors	Iwasa, Yuko and Otsubo, Shigeru and Sugi, Orie and Sato, Keitaro and Asamiya, Yukari and Eguchi, Aya and Iwasaki, Tomihito and Matsuda, Nami and Kikuchi, Kan and Ikebe, Norisato and Miwa, Naoko and Kimata, Naoki and Uchida, Keiko and Uchida, Shigeharu and Nitta, Kosaku and Akiba, Takashi
Title	Patterns in the prevalence of hepatitis C virus infection at the start of hemodialysis in Japan.
Journal	Clin Exp Nephrol.
Issue	12(1):53-7
Year	2008
Study design	Cross-sectional
Assay	Not mentioned
Sample size	400
Study setting	Tokyo Women's medical University Hospital from February 2003 to June 2007
Characteristics of study subjects (Gender, age, ...)	Haemodialysis patients and healthy blood donors, mean age 66.4 ± 14.3. Number of males 269
Sampling method	
Outcome	Anti HCV
Data collection method	Medical and laboratory records
Results	Among the anti-HCV- antibody-positive patients, 55.2% had received a blood transfusion. This rate was significantly higher than that among the anti-HCV-antibody-negative patients (19.4%, $p<0.0001$ ).
Comments	Metropolitan Red Cross Blood Center accepts volunteers who do not have history of blood transfusion, history of viral hepatitis, or other risk factors as blood donors. So the volunteer blood donors, even first time ones, have been documented to have lower infection rates than the general population.

ID	PM-J015
Authors	Hayashida, Ayako and Inaba, Noriyuki and Oshima, Kyoko and Nishikawa, Masayoshi and Shoda, Akiko and Hayashida, Shihou and Negishi, Masami and Inaba, Fujiyuki and Inaba, Michiyo and Fukasawa, Ichio and Watanabe, Hiroshi and Takamizawa, Hiroyoshi
Title	Re-evaluation of the true rate of hepatitis C virus mother-to-child transmission and its novel risk factors based on our two prospective studies.
Journal	J Obstet Gynaecol Res.
Issue	33(4):417-22
Year	2007
Study design	Prospective cohort
Assay	PCR
Sample size	124
Study setting	Two obstetric institutes in the Kanto region (Chiba University Hospital and Dokkyo Medical University Hospital) between 1989–2004
Characteristics of study subjects (Gender, age, ...)	Children born to HCV positive mothers
Sampling method	
Outcome	HCV RNA
Data collection method	Interview, blood collection
Results	A total of 124 newly born infants (82 between 1989-1994; 42 between 1995-2004) from 103 HCV carrier pregnant women were regularly and prospectively followed up for 12–48 months in the early group and for 12–84 months in the recent group, and their HCV infection status was investigated. Six of 82 infants (7.3%) were diagnosed as carriers between 1989-1994 and six of 42 (14.2%) between 1995-2004. Genotypes were fully identical between mothers and their children.
Comments	Long duration of follow-up

	PCR was done mainly by the authors in the early group, and by commercial laboratories in the recent group (no indication on the type).
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ID	PM-J017
Authors	Kato, H and Maeno, Y and Seko-Nakamura, Y and Monma-Ohtaki, J and Sugiura, S and Takahashi, K and Zhe, L X and Matsumoto, T and Kurvanov, F and Mizokami, M and Nagao, M
Title	Identification and phylogenetic analysis of hepatitis C virus in forensic blood samples obtained from injecting drug users.
Journal	Forensic Sci Int.
Issue	3;168(1):27-33
Year	2007
Study design	Cross-sectional
Assay	PCR (GeneAmp PCR System 2400, Perkin-Elmer, Norwalk, CT)
Sample size	12
Study setting	Nagoya City University. Study period not mentionned
Characteristics of study subjects (Gender, age, ...)	Cadavers of injected drug users, 9 males, mean age $34 \pm 11.1$ years old
Sampling method	
Outcome	HCV RNA
Data collection method	Medical records and forensic blood sampling
Results	Two of the 12 autopsy cases (IDU248 and IDU740) (16.7%) were positive for HCV. Phylogenetic analysis of the two HCV isolates revealed that one was classified into genotype 1b and another was genotype 2b. Furthermore, nucleotide sequences of two isolates recovered from IDUs with hepatitis C were identical, that indicated the transmission of HCV between them, and those HCV were phylogenetically classified into genotype 2a.
Comments	Sample size small (only 12) Other factors not taken into account for analysis

ID	PM-J018
Authors	Chung, Hobyung and Kudo, Masatoshi and Kumada, Takashi and Katsushima, Shinji and Okano, Akihiro and Nakamura, Takefumi and Osaki, Yukio and Kohigashi, Katsuji and Yamashita, Yukitaka and Komori, Hideshi and Nishiuma,
Title	Hepatitis C virus infection in 2,744 hemodialysis patients followed regularly at nine centers in Hiroshima during November 1999 through February 2003.
Journal	J Med Virol.
Issue	76(4):498-502.
Year	2005
Study design	Cohort Study
Assay	SecondgenerationHCVPHA
Sample size	2114
Study setting	November 1999 to February 2003, patients attending 75 dialysis centers in Hiroshima
Characteristics of study subjects (Gender, age, …)	men predominated and accounted for 58.8% (1,613/2,744). The mean age was significantly lower in men than women (63.3±13.1 vs. 65.7±13.2 years).
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Serum samples
Results	Among these patients, 16 (0.8%) were infected persistently with HCV, an incidence of 0.33%.
Comments	Key issues emerged as to this status of HCV infection among HD patients and means to prevent its future spread.

ID	PM-J020
Authors	Nakayama, Haruo and Sugai, Yoshiki and Ikeya, Shinichi and Inoue, Jun and Nishizawa, Tsutomu and Okamoto, Hiroaki
Title	Molecular investigation of interspousal transmission of hepatitis C virus in two Japanese patients who acquired acute hepatitis C after 40 or 42 years of marriage.
Journal	J Med Virol.
Issue	75(2):258-66.
Year	2005
Study design	Case Report
Assay	Abbott HCV PHA-II
Sample size	2
Study setting	Serum samples were collected from two index patients who contracted acute hepatitis C and their spouses who had been diagnosed with type C liver cirrhosis or hepatocellular carcinoma at least 1 year earlier.
Characteristics of study subjects (Gender, age, …)	Mean age 65
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Serum samples
Results	The HCV isolates from Patients C1I and C1S and those from Patients C2I and C2S shared identity of 99.9% and 99.1%, respectively, in the 1,087-nucleotide (nt) sequence of the NS5B region, although these four isolates were only 91.7%–96.2% identical to the 94 reported genotype 1b isolates including those from Japanese patients.
Comments	Evidence of sexual transmission of HCV is inconclusive with varying results

ID	PM-J021
Authors	Chung, Hobyoung and Kudo, Masatoshi and Kumada, Takashi and Katsushima, Shinji and Okano, Akihiro and Nakamura, Takefumi and Osaki, Yukio and Kohigashi, Katsuji and Yamashita, Yukitaka and Komori, Hideshi and Nishiuma, Shinichi
Title	Risk of HCV transmission after needlestick injury, and the efficacy of short-duration interferon administration to prevent HCV transmission to medical personnel
Journal	J Gastroenterol.
Issue	38(9):877-9.
Year	2003
Study design	Cross-sectional
Assay	Second-generation kit
Sample size	684
Study setting	10 hospitals in Japan through March 2001
Characteristics of study subjects (Gender, age, ...)	Health workers who had a needlestick accident involving anti-HCV-positive blood: 535 (79%) nurses, 118 (17%) medical doctors, 23 (3%) laboratory technicians, and 8 (1%) others
Sampling method	
Outcome	Anti HCV
Data collection method	
Results	Overall, two cases (2/684; 0.3%) of HCV infection were found, one case in each of the treated (1/279; 0.4%) and nontreated (1/405; 0.2%) groups. There was no significant difference in the transmission of HCV between the two groups. Both patients with HCV infection were treated with interferon after developing acute hepatitis, and HCV was subsequently cleared.
Comments	Not all the anti-HCV-positive sources were tested for HCV viremia, and the actual HCV carriers among anti-HCV-positive sources might be fewer.

ID	PM-J022
Authors	Nagao, Y and Tomonari, R and Kage, M and Komai, K and Tsubone, K and Kamura, T and Sata, M
Title	The possible intraspousal transmission of HCV in terms of lichen planus.
Journal	Int J Mol Med.
Issue	10(5):569-73.
Year	2002
Study design	Cross-sectional
Assay	Lumipulse II HCV, Fujirebio Inc., Tokyo, Japan.
Sample size	24
Study setting	Hospitals
Characteristics of study subjects (Gender, age, ...)	Japanese patients with HCV-associated Oral lichen Planus (OLP). Age range from 26-84 years, mean age $67.6 \pm 12$
Sampling method	N/A
Outcome	Anti HCV
Data collection method	
Results	Two spouses of 10 married couples were shown to be infected with HCV.
Comments	Transmission of HCV may be due to infected blood abrasions of mucosa.

ID	PM-J023
Authors	Inui, Ayano and Fujisawa, Tomoo and Sogo, Tsuyoshi and Komatsu, Haruki and Isozaki, Atsushi and Sekine, Isao
Title	Different outcomes of vertical transmission of hepatitis C virus in a twin pregnancy
Journal	J Gastroenterol Hepatol.
Issue	17(5):617-9.
Year	2002
Study design	Case report
Assay	RT-PCR (AMPLICOR HCV ; Roche Diagnostics, Tokyo, Japan)
Sample size	2
Study setting	National Defence Medical College hospital. Study period not mentionned
Characteristics of study subjects (Gender, age, ...)	Monochorionic diamniotic male twins, born to HCV positive mother. Their father was negative for anti-HCV and anti-HIV antibodies.
Sampling method	N/A
Outcome	HCV RNA
Data collection method	Medical records
Results	The serum from the first baby was negative for HCV-RNA, whereas that from the second one was positive and the HCV genotype was the same as the mother's (i.e. genotype 1b). The second baby had abnormal levels of ALT, was followed up with routine transaminase measurements at the age of 3 months, and showed abnormal ALT levels for 30 months, together with high serum HCV-RNA levels.
Comments	Evidence of MTCT based on the gene homogeny and no history of contact with known HCV-infected persons other than their mother.

ID	PM-J028
Authors	Enomoto, A and Yoshino, S and Hasegawa, H and Komatsu, T and Sasahara, H and Takano, S and Esumi, M
Title	Phylogenetic investigation for the risk of hepatitis C virus transmission to surgical and dental patients.
Journal	J Viral Hepat.
Issue	8(2):148-53.
Year	2001
Study design	Cross-sectional
Assay	IRMA HCV Ab 3.0
Sample size	83
Study setting	Patients admitted to the same gastroenterological surgical ward in June and November 1997.
Characteristics of study subjects (Gender, age, ...)	53 male, 30 female, mean age $61 \pm 12$ years
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples
Results	Anti-HCV antibody-positive patients comprised 13 of 83 patients (15.7%) in the surgical ward, seven and 10 patients in the two dental hospitals, respectively.
Comments	However, no sequences from different patients were grouped into the same cluster. These results suggest that unrecognized transmission of HCV is a rare event in surgical and dental patients. But It is also essential for surgical and dental health care workers to be aware of the possible risk of HCV infection and to strictly adhere to the CDC's recommendations.

ID	PM-J029
Authors	Tajiri, H and Miyoshi, Y and Funada, S and Etani, Y and Abe, J and Onodera, T and Goto, M and Funato, M and Ida, S and Noda, C and Nakayama, M and Okada, S
Title	Prospective study of mother-to-infant transmission of hepatitis C virus
Journal	Pediatr Infect Dis J.
Issue	20(1):10-4.
Year	2001
Study design	Prospective cohort
Assay	RT-PCR
Sample size	141 mothers/147 babies
Study setting	Seven hospitals in the Osaka metropolitan, from 1993 to 1998
Characteristics of study subjects (Gender, age, ...)	Pregnant Japanese women with HCV, babies born to HCV mothers
Sampling method	
Outcome	HCV RNA
Data collection method	
Results	Only 20 children were anti-HCV-positive by the 12th month. Among them 9 were HCV RNA-positive and 11 remained HCV RNA-negative. Infected children were positive for HCV RNA by reverse transcription-PCR on more than 2 visits (mean, 3.5; range, 2 to 8). Thus, the rate of mother-to-infant transmission of HCV was 7.8% (9 of 114).
Comments	HCV RNA measurement was repeated at 0, 3, 6, 9, 12 months, allowing to have a better understanding of the transmission route.

ID	PM-J031
Authors	Okamoto, M and Nagata, I and Murakami, J and Kaji, S and Iitsuka, T and Hoshika, T and Matsuda, R and Tazawa, Y and Shiraki, K and Hino, S
Title	Prospective reevaluation of risk factors in mother-to-child transmission of hepatitis C virus: high virus load, vaginal delivery, and negative anti-NS4 antibody
Journal	J Infect Dis.
Issue	182(5):1511-4
Year	2000
Study design	Prospective cohort
Assay	Nested RT-PCR
Sample size	84
Study setting	7 hospitals of Tottori prefecture, from June 1992 to December 1998
Characteristics of study subjects (Gender, age, ...)	Babies born to anti HCV-positive mothers
Sampling method	
Outcome	HCV RNA
Data collection method	
Results	Those enrolled in this study consisted of 73 anti-HCV positive and 50 RNA mothers, and 84 and 59 children born to these mothers, respectively. Seven children born to 5 mothers were found to be positive for HCV RNA by RT-PCR analysis.
Comments	Analysis was stratified based on the viral as it could be a confounding factor. Vaginal delivery was still significantly associated with MTCT.

ID	PM-J032
Authors	Hosokawa, N and Esumi, M and Iwasaki, Y and Yanai, M and Enomoto, A and Kawano, K
Title	Phylogenetic evidence, by multiple clone analysis of hypervariable region 1, for the transmission of hepatitis C virus to chronic haemodialysis patients.
Journal	J Viral Hepat.
Issue	7(4):276-82
Year	2000
Study design	Cross-sectional
Assay	EIA
Sample size	20
Study setting	Patients who had received haemodialysis therapy for chronic renal failure in the same room of a dialysis center.
Characteristics of study subjects (Gender, age, ...)	The patients were 35-82 years old (mean age 54 ± 10 years).
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples
Results	Phylogenetic analysis of these sequences revealed 5 genetic clusters consisting of HCV isolates from 11 of the 20 patients. In addition to two genetic clusters of HCV isolates from the four currently seroconverting patients and another patient who had been persistently infected, we identified three others phylogenetic relationships in HCV isolates from six patients.
Comments	phylogenetic analysis using HCV HVR1 sequences is very valuable in analysing person-to-person transmission routes.

ID	PM-J034
Authors	Sawayama, Y and Hayashi, J and Kakuda, K and Furusyo, N and Ariyama, I and Kawakami, Y and Kinukawa, N and Kashiwagi, S
Title	Hepatitis C virus infection in institutionalized psychiatric patients: possible role of transmission by razor sharing.
Journal	Dig Dis Sci.
Issue	45(2):351-6.
Year	2000
Study design	Cross-sectional
Assay	HCV PHA
Sample size	196
Study setting	Japanese inpatients at psychiatric institutions in Fukuoka, the largest city on Kyushu Island in the southwestern part of Japan between July and October 1997.
Characteristics of study subjects (Gender, age, ...)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	patient's medical chart and interviewing patients and their families. Blood samples
Results	Anti-HCV was detected in 20 (10.2%) of the 196 patients and in 6 (1.5%) of 400 matched control. Anti-HBc was present in 87 (44.4%) patients and in 82 (20.5%) of the controls. Among the anti-HBc positive patients and controls, no patient and three controls were concurrently HBsAg positive. The prevalence of anti-HCV and anti-HBc in psychiatric patients were significantly higher than in the controls (P, 0.0001, P, 0.0001, respectively; x2 test).

Comments	Careful collection of clinical data and multivariate statistical analysis showed for the first time that prolonged institutionalization entails a significant risk of exposure to HCV, through razor sharing.
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ID	PM-J035
Authors	Uesugi, S and Taketa, K and Rimal, N and Ikeda, S and Kariya, T and Suganuma, N and Yamamoto, H and Kira, S
Title	Seroepidemiologic studies of hepatitis C virus infection in a population of Okayama Prefecture screened for liver disease.
Journal	Acta Med Okayama.
Issue	53(1):31-8.
Year	1999
Study design	Cross-sectional
Assay	ELISA (Abbott HCV EIA 2 <sup>nd</sup> generation kit)
Sample size	1398
Study setting	Okayama prefecture, from April 1992 to March 1993
Characteristics of study subjects (Gender, age, ...)	Inhabitants who underwent screening for liver disease, 752 males
Sampling method	
Outcome	Anti HCV
Data collection method	Medical records
Results	After adjusting for age, sex, HBcAb and HAVAb, blood transfusion and family history of liver disease were significantly associated with HCV (OR=1.9(1.2-3.1) and 2.6(1.1-6.4) respectively)
Comments	Potential selection bias since participants were chosen among those at risk of liver disease.

ID	PM-J037
Authors	Kayaba, K and Igarashi, M and Okamoto, H and Tsuda, F
Title	Prevalence of anti-hepatitis C antibodies in a rural community without high mortality from liver disease in Niigata prefecture.
Journal	J Epidemiol.
Issue	8(4):250-5
Year	1998
Study design	Cross-sectional
Assay	ELISA (SMITEST HCV Core Ab ELISA)
Sample size	2231
Study setting	Community-based in Niigata prefecture, September 1995, June and July 1996
Characteristics of study subjects (Gender, age, …)	1,544 (69.2%) were women, average age 53.8±14.3
Sampling method	
Outcome	Anti HCV
Data collection method	Interviews and blood sample collection
Results	Blood transfusion: RR=5.51 (2.9-10.48); aOR=3.49 (1.71-7.15) Surgery with hospital admission: RR=4.43 (2.04-9.65); aOR=2.89 (1.25-6.69) Acupuncture: RR=1.3 (0.65,2.61) Family history of liver disease: RR=1.05 (0.33-3.40)
Comments	Community-based study Response rate was 86.4%

ID	PM-J038
Authors	Kobayashi, M and Tanaka, E and Oguchi, H and Hora, K and Kirosawa, K
Title	Prospective follow-up study of hepatitis C virus infection in patients undergoing maintenance haemodialysis: comparison among haemodialysis units.
Journal	J Gastroenterol Hepatology.
Issue	(6):604-9.
Year	1998.
Study design	Prospective Follow Up
Assay	AMPLICORTM
Sample size	179
Study setting	A prospective follow-up study of HCV infection was conducted in seven hemodialysis units located in the same prefecture of Shinshu University from April 1990 to May 1995.
Characteristics of study subjects (Gender, age, …)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples
Results	Nine (5%) of the 179 patients who were initially negative for HCV antibody became positive during the follow-up period. All nine of these patients were negative for serum HCV-RNA at the start of follow up and became positive after seroconversion of HCV antibody
Comments	Patients undergoing haemodialysis were still at risk for HCV infection in some haemodialysis units even after the introduction of universal measures of asepsis and disinfection, although this might be due to the incomplete practice of these measures. Periodical measurement of HCV antibody is necessary in haemodialysis units to monitor and consequently help prevent new HCV infection.

ID	PM-J039
Authors	Xiong, S K and Okajima, Y and Ishikawa, K and Watanabe, H and Inaba, N
Title	Vertical transmission of hepatitis C virus: risk factors and infantile prognosis.
Journal	J Obstet Gynaecol Res.
Issue	24(1):57-61
Year	1998
Study design	Prospective cohort
Assay	Nested RT-PCR
Sample size	65
Study setting	Dokkyo university hospital, from May 1990 to June 1997
Characteristics of study subjects (Gender, age, ...)	Babies born to anti HCV-positive mothers,
Sampling method	
Outcome	HCV RNA
Data collection method	Medical records
Results	Of the 68 infants delivered by the carrier women, 65 were successfully followed. Four of the infants (6.2%) seroconverted to HCV- RNA-positivity at various ages and maintained the seropositivity persistently for 6 months or more.
Comments	The magnitude of this study is too small to clarify the natural history of HCV vertical transmission.

ID	PM-J042
Authors	Tanaka, K and Stuver, S O and Ikematsu, H and Okayama, A and Tachibana, N and Hirohata, T and Kashiwagi, S and Tsubouchi, H and Mueller, N E
Title	Heterosexual transmission of hepatitis C virus among married couples in southwestern Japan.
Journal	Int J Cancer.
Issue	3;72(1):50-5.
Year	1997
Study design	Cross-sectional
Assay	IRMA II
Sample size	218 spouses
Study setting	The subjects in this study are a subset of participants in the Miyazaki Cohort Study.
Characteristics of study subjects (Gender, age, ...)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Questionnaire data, Serologic tests
Results	218 spouses were examined, 7 (11%) of 62 anti-HCV-positives, compared with 14 (9%) of 156 anti-HCV negatives, had received a transfusion (sex- and age-adjusted OR 5 1.3, CI 0.5-3.3); 39 (63%) of 62 anti-HCV-positives, compared with 77 (49%) of 156 anti-HCV-negatives, had undergone a surgical operation (sex- and age-adjusted OR 5 1.7, CI 0.9-3.2, p 5 0.09).
Comments	Cross-sectional studies, particularly in endemic areas, have a limitation in that HCV transmission through sexual contact between heterosexual partners can hardly be distinguished from that through some external source to which both partners may be exposed.

ID	PM-J044
Authors	Noguchi, S and Sata, M and Suzuki, H and Mizokami, M and Tanikawa, K
Title	Routes of transmission of hepatitis C virus in an endemic rural area of Japan. Molecular epidemiologic study of hepatitis C virus infection.
Journal	Scand J Infect Dis
Issue	29(1):23-8.
Year	1997
Study design	Cross-sectional
Assay	EIA
Sample size	132
Study setting	Adult inhabitants of the K area, over the age of 20
Characteristics of study subjects (Gender, age, ...)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples
Results	25 of the wives of the anti-HCV positive men (25/75, 33.3%) also showed anti-HCV (mean age 61.2 ± 8.8 years). However, this prevalence of anti-HCV did not differ significantly from that in the total age-matched all-women participants (82/225, 36.4%). Among the husbands of anti-HCV positive women, 25 (25/57, 43.9%, mean age 64.4 ± 9.4 years) were anti-HCV positive also.
Comments	Results suggest that while medical procedures such as blood transfusion and surgery were involved in the spread of HCV infection in area K, the intra spousal or mother-to-child routes did not contribute significantly to the spread of HCV infection.

ID	PM-J045
Authors	Ikeda, K and Chayama, K and Saitoh, S and Koida, I and Suzuki, Y and Tsubota, A and Kobayashi, M and Arase, Y and Murashima, N and Kumada, H
Title	Hepatitis C virus subtype 3b infection in a hospital in Japan: epidemiological study.
Journal	J Gastroenterol.
Issue	31(6):801-5.
Year	1996
Study design	Cross-sectional
Assay	Reverse transcription-nested PCR
Sample size	1330
Study setting	Toranomon Hospital, Tokyo, from 1991 to 1994
Characteristics of study subjects (Gender, age, ...)	HCV positive patients aged 21-87 years. Males=882
Sampling method	
Outcome	HCV RNA
Data collection method	Blood collection, interviews
Results	11 patients were infected by serotype 3b. They all received repeated intramuscular or intravenous injections for treatment of various diseases or for preventive vaccination for contagious diseases from the same doctor. The rare HCV subtype 3b, appeared to have been transmitted among through the performance of certain medical practices.
Comments	The authors could not obtain accurate information about the career and state of health of the doctor who were suspected to be the source of infection.

ID	PM-J046
Authors	Nakashima, K and Kashiwagi, S and Hayashi, J and Urabe, K and Minami, K and Maeda, Y
Title	Prevalence of hepatitis C virus infection among female prostitutes in Fukuoka, Japan.
Journal	J Gastroenterology.
Issue	31(5):664-8.
Year	1996
Study design	Cross-sectional
Assay	HCVPHA
Sample size	604 prostitutes+6632 Blood donors (Control)
Study setting	From 1989 through 1992, at two dermatology clinics in Fukuoka, Japan, female prostitutes were studied to determine the prevalence of HCV infection.
Characteristics of study subjects (Gender, age, ...)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples, Interview.
Results	Anti-HCV was present in 10.1% of the 604 female prostitutes, and in 0.8% of the controls
Comments	It is likely that the sexual transmission of HCV may be infrequent in the general population, but frequent in persons with syphilis or in prostitutes, whose sexual activity is frequent. We must pay attention to the risk of sexual transmission of HCV in the sexually active groups.

ID	PM-J047
Authors	Hara, T and Setoguchi, Y and Kajihara, S and Yamamoto, K and Sakai, T and Inoue, T and Ohba, K and Mizokami, M
Title	Phylogenetic tree-based epidemiological analysis of hepatitis C virus transmission in a region of Japan with a high prevalence of infection
Journal	J Gastroenterol Hepatol.
Issue	11(7):641-5.
Year	1996
Study design	Cross-sectional
Assay	RT-PCR
Sample size	86
Study setting	H and L districts in Saga prefecture, between March and August 1993
Characteristics of study subjects (Gender, age, ...)	HCV positive patients, 48 men, mean age=51.1 years
Sampling method	
Outcome	HCV RNA
Data collection method	Medical records and blood collection
Results	Of the 86 HCV positive patients, 14 had history of blood transfusion and 41 had surgery. Of the 20 patients with genotype 1, four (20%) had received habitual medical injections and seven (35%) had undergone acupuncture.
Comments	Small sample size No control group to assess the route

ID	PM-J048
Authors	Koseki, S and Taga, M and Aoyama, M and Hirabuki, T and Hirahara, F and Takahasi, T and Minaguchi, H and Yokota, S and Ito, A
Title	Mother-to-infant transmission of hepatitis C virus in human immunodeficiency virus-coinfected mother: a case report.
Journal	J Obstet Gynaecol Res.
Issue	22(2):139-42.
Year	1996
Study design	Case Report
Assay	Nova Path Immunoblot Assay
Sample size	1
Study setting	a mother infected with both HCV and HIV
Characteristics of study subjects (Gender, age, …)	The patient, who was a 23-year-old, para 0, gravida 1, and who had been an intravenous drug user.
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples
Results	At 12 months of age, the infant's anti- HCV antibody vanished.
Comments	Mother to-infant transmission of HCV from a HIV coinfected mother can occur regardless of the titer of HCV-RNA in the mother. Other factors, such as the role of the placenta, virus tropism, and host, or genetic factors, might contribute to an infant's susceptibility to infection.

ID	PM-J049
Authors	Nakayama, E and Liu, J H and Akiba, T and Marumo, F and Sato, C
Title	Low prevalence of anti-hepatitis C virus antibodies in female haemodialysis patients without blood transfusion: a multicentre analysis.
Journal	J Med Virol.
Issue	48(3):284-8.
Year	1996
Study design	Cross-sectional
Assay	Second-generation anti-HCV antibody assay (Abbott RIA kit, Abbott Laboratories, North Chicago, IL; or the Ortho EIA kit, Ortho Diagnostic Systems, Raritan, NJ)
Sample size	2132
Study setting	23 dialysis units in Tokyo. Study period not mentioned.
Characteristics of study subjects (Gender, age, …)	Chronic haemodialysis patients, males=1274, average age $56.2 \pm 13$
Sampling method	
Outcome	Anti HCV
Data collection method	Medical records
Results	The prevalence of anti-HCV antibodies was 29.9% in chronic haemodialysis patients with blood transfusion and 7.6% in those without blood transfusion. The prevalence of anti-HCV antibodies increased with the length of haemodialysis in both males and females with blood transfusion.
Comments	Multicentric study in Tokyo. Not only the haemodialysis status but also the length of haemodialysis was taken into account in the study.

ID	PM-J051
Authors	Matsubara, T and Sumazaki, R and Takita, H
Title	Mother-to-infant transmission of hepatitis C virus: a prospective study
Journal	Eur J Pediatr.
Issue	1995
Year	154(12):973-8
Study design	Prospective cohort
Assay	RT-PCR
Sample size	29 mothers and 31 babies
Study setting	Tsukuba University Hospital and the other three hospitals in Tsukuba City, from April 1989 to July 1993
Characteristics of study subjects (Gender, age, ...)	Babies born to anti HCV-positive mothers
Sampling method	
Outcome	HCV RNA
Data collection method	
Results	HCV-RNA was detected in only 3 infants (9.7%) within 1-4 weeks after birth and persisted thereafter. The genotype of HCV-RNA in each of the infants was consistent with that of their mother. In 2 cases, grandparents of the children were also infected
Comments	Small sample size The study took into account 2 generation infection possibility

ID	PM-J052
Authors	Yanaga, K and Wakayama, S and Soejima, Y and Yoshizumi, T and Nishizaki, T and Sugimachi, K
Title	Hepatitis C virus infection among Japanese general surgical patients.
Journal	World J Surg.
Issue	19(5):694-6
Year	1995
Study design	Cross-sectional
Assay	Ortho ELISA Test System
Sample size	784
Study setting	During a 1-year period between April 1, 1991 and March 31, 1992 a total of 1214 patients visited our surgical department, of whom 789 underwent HCV antibody screening because of the need to assess their infection status for their scheduled inpatient or outpatient surgical procedures.
Characteristics of study subjects (Gender, age, ...)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples
Results	Of these patients, 129 (16.3%) tested positive, which was much higher than the positivity of the ordinary Japanese. Hepatobiliary diseases and portal hypertension were associated with a higher positivity than other disease categories (94 of 206, 45.6% versus 35 of 583, 6%; $p < 0.0001$ ). Patients above 50 years of age had a higher positivity than their younger counterparts (118 of 578, 20.4% versus 11 of 211, 5.3%; $p < 0.0001$ ). The HCV positivity was as high as 54.1% (119 of 220) among surgical patients with known risk factors for hepatitis, in

	contrast to only 1.9% (10 of 569) among those without such risk factors.
Comments	Surgical patients have a high incidence of HCV infection, for whom medical professionals should pay special attention to avoid disease transmission.

ID	PM-J053
Authors	Utsumi, T and Hashimoto, E and Okumura, Y and Takayanagi, M and Nishikawa, H and Kigawa, M and Kumakura, N and Toyokawa, H
Title	Heterosexual activity as a risk factor for the transmission of hepatitis C virus.
Journal	J Med Virol.
Issue	46(2):122-5
Year	1995
Study design	Cross-sectional
Assay	Abbott HCV EIA second generation
Sample size	201
Study setting	Health service centres of prisons in Tokyo, From July 1993 to December 1993
Characteristics of study subjects (Gender, age, ...)	Men kept in detention in Tokyo, mean age 45±13
Sampling method	
Outcome	Anti HCV
Data collection method	Medical records
Results	Prevalence of anti-HCV for: Intravenous drug abuse: 56/(56+13)=83% Tattooing: 42/(42+15)=74.6% History of surgery: 24/(24+16)=60%  Logistic regression adjusted for Age, IDU, tattooing: Intravenous drug abuse: aOR=7.39 (3.41-16.05) Tattooing: aOR= 1.57 (0.63-3.92)
Comments	Only prisoners, not representative of the general population

ID	PM-J054
Authors	Moriya, T and Sasaki, F and Mizui, M and Ohno, N and Mohri, H and Mishiro, S and Yoshizawa, H
Title	Transmission of hepatitis C virus from mothers to infants: its frequency and risk factors revisited.
Journal	Biomed Pharmacother.
Issue	49(2):59-64.
Year	1995
Study design	Follow Up
Assay	hemagglutination
Sample size	84
Study setting	Pregnant Japanese women were tested for antibodies against hepatitis C virus in obstetric and pediatric departments in Hiroshima and Ehime prefectures, Japan.
Characteristics of study subjects (Gender, age, …)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples
Results	84 mothers, 87 babies were born (including 3 twin pairs), and followed-up for 6 months or more. Among the 87 babies, only 2 (2.3%) became HCV RNA-positive during the follow-up period
Comments	With respect to breast milk feeding, this study suggests its unrelatedness to vertical transmission of HCV. Failure of detecting HCV RNA in breast milk, taken together, the possibility of HCV transmission by breast milk feeding must be very low.

ID	PM-J056
Authors	Setoguchi, Y and Kajihara, S and Hara, T and Motomura, M and Mizuta, T and Wada, I and Yamamoto, K and Sakai, T
Title	Analysis of nucleotide sequences of hepatitis C virus isolates from husband-wife pairs.
Journal	J Gastroenterol Hepatol.
Issue	9(5):468-71
Year	1994
Study design	Cross-sectional
Assay	Ortho HCV antibody ELISA system
Sample size	83
Study setting	From January 1993 to August 1993, 83 CLD patients (61 males and 22 females, 54.0±9.5 years) who were seropositive for anti-HCV antibody and HCV-RNA were identified at the Saga Medical School.
Characteristics of study subjects (Gender, age, …)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples
Results	Of 83 spouses, 14 (16.9%), 20 (24.1%) had detectable anti-HCV antibodies, and 17 (20.5%) had measurable HCV-RNA in serum. However, the seropositivity rate of anti-HCV antibodies (24.1%) of patients' spouses was not significantly higher than that (15.4-27.5%) of an unselected population in the same district. Ten patient-spouse pairs underwent nucleotide sequence analysis of the HCV core and envelope genes. Overall the sequence homology of 10 couples (91.1%) was not significantly higher than that of 10 randomly chosen unrelated pairs (88.2%).
Comments	These results suggest that sexual transmission of HCV is rare.

ID	PM-J057
Authors	Kiyosawa, K and Tanaka, E and Sodeyama, T and Yoshizawa, K and Yabu, K and Furuta, K and Imai, H and Nakano, Y and Usuda, S and Uemura, K
Title	Transmission of hepatitis C in an isolated area in Japan: community-acquired infection. The South Kiso Hepatitis Study Group.
Journal	Gastroenterology
Issue	106(6):1596-602
Year	1994
Study design	Cross-sectional
Assay	ELISA (Ortho Diagnostic Systems, Inc., Raritan, NJ)
Sample size	Arahiro=435 Non-endemic area=1542
Study setting	Arahiro and non-endemic areas of South Kiso town, in July 1985
Characteristics of study subjects (Gender, age, ...)	Population of the Arahiro area: males=184, mean age=52.35 Non-endemic areas: males=565, mean age=53.85
Sampling method	
Outcome	Anti HCV
Data collection method	Interview, blood collection
Results	<ul style="list-style-type: none"> <li>- Arahiro           <ul style="list-style-type: none"> <li>Surgery: 31.9% of HCV positive and 9.5% of HCV negative</li> <li>Transfusion: 11.3% of HCV positive and 4.8% of HCV negative</li> <li>Tattooing: 0.7% of HCV positive and 0% of HCV negative</li> <li>IDU: 0.7% of HCV positive and 0% of HCV negative</li> </ul> </li> <li>- Non endemic areas           <ul style="list-style-type: none"> <li>Surgery: 71.4% of HCV positive and 18.3% of HCV negative</li> <li>Transfusion: 74.3% of HCV positive and 3.0% of HCV negative</li> <li>Tattooing: 2.9% of HCV positive and 0% of HCV negative</li> <li>IDU: 2.9% of HCV positive and 0% of HCV negative</li> </ul> </li> </ul>

Comments	Community-based study Response rate: 435/728=59%
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ID	PM-J058
Authors	Yoshihiro Akahane, MD; Mineo Kojima, MD; Yoshiki Sugai, MD; Minoru Sakamoto, MD; Yoshiki Miyazaki, MD; Takeshi Tanaka, BS; Fumio Tsuda, PhD; Shunji Mishiro, MD; Hiroaki Okamoto, MD; Yuzo Miyakawa, MD; and Makoto Mayumi, MD
Title	Hepatitis C Virus Infection in Spouses of Patients with Type C Chronic Liver Disease
Journal	Ann Intern Med
Issue	120:748-752.
Year	1994
Study design	Cross-Sectional
Assay	EIA-II
Sample size	154
Study setting	Spouses of consecutive patients at Yamanashi Medical College, Kojima Clinic, and Iwaki Kyoritsu General Hospital from October to December 1991.
Characteristics of study subjects (Gender, age, ...)	Patients with HCV-related chronic liver disease included 66 with chronic hepatitis, 49 with cirrhosis, and 39 with hepatocellular carcinoma
Sampling method	N/A
Outcome	HCV RNA
Data collection method	Blood samples
Results	Hepatitis C virus-associated antibodies were detected in 42 (27%) spouses, of whom 25 were also positive for HCV RNA. Of 112 (73%) spouses without detectable antibodies, 2 had chronic liver disease. The development of markers of HCV infection in spouses increased with the duration of marriage, ranging from 1 to 60 years (30 ± 11 years).
Comments	Spouses of patients with HCV viremia and chronic liver disease have an increased risk for acquiring HCV, which is proportional to the duration of

	marriage. They should be followed routinely for markers of HCV infection and liver disease
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ID	PM-J059
Authors	Ohto, H and Terazawa, S and Sasaki, N and Sasaki, N and Hino, K and Ishiwata, C and Kako, M and Ujiie, N and Endo, C and Matsui, A
Title	Transmission of hepatitis C virus from mothers to infants. The Vertical Transmission of Hepatitis C Virus Collaborative Study Group.
Journal	N Engl J Med.
Issue	330(11):744-50.
Year	1994
Study design	Prospective cohort
Assay	Nested PCR
Sample size	54
Study setting	Fukushima, from 1990 to 1992
Characteristics of study subjects (Gender, age, ...)	Children born to HCV-positive mothers
Sampling method	NA
Outcome	HCV RNA
Data collection method	Blood sampling and questionnaire
Results	54 infants (including a set of twins) born to 53 anti-HCV positive mothers were followed for at least 6 months after birth. Of the 54 children, 3 were HCV RNA positive at the time of the outcome measurement. All the 3 were born to HCV-RNA positive women.
Comments	Homology testing was not done to confirm the mother-to-child transmission

ID	PM-J060
Authors	Honda, M and Kaneko, S and Unoura, M and Kobayashi, K and Murakami, S.
Title	Risk of Hepatitis C Virus Infections Through Household Contact with Chronic Carriers: Analysis of Nucleotide Sequences
Journal	Hepatology17(6):971-6.
Issue	17(6):971-6
Year	1993
Study design	Cross-sectional
Assay	N/A
Sample size	88
Study setting	Chronic hepatitis patients positive for anti-HCV were observed at Kanazawa University, Ishikawa Prefecture, Japan.
Characteristics of study subjects (Gender, age, ...)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood samples
Results	5 (23%) of 22 children whose fathers were patients, 4 (29%) of 14 children whose mothers were patients, 3 (30%) of 10 siblings whose siblings were patients and 8 (19%) of 42 spouses whose spouses were patients.
Comments	Results showed a high prevalence of anti-HCV and chronic hepatitis among the family members of patients with chronic hepatitis C. Further studies are needed to elucidate the role of intrafamilial transmission and other mechanisms in the spread of HCV infection.

ID	PM-J061
Authors	Shimoyama, R and Sekiguchi, S and Suga, M and Sakamoto, S and Yachi, A
Title	The epidemiology and infection route of asymptomatic HCV carriers detected through blood donations.
Journal	Gastroenterol Jpn.
Issue	28 Suppl 5:1-5.
Year	1993
Study design	Cross-sectional
Assay	ELISA (Ortho)
Sample size	262
Study setting	Hokkaido Red Cross Blood Centre, from May 1991 to March 1992.
Characteristics of study subjects (Gender, age, ...)	HCV positive blood donors, 150 males, Mean age= 46.8±11.2
Sampling method	
Outcome	Anti-HCV
Data collection method	
Results	<p>Estimated route of infection were reported:</p> <p>Transfusion (33%)</p> <p>Acupuncture (20%)</p> <p>Surgery (16%)</p> <p>Household (10%)</p> <p>Vaccination (8%)</p> <p>Tattoo, IV drug (4%)</p> <p>Sexual (4%)</p> <p>Needle accident (2%)</p> <p>Unknown (4%)</p>
Comments	The estimation of the route of transmission is not fully explained

ID	PM-J062
Authors	Takehirom Itsui, I K Iow Ano, K.A Zuo Masuko, C Hikaoy Amazaki, Hiroakoik Amoto, Fuhlio Tsuda, 4 Takeshi Anus And Shunji Mishiro
Title	Hepatitis C Virus Infection in Medical Personnel After Needlestick Accident
Journal	Hepatology.
Issue	16(5):1109-14.
Year	1992
Study design	Cross-sectional
Assay	HCV Ab ELISA
Sample size	159
Study setting	From all the needlestick accidents that occurred at Masuko Memorial Hospital (Nagoya, Japan) between August 1977 and September 1990
Characteristics of study subjects (Gender, age, ...)	The needlestick-injured medical personnel comprised 5 doctors, 131 nurses and 23 laboratory technicians
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	N/A
Results	<p>The risk of hepatitis C virus transmission from a single needlestick accident with hepatitis C virus RNA-positive blood was 10%, considerably higher than the 4% estimated in a previous study. We found that donor blood with antibody to a hepatitis C vim core-derived peptide with enzyme-liked immunosorbent assay optical densities greater than 2.0 carried a significant risk of transmitting hepatitis C virus to needlestick victims.</p>
Comments	It remains uncertain whether this hepatitis was related to some other infectious agent, known or unknown.

ID	PM-J063
Authors	Tamura, I and Koda, T and Kobayashi, Y and Ichimura, H and Kurimura, O and Kurimura, T
Title	Prevalence of four blood-borne viruses (HBV, HCV, HTLV-I, HIV-1) among haemodialysis patients in Japan.
Journal	J Med Virol.
Issue	36(4):271-3.
Year	1992
Study design	Cross-sectional
Assay	Immunoblot assay (RIBA, Ortho Diagnostic Systems)
Sample size	393
Study setting	5 hospitals in Hiroshima, from May to October 1990
Characteristics of study subjects (Gender, age, ...)	Haemodialysis patients aged 17 to 87 years
Sampling method	
Outcome	Anti HCV
Data collection method	
Results	<p>Seropositivity of anti-HCV was significantly higher in Haemodialysis patients than in controls (17.8% vs. 1.1%, P &lt; 0.001).</p> <p>The frequency of seropositivity for anti-HCV in patients with blood transfusion was significantly higher than in patients without transfusion (20.3% vs. 9.2%, P &lt; 0.05).</p>
Comments	Prevalence of anti HCV was irrespective of the duration of haemodialysis (> or < 3 years)

ID	PM-J064
Authors	Kendo Kiyosawa, MD; Takeshi Sodeyama, MD; Eiji Tanaka, MD; Yoshiyuki Nakano, MD; Seiichi Furuta, MD; Kusuya Nishioka, MD; Robert H. Purcell, MD; and Harvey J. Alter, MD
Title	Hepatitis C in Hospital Employees with Needlestick Injuries
Journal	Annals of Internal Medicine.
Issue	115:367-369.
Year	1991
Study design	Follow Up
Assay	enzyme-linked immunosorbent assay (ELISA)
Sample size	110
Study setting	Among hospital employees in Shinshu University Hospital
Characteristics of study subjects (Gender, age, ..)	N/A
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Serum specimens obtained from patients
Results	<p>Acute hepatitis C or unclassified (anti-HCV and HBsAg-negative) hepatitis developed in five employees after needlestick accidents.</p> <p>Acute hepatitis C developed in only 3 of 110 (2.7%; CI, 0.6% to 8%) recipients of an anti-HCV-positive needlestick. Unclassified hepatitis developed in two recipients, one whose donor was anti-HCV positive and HBsAg negative and the other whose donor was anti-HCV negative and HBsAg negative. Antibody to HCV did not develop in any of 106 recipients of an anti-HCV-positive needlestick who did not show concomitant evidence of viral hepatitis.</p>
Comments	From this study, we cannot clinically distinguish between anti-HCV positive and anti-HCV-negative hepatitis among recipients.

ID	PM-J066
Authors	Kendo Kiyosawa, Takeshi Sodeyama, Eiji Tanaka, Satoshi Shimizu, Seiichi Furuta, Yoshiki Miyazaki, Yoshihiro Akahane, and Hiroshi Suzuki
Title	Intrafamilial Transmission of Hepatitis C Virus in Japan
Journal	Journal of Medical Virology
Issue	33:114-116
Year	1991
Study design	Cross-sectional
Assay	HCV antibody ELISA Test System,
Sample size	107 patients and 296 family members
Study setting	Patients with chronic non-A, non-B liver disease followed at Shinshu University Hospital and the Yamanashi Medical College Hospital between April 1980 and December 1989.
Characteristics of study subjects (Gender, age, ...)	There were 69 men and 38 women; mean age was 55.3 years.
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Serum samples were taken
Results	85 index patients who were positive for anti-HCV, 15 (8%) of 196 of their family members were also HCV antibody positive, whereas of the 22 index patients who were anti-HCV antibody negative, none of the family members of the 100 evaluated was positive for anti-HCV antibody, a statistically significant difference between groups ( $P < 0.02$ ).
Comments	The relatively high prevalence of anti-HCV antibody in the family members of anti-HCV antibody positive index patients was documented as compared with family members of index patients without antibody to HCV. There was no evidence of sexual or maternal transmission of hepatitis C. Long-term

	prospective and comparative studies are required to clarify the mode of transmission of HCV.
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ID	PM-J071
Authors	宇都宮節夫 吉岡健太郎 高木健治 脇田隆字
Title	透析患者における TTV の感染率と感染経路
Journal	Japanese journal of clinical medicine
Issue	Nihon rinsho. 57(6):1417-20.
Year	1999
Study design	横断研究
Assay	Nested PCR
Sample size	206
Study setting	透析施設
Characteristics of study subjects (Gender, age, …)	健常供血者 91 人、維持透析を受けている慢性腎不全患者 115 人
Sampling method	
Outcome	TTV, HCV 抗体 , HCV-RNA
Data collection method	採血
Results	TTV 陽性率は透析患者 51.3%、健常供血者 16.5% だった。透析患者において TTV は輸血以外に主たる感染経路が存在すると考えられた。透析患者において TTV は単独での肝に対する病原性は低いと考えられた。透析患者において TTV は HCV による肝障害を増悪させる可能性があると考えられた。
Comments	本研究は、透析患者における TTV が HCV 感染の肝障害増悪を示唆したが、全体として TTV 単独感染例、HCV との重感染例とともに TTV の病原性は低いとの報告が多かったということも付け加えている

ID	PM-J076
Authors	岡本 憲和, 溝上 雅史, 折戸 悅朗, 加納 英行, 吉原 なみ子
Title	医療従事者の針刺し事故によるC型肝炎ウイルス感染について
Journal	The Journal of the Japanese Association for Infectious Diseases
Issue	感染症学雑誌. 65(11):1470-5.
Year	1991.11
Study design	横断研究
Assay	HCV 抗体測定キット, r-PHA 法
Sample size	99
Study setting	病院
Characteristics of study subjects (Gender, age, …)	患者(Donor)と汚染事故職員(Recipient)の事故当日の pair 血清が保存されていた症例
Sampling method	
Outcome	HCV 抗体, HBs 抗原
Data collection method	採血
Results	患者と血液汚染事故職員の事故当日の Pair 血清が存在した 99 例につき、血清の HCV 抗体を測定した。患者 99 例のうち、HCV 抗体陽性例は 16 例 (16.2%) であった。HCV 抗体陽性患者に使用した針で誤針した職員 16 例を平均 24.8 カ月追跡したが、1 例も HCV 抗体の陽転化は認められなかった。針刺し事故における HCV の感染頻度は低いと思われた。
Comments	本研究からは針刺し事故による HCV 感染の頻度は低いとの示唆があるが、各種報告から考えても、感染の可能性は十分にあると思われ、医療従事者の予防対策は重要である。

ID	PM-J079
Authors	Aikawa, Tatsuya and Kojima, Maki
Title	[Transmission of hepatitis C virus (HCV) by tattooing and acupuncture].
Journal	Nihon rinsho. Japanese journal of clinical medicine
Issue	Vol 62, SupP17,
Year	2004
Study design	横断研究
Assay	
Sample size	18856
Study setting	
Characteristics of study subjects (Gender, age, …)	病院内科受診者
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	対象患者数は、18856名を対象に、HCV 感染調査を行った。HCV 抗体陽性者は、800(4.2%)、感染危険因子として、輸血 303(37.9%)、薬物乱用 106(13.3%)、刺青 66(8.3%)という結果となった。
Comments	方法や検査法の記載なし

ID	PM-J080
Authors	Tanaka, Kazuo and Ide, Tatsuya and Sata, Michio
Title	[Routes of transmission of hepatitis C virus in hyperendemic areas, and molecular epidemiologic study of hepatitis C virus infection].
Journal	Nihon rinsho. Japanese journal of clinical medicine
Issue	Vol 62, Suppl 7
Year	2004
Study design	横断研究
Assay	第2世代 PHA 法
Sample size	857
Study setting	病院
Characteristics of study subjects (Gender, age, …)	肝疾患住民検診に応じた 857 人（男性 339 人、女性 518 人）
Sampling method	
Outcome	HCV 抗体
Data collection method	採血、問診
Results	受診者 857 人中、HCV 抗体陽性率は、26.3%(225/857 人)であった。肝疾患感染危険因子に関するアンケート調査より、肝疾患の既往のある者、黄疸歴、輸血歴、手術歴、鍼治療歴のある者は、そうでない者に比べて有意に HCV 抗体陽性率が高かった。
Comments	今回の危険因子のアンケート項目以外の因子が関連する可能性もある

ID	PM-U001
Authors	Grady, G F and Bennett, A J
Title	Risk of posttransfusion hepatitis in the United States. A prospective cooperative study.
Journal	JAMA.
Issue	220(5):692-701.
Year	1972
Study design	Prospective cohort
Assay	Not mentioned
Sample size	5142
Study setting and period	14 university medical centers in U.S, from March 1966 to Jan 1970
Characteristics of study subjects (Gender, age, ...)	Cardiovascular surgery patients, age>15 years who received transfusion of blood products. Males=3315
Sampling method	Convenience
Outcome	Non-A Non-B
Data collection method	Self-reporting clinical symptoms and blood collection for SGPT testing
Results	Incidence of post-transfusion hepatitis by type of blood product: Blood transfusion : 157/4984 (3.2%) Plasma product transfusion : 16/136 (12%) Fibrinogen transfusion : 15/80 (19%)
Comments	Hepatitis diagnosis was based on clinical signs and symptoms and elevation of SGPT. No test was done to confirm the type of virus. Surgery itself is a risk factor of transmission of hepatitis and may be a confounding factor.

ID	PM-U002
Authors	Aach, R D and Szmuness, W and Mosley, J W and Hollinger, F B and Kahn, R A and Stevens, C E and Edwards, V M and Werch, J
Title	Serum alanine aminotransferase of donors in relation to the risk of non-A,non-B hepatitis in recipients: the transfusion-transmitted viruses study.
Journal	N Engl J Med.
Issue	304(17):989-94.
Year	1981
Study design	Prospective Cohort Study
Assay	Ausria I-125 or Ausia II-125, Ausab and Carab.
Sample size	1513
Study setting and period	Followed 1513 transfusion recipients from 1974 through 1979.
Characteristics of study subjects (Gender, age, ...)	transfusion recipients, aged at least 16 years, mean age= 34±12, sex ratio men to women: 2:1.
Sampling method	Volunteer
Outcome	Non-A, Non-B
Data collection method	Blood sample.
Results	The attack rate for non-A, non-B hepatitis was 10 per cent.
Comments	A larger number of cases could have been prevented by lowering the cut off to 30IU, but the procedure would have required discarding about 9% of the blood collected.

ID	PM-U004
Authors	Alter, M J and Gerety, R J and Smallwood, L A and Sampliner, R E and Tabor, E and Deinhardt, F and FrÃ¶nsner, G and Matanoski, G M
Title	Sporadic non-A, non-B hepatitis: frequency and epidemiology in an urban U.S. population.
Journal	J Infect Dis.
Issue	145(6):886-93.
Year	1982
Study design	Prospective Cohort Study
Assay	Ausria II®; Abbott Laboratories, North Chicago, Ill. Ausab®; Abbott. Corab®; Abbott. Havab®; Abbott.
Sample size	96
Study setting and period	Patients at five acute care hospital in Baltimore between February 1979 to August 1980.
Characteristics of study subjects (Gender, age, ...)	Both inpatients and outpatients, who were $\geq 12$ years. Sex ratio M:W 2:1
Sampling method	N/A
Outcome	Non-A, non-B
Data collection method	Blood sample, Questionnaire
Results	Of 295 patients with hepatitis, 30 (10.20,10) were diagnosed as having hepatitis A, 142 (48.10,10) as having hepatitis B, and 123 (41.7%) as having non-A, non-B hepatitis. Of 123 patients with non-A, non-B hepatitis, 96 completed questionnaires and were compared with their control subjects.
Comments	There were 295 hepatitis patients diagnosed at five acute care hospital in Baltimore between 1979 to 1980. There were 123 patients had non-A, non-B hepatitis, which only 96 of them completed questionnaires and were compared with their control subjects.

ID	PM-U005
Authors	Seaworth, B J and Garrett, L E and Stead, W W and Hamilton, J D
Title	Non-A, non-B hepatitis and chronic dialysis--another dilemma.
Journal	Am J Nephrol.
Issue	4(4):235-9
Year	1984
Study design	Cross-sectional
Assay	HAV: IgG antibody to hepatitis A and when appropriate the IgM antibody (HAVAb. Abbott Laboratories). HBV: Ausria-II® and Ausab® (Abbott Laboratories. Chicago. 111.)
Sample size	163
Study setting and period	Durham Veterans Administration Medical Center, from July 1978 to June 1981
Characteristics of study subjects (Gender, age, ...)	Patients on center hemodialysis, home hemodialysis and peritoneal dialysis. Average age=53 years
Sampling method	NA
Outcome	Non-A non-B hepatitis, defined as clinical signs and symptoms of hepatitis with SGOT>40 IU/ml and absence of detection of HBsAg or HAVAb
Data collection method	Blood collection
Results	During the period of the study, hepatitis occurred in 34 of the 163 patients, including 23 cases of non-A non-B hepatitis. Cases of NANB hepatitis were most prominent in the group on center hemodialysis with 13 (27%) of the 49 patients affected. 8 (10%) cases occurred in the 77 home dialysis patients and 2 (5%) cases in the 37 on peritoneal dialysis.
Comments	Some patients received blood transfusion. It is difficult to attribute the occurrence of non-A non-B hepatitis to only hemodialysis

ID	PM-U006
Authors	Alter, M J and Coleman, P J and Alexander, W J and Kramer, E and Miller, J K and Mandel, E and Hadler, S C and Margolis, H S
Title	Importance of heterosexual activity in the transmission of hepatitis B and non-A, non-B hepatitis.
Journal	JAMA.
Issue	262(9):1201-5.
Year	1989
Study design	Cross-sectional study
Assay	Abbott Laboratories, North Chicago, 111.
Sample size	140
Study setting and period	March 1, 1985 through February 28, 1986
Characteristics of study subjects (Gender, age, ...)	Patients with acute viral hepatitis
Sampling method	N/A
Outcome	Non-A, non-B
Data collection method	Interview
Results	During the 12-month enrollment period, 158 patients with NANB hepatitis were identified and 140 (89%) were interviewed. Forty-seven percent of these patients reported a known source for infection: blood transfusions (13%) and IV drug use (34%).
Comments	Among 158 non-A, non-B hepatitis patients, there were only 140 patients completed the interview.

ID	PM-U007
Authors	Centers for Disease Control (CDC), [Collective Name]
Title	Non-A, non-B hepatitis--Illinois.
Journal	MMWR Morb Mortal Wkly Rep..
Issue	38(31):529-31
Year	1989
Study design	Case report
Assay	NA
Sample size	17
Study setting and period	Wabash County (Illinois) Health Department, From November 15, 1988, to June 30, 1989
Characteristics of study subjects (Gender, age, ...)	Residents of Wabash and neighboring county. Six (35%) were male; 16 (94%) white, and one was American Indian. Median age was 28 years (range: 14-36 years).
Sampling method	NA
Outcome	Non-A non-B hepatitis, defined as clinical signs and symptoms of hepatitis, elevated ALT>2.5 ULN and negative serologic markers for acute hepatitis A and B.
Data collection method	Interview and medical records
Results	Seven (41%) patients admitted to intravenous (IV)-drug use, and five (29%) were suspected IV-drug users. None of the patients reported blood transfusion within 6 months before onset of illness; none reported employment in a health-care setting with frequent blood exposure; and none reported sexual contact within 6 months before onset of illness with a person known to have had NANB hepatitis.
Comments	Intravenous (IV)-drug use may be considered as the route of transmission since the assessment of other main routes of transmission was inconclusive.

ID	PM-U008
Authors	Gerber, A R and Englander, S J and Selvey, D and Carlson, J F and Matthews, D L and Webster, H M and Caldwell, G G.
Title	An outbreak of non-A, non-B hepatitis associated with the infusion of a commercial factor IX complex during cardiovascular surgery.
Journal	Vox Sang.
Issue	58(4):270-5.
Year	1990
Study design	Retrospective study
Assay	N/A
Sample size	171
Study setting and period	January 1,1984, and June 3,1985
Characteristics of study subjects (Gender, age, ...)	Among Cardiovascular surgery patients.
Sampling method	N/A
Outcome	Non-A, non-B
Data collection method	Blood sample
Results	The investigation identified 23 cases and 7 probable cases of non-A, non-B hepatitis; 27 were among brand B recipients, and 3 were among brand A recipients
Comments	The frequency with which clotting factor preparations are infused during cardiovascular surgery and other types of surgery is in need of further investigation.

ID	PM-U009
Authors	Donahue, J G and Nelson, K E and Muñoz, A and Vlahov, D and Rennie, L L and Taylor, E L and Saah, A J and Cohn, S and Odaka, N J and Farzadegan, H
Title	Antibody to hepatitis C virus among cardiac surgery patients, homosexual men, and intravenous drug users in Baltimore, Maryland.
Journal	Am J Epidemiol.
Issue	134(10):1206-11.
Year	1991
Study design	3 Prospective cohort studies
Assay	ELISA (Ortho Diagnostics, Raritan, New Jersey). Recombinant immunoblot assay (Ortho/Chiron, Raritan, New Jersey)
Sample size	Study 1: 500 Study 2: 225 Study 3: 926
Study setting and period	Study 1: Multicenter, from April 1985 to January 1986 Study 2: Baltimore, from February 1988 to March 1989 Study 3: Baltimore and Washington, from April to Sep 1984
Characteristics of study subjects (Gender, age, ...)	Study 1: Cardiovascular surgery patients, median age 59.7 Study 2: HIV-1 positive and negative subjects, mean age=34.1 Study 3: Homosexual and bisexual men
Sampling method	Study 1: NA Study 2: Random Study 3: NA
Outcome	Anti-HCV
Data collection method	Blood collection and medical records
Results	Study 1: 488 patients were hepatitis C seronegative preoperatively and 19 (3.9%) seroconverted 8-12 months after surgery Study 2: Of the 116 HIV-1-seronegative intravenous drug users, 86.2% were seropositive for hepatitis C, which is comparable to the 84.4% among intravenous drug users who were seropositive for HIV-1 (109) Study 3: the prevalence of hepatitis C antibodies at 5.5 years of follow-up was 1.6% (15 of 926)
Comments	Study 1: Surgery itself is a risk factor of transmission of hepatitis and may be a confounding factor. Study 2: There were discrepancies between the number of persons tested and the number sampled due to missing data. Study 3: Subjects are selected among participants of the AIDS Cohort Study, which is designed to determine the natural history of HIV-1 infection in homosexual men. This may be a source of selection bias.

ID	PM-U010
Authors	Meyer, R A and Gordon, S C.
Title	Epidemiology of hepatitis C virus infection in a suburban Detroit community.
Journal	Am J Gastroenterol.
Issue	86(9):1224-6.
Year	1991 Sep.
Study design	Retrospective Cohort Study
Assay	Based on Kuo et al. 1989, method.
Sample size	50
Study setting and period	From Jan to May 1990.
Characteristics of study subjects (Gender, age, ...)	Studied among anti-HCV positive. 26 males. Mean age: 51 years old.
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Review medical documents.
Results	Among the 50 anti-HCV positive, 50% and 22% had history of blood transfusion and intravenous drug use respectively.
Comments	Studied only among anti-HCV positive.

ID	PM-U011
Authors	Brettler, D B and Mannucci, P M and Gringeri, A and Rasko, J E and Forsberg, A D and Rumi, M G and Garsia, R J and Rickard, K A and Colombo, M
Title	The low risk of hepatitis C virus transmission among sexual partners of hepatitis C-infected hemophilic males: an international, multicenter study.
Journal	Blood.
Issue	80(2):540-3
Year	1992
Study design	Cross-sectional
Assay	First and second-generation ELISA for anti-HCV (Ortho HCV ELISA test system, Raritan, NJ). Second-generation immunoblot assay (recombinant immunoblot assay [RIBA] HCV, second-generation assay; Chiron Corporation, Emeryville, CA).
Sample size	106
Study setting and period	Australia (38), Italy (35) and the United States (33)
Characteristics of study subjects (Gender, age, ...)	Female sexual partners of anti-HCV-positive haemophiliacs. Age range 18-73.5 years. Median length of sexual exposure their positive partner=147 months (range=5->240 months)
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and interview
Results	3 women were anti-HCV-positive (2.7%). One was from the United States (prevalence= 1/3) and was a past partner of an intravenous drug abuser, although she denied intravenous drug use herself
Comments	The study design does not allow to conclude on the sexual causality, since the HCV status of the women were not known prior to their

ID	PM-U012
Authors	Hardy, N M and Sandroni, S and Danielson, S and Wilson, W J.
Title	Antibody to hepatitis C virus increases with time on hemodialysis.
Journal	Clin Nephrol.
Issue	38(1):44-8.
Year	1992 Jul.
Study design	Cross-sectional Study
Assay	First generation ELISA, Chiron RIBA HCV second generation.
Sample size	87
Study setting and period	All patients receiving treatment from the University Medical Center Hemodialysis Unit.
Characteristics of study subjects (Gender, age, ...)	NA
Sampling method	All
Outcome	Anti-HCV
Data collection method	Blood sample, medical record.
Results	Antibody to HCV was found 31 of 87 hemodialysis patients.
Comments	We were unable to demonstrate a correlation of HCV-anti body positivity with the haemodialysis patients in US.

ID	PM-U013
Authors	Li, L and Zhang, X and Constantine, N T and Smialek, J E
Title	Seroprevalence of parenterally transmitted viruses (HIV-1, HBV, HCV, and HTLV-I/II) in forensic autopsy cases.
Journal	J Forensic Sci.
Issue	38(5):1075-83
Year	1993
Study design	Cross-sectional
Assay	Second generation ELISA (Abbott Laboratories) Second generation immunoblot assay (RIBA, Chiron Corp., Emeryville, CA)
Sample size	414
Study setting and period	Office of the Chief Medical Examiner, Maryland, from February to April 1992
Characteristics of study subjects (Gender, age, ...)	Forensic autopsy cases, Males=314. Age range=1-85 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection, medical records
Results	55 cases were intravenous drug users, of which 34(61.8%) were infected with HCV. Among the 356 cases for which the risk factors were unknown, 44(12.4%) were anti-HCV-positive.
Comments	The cross-sectional nature of the study and the subjects (dead people) does not allow to conclude on the causality.

ID	PM-U014
Authors	Polish, L B and Tong, M J and Co, R L and Coleman, P J and Alter, M J
Title	Risk factors for hepatitis C virus infection among health care personnel in a community hospital.
Journal	Am J Infect Control.
Issue	21(4):196-200.
Year	1993
Study design	Cross-sectional study
Assay	Abbott Laboratories, Chicago, Ill.
Sample size	1677
Study setting and period	Among hospital employees, Huntington Memorial Hospital in Pasadena, California in 1983.
Characteristics of study subjects (Gender, age, ...)	Approximately 75% were aged between 18 and 44 years old.
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire
Results	Forty-four employees were repeatedly reactive for anti-HCV by enzyme immunoassay.

ID	PM-U016
Authors	Hyams, K C and Krogwold, R A and Brock, S and Wignall, F S and Cross, E and Hayes, C
Title	Heterosexual transmission of viral hepatitis and cytomegalovirus infection among United States military personnel stationed in the western Pacific.
Journal	Hyams, K C and Krogwold, R A and Brock, S and Wignall, F S and Cross, E and Hayes, C
Issue	20(1):36-40.
Year	1993
Study design	Cross-sectional study
Assay	A second generation of EIA (Abbott)
Sample size	740
Study setting and period	US military personnel stationed in Philippine from September 1990 to May 1991.
Characteristics of study subjects (Gender, age, ...)	All men, mean age: 26.5, rang: 18:47
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample.
Results	All the five HCV positive men had a history of prior contact with prostitute.
Comments	Transmission route could not be explained when there is low prevalence of HCV.

ID	PM-U019
Authors	Lanphear, B P and Linnemann, C C and Cannon, C G and DeRonde, M M and Pendy, L and Kerley, L M
Title	Hepatitis C virus infection in healthcare workers: risk of exposure and infection.
Journal	Infect Control Hosp Epidemiol.
Issue	15(12):745-50.
Year	1994
Study design	Retrospective cohort
Assay	Second-generation ELISA for anti-HCV (Abbott Laboratories) HCV immunoblot assay (MATRIX HCV, Abbott Laboratories)
Sample size	50
Study setting and period	University of Cincinnati Hospital, from January 1, 1987 to December 31, 1989
Characteristics of study subjects (Gender, age, ...)	Healthcare workers exposed to HCV by needlestick injury
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood samples from source patients and healthcare workers were collected at the time of the exposure and sera were stored to be tested later
Results	3 (6.0%) of 50 HCWs who sustained an HCV-positive needlestick injury seroconverted to both the ELISA and immunoblot assay (CI,95, 1.3% to 16.6%) > 5 months after the exposure.
Comments	Due to the retrospective nature of the study, all HCWs who had an HCV-positive exposure were not evaluated. Only HCWs who had an identified exposure or clinical hepatitis were evaluated, it is possible that the incidence of HCV infection has been underestimated. HCWs who had a deeper penetrating injury might be more likely to return for evaluation, it is possible that the transmission rate of HCV has been overestimated

ID	PM-U021
Authors	Centers for Disease Control and Prevention (CDC)
Title	Outbreak of hepatitis C associated with intravenous immunoglobulin administration—United States, October 1993–June 1994.
Journal	MMWR Morb Mortal Wkly Rep.
Issue	43(28):505-9.
Year	1994
Study design	Case report
Assay	NA
Sample size	112
Study setting and period	24 states in the US from October 1993 to June 1994
Characteristics of study subjects (Gender, age, ...)	Reported cases of HCV in 24 states of the U.S. Age range=2-84 years, Males=54
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection and medical records
Results	Of 74 reported persons with possible HCV infection for whom risk factor data (e.g., blood transfusion or injecting-drug use) were available, 68 (92%) had receipt of Intravenous immunoglobulin as the only risk factor for infection.
Comments	Data on risk factors of transmission were not available for all the patients, the estimates might be underestimated.

ID	PM-U022
Authors	Thomas, D L and Cannon, R O and Shapiro, C N and Hook, E W and Alter, M J and Quinn, T C
Title	Hepatitis C, hepatitis B, and human immunodeficiency virus infections among non-intravenous drug-using patients attending clinics for sexually transmitted diseases.
Journal	J Infect Dis.
Issue	169(5):990-5.
Year	1994
Study design	Cross-sectional study
Assay	Abbott Laboratories, Abbott Park, IL
Sample size	1257
Study setting and period	Between 2 February and 30 April 1987.
Characteristics of study subjects (Gender, age, ...)	All patients attending the clinic for a new problem, men:793, age range:11-71.
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire
Results	Of 1257 patients, 122 (9.7%) had anti-HCV, which was more common in male (11.5%) than in female (6.7%) subjects ( $P = .006$ ). Univariate analysis showed that for female subjects, anti-HCV was associated with having more than one male sex partner in the month before their visit ( $P = .018$ ) and anti-HBc ( $P < .001$ )
Comments	These observations among non-intravenous drug-using patients suggest that sexual transmission of HCV may occur.

ID	PM-U023
Authors	Fiscus, S A and Kelly, W F and Battigelli, D A and Weber, D J and Schoenbach, V J and Landis, S E and Wilber, J C and Van der Horst, C M
Title	Hepatitis C virus seroprevalence in clients of sexually transmitted disease clinics in North Carolina.
Journal	Sex Transm Dis.
Issue	21(3):155-60.
Year	1994
Study design	Cross-sectional
Assay	First-generation EIA (Abbott Laboratories, Abbott Park, IL) Immunoblot assay (RIBA4, Chiron Corporation, Emeryville, CA)
Sample size	Random
Study setting and period	Public health departments of Wake, Durham and Mecklenburg counties of North Carolina in 1988
Characteristics of study subjects (Gender, age, ...)	Clients of a sexually-transmitted disease clinic. Age range=16-40 years. Males=340
Sampling method	Random
Outcome	Anti-HCV
Data collection method	Blood collection in self-administered questionnaire
Results	102/149 intravenous drug users were HCV positive (68.5%) 9/94 homosexual/bisexual were tested positive for HCV (9.6%)
Comments	Sampling clients of a STD clinic may be source of selection bias, since these people may have a higher risk of HCV compared to the general population

ID	PM-U024
Authors	Daikos, G L and Lai, S and Fischl, M A
Title	Hepatitis C virus infection in a sexually active inner-city population. The potential for heterosexual transmission.
Journal	Infection.
Issue	22(2):72-6.
Year	1994
Study design	Cross-sectional study
Assay	Ortho Diagnostics System Inc., Raritan, New Jersey.
Sample size	571
Study setting and period	Sexually active heterosexual population, between 1988 and 1991
Characteristics of study subjects (Gender, age, ...)	Their median age was 29 years (range, 15-71 years). The majority were black (62%) and non-Hispanic (46%).
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire
Results	Of 571 participants, 25 (4.4%) were seropositive for HCV.
Comments	The present study has several limitations. First, the participants did not represent a random sample of all heterosexually active inner-city populations. Second, this was a cross-sectional study that did not establish any temporal sequence of events necessary for drawing conclusions about causal relations among different factors and HCV infection.

ID	PM-U025
Authors	McCashland, T M and Wright, T L and Donovan, J P and Schafer, D F and Sorrell, M F and Heffron, T G and Langnas, A N and Fox, I J and Shaw, B W and Zetterman, R K
Title	Low incidence of intraspousal transmission of hepatitis C virus after liver transplantation.
Journal	Liver Transpl Surg.
Issue	1(6):358-61.
Year	1995
Study design	Cross-sectional
Assay	Second-generation ELISA (Abbott Diagnostic, North Chicago, 1L) PCR (Chiron Corporation, Emeryville, CAI)
Sample size	22
Study setting and period	University of Nebraska Medical Center
Characteristics of study subjects (Gender, age, ...)	Spouses of HCV-positive patients. Males=5, Age range=33-66 years
Sampling method	NA
Outcome	Anti-HCV and HCV RNA
Data collection method	Blood collection and questionnaire
Results	1/22 (5%) of spouses were anti-HCV-positive When HCV status was assessed using PCR, it revealed that none of the spouses was infected with HCV.
Comments	The only spouse who was positive for anti-HCV by ELISA had normal liver enzymes and was PCR-negative, suggesting that the anti-HCV positive result may be a false-negative

ID	PM-U027
Authors	Simonian, P T and Gilbert, M and Trumble, T E
Title	Incidence of hepatitis C in patients requiring orthopaedic surgery.
Journal	J Bone Joint Surg Br.
Issue	77(6):971-4.
Year	1995
Study design	Cross-sectional
Assay	Second-generation screening assay, ELA 2.0 (Abbott Laboratories, Abbott Park, Illinois)
Sample size	19
Study setting and period	Department of Orthopaedic Surgery, University of Washington
Characteristics of study subjects (Gender, age, ...)	HCV-positive Orthopaedic surgery patients. Age range=29-52. Males=16
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	Risk factors of transmission for the 19 HCV-positive patients who undergone orthopaedic surgery: Tattooing: 15 Intravenous drug use: 7 Sexual: 1
Comments	On the initial questionnaire two patients gave a positive history of IV drug abuse, but seven did so on a repeat questionnaire. This suggests a possible prevarication bias.

ID	PM-U029
Authors	Shopper, T and Boozer, C and Lancaster, D and Cade, J E and Lundgren, G
Title	Presence of anti-hepatitis C virus serum markers in a dental school patient population.
Journal	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.
Issue	79(5):655-60
Year	1995
Study design	Cross-sectional
Assay	ELISA (Abbot HCV 2.0 Abbot Laboratories, Abbot Park, Ill.)
Sample size	500
Study setting and period	Louisiana state university school of dentistry, from February to April 1992
Characteristics of study subjects (Gender, age, ...)	Patients applying for dental care. Age range=14-70 years. Males=194
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	Proportion of infected subjects by factor Blood transfusion 8/72 (11.1%) Intravenous drug use 4/7 (57.1%) Surgery 21/328 (6.4%) Piercing 11/293 (3.8%) Tattooing 9/43 (20.9%) Acupuncture 1/7 (14.3%)
Comments	Generalization of the findings should be cautious due to the convenience nature of the sampling

ID	PM-U031
Authors	Thomas, D L and Zenilman, J M and Alter, H J and Shih, J W and Galai, N and Carella, A V and Quinn, T C
Title	Sexual transmission of hepatitis C virus among patients attending sexually transmitted diseases clinics in Baltimore--an analysis of 309 sex partnerships.
Journal	J Infect Dis.
Issue	171(4):768-75.
Year	1995
Study design	Cross-sectional
Assay	Second-generation EIA (Ortho Diagnostics, Raritan, NJ): Second-generation recombinant immunoblot assay (RIBA) (Ortho Diagnostics).
Sample size	555
Study setting and period	STD clinics in Baltimore, from November 1990 to June 1992.
Characteristics of study subjects (Gender, age, ...)	Non-injection drug-using males attending STD clinics in Baltimore, aged>13 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	Prevalence of anti-HCV was higher in homosexual non-injection drug-using males (18.4%) compared with patients without homosexual exposures (5.8%) (OR=3.6 (1.6-8.5), p=.003). Anal-receptive sex was significantly associated with HCV (OR=2.6 (1.2-5.7), p = .03).
Comments	Sampling clients of a STD clinic may be source of selection bias, since these people may have a higher risk of HCV compared to the general population

ID	PM-U032
Authors	Tong, M J and Lai, P P and Hwang, S J and Lee, S Y and Co, R L and Chien, R N and Kuo, G
Title	Evaluation of sexual transmission in patients with chronic hepatitis C infection.
Journal	Clin Diagn Virol.
Issue	3(1):39-47.
Year	1995
Study design	Cross-sectional study
Assay	EIA and chimeric C25 ELISA.
Sample size	68
Study setting and period	All patients were referred to the Liver Center, Huntington Memorial Hospital and followed for at least 6 months or longer.
Characteristics of study subjects (Gender, age, ...)	26 males.
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample
Results	All index patients were positive for both anti-HCV and HCV RNA. Antibody to HCV was detected in four (5.9%) of their spouses.
Comments	Base on the nature of the study, those 5 patients might get infected from other routes of transmission.

ID	PM-U034
Authors	Cendoroglo Neto, M and Draibe, S A and Silva, A E and Ferraz, M L and Granato, C and Pereira, C A and Sesso, R C and Gaspar, A M and Ajzen, H
Title	Incidence of and risk factors for hepatitis B virus and hepatitis C virus infection among haemodialysis and CAPD patients: evidence for environmental transmission.
Journal	Nephrol Dial Transplant.
Issue	10(2):240-6.
Year	1995
Study design	Prospective Cohort Study
Assay	Second-generation ELISA. Abbott Laboratories
Sample size	129
Study setting and period	January 1987 to January 1990
Characteristics of study subjects (Gender, age, ...)	Haemodialysis patients
Sampling method	All
Outcome	Anti-HCV
Data collection method	Blood sample
Results	Regarding hepatitis C, 83 anti-HCV-negative patients on haemodialysis and 46 on CAPD were followed. There were 18 seroconversions on haemodialysis (0.15/patient-year) and two seroconversions on CAPD (0.03/patient-year).
Comments	Hemodialysis treatment was also the only risk factor significantly associated with a higher risk of HCV infection. We observed a greater risk for the occurrence of HCV infection in the haemodialysis group, compared with the CAPD group.

ID	PM-U035
Authors	Bresee, J S and Mast, E E and Coleman, P J and Baron, M J and Schonberger, L B and Alter, M J and Jonas, M M and Yu, M Y and Renzi, P M and Schneider, L C
Title	Hepatitis C virus infection associated with administration of intravenous immune globulin. A cohort study.
Journal	JAMA.
Issue	276(19):1563-7.
Year	1996
Study design	Prospective cohort
Assay	second-generation EIA (HCV EIA 2.0, Abbott Laboratories, North Chicago, Ill)
Sample size	278
Study setting and period	Allergy/ Immunology Program at Children's Hospital in Boston, from March 1993 to February 1994
Characteristics of study subjects (Gender, age, ...)	Patients treated with intravenous immune globulin. Males=160. Age range: 10 months-65 years
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	Anti-HCV was detected in 26 persons (9%), including 22 (76%) of the 29 who had ALT levels more than 2.5 times the ULN, 2 (6%) of 36 with ALT levels 1.1 to 2.5 times the ULN, and 2 (1%) of 213 with normal ALT levels. Of the 26 persons who were anti-HCV positive, 21 (81%) had detectable HCV RNA by PCR compared with 3 (2%) of the 154 persons who tested negative for anti-HCV.
Comments	Potential limitations of this study are the possibility for ascertainment and misclassification bias. The attack rate may be overestimated if persons with symptomatic HCV infection were more likely to be screened, or if persons with chronic HCV infection were included as case patients.

ID	PM-U037
Authors	Conry-Cantilena, C and VanRaden, M and Gibble, J and Melpolder, J and Shakil, A O and Viladomiu, L and Cheung, L and DiBisceglie, A and Hoofnagle, J and Shih, J W
Title	Routes of infection, viremia, and liver disease in blood donors found to have hepatitis C virus infection.
Journal	N Engl J Med.
Issue	334(26):1691-6
Year	1996
Study design	Cross-sectional
Assay	Second-generation RIBA (RIBA 2.0, Chiron, Emeryville, Calif.)
Sample size	481
Study setting and period	American Red Cross from January 1991 to December 1994
Characteristics of study subjects (Gender, age, ...)	Blood donors, mean age=41 years, Men=272
Sampling method	Convenience
Outcome	Anti HCV
Data collection method	Blood collection and questionnaire
Results	<p>Of the 481 participants, 248 were positive, 131 negative and 102 had an intermediate result.</p> <p>66 of the positive cases had history of blood transfusion vs 11 negative cases. 103 of the positive cases had history of intravenous drug use vs 14 negative cases. 132 of the positive cases had history of history of sexually transmitted disease, sex with a prostitute, five or more sexual partners per year, or a combination of these, vs 21 negative cases.</p> <p>52 of the positive cases were tattooed vs 5 negative cases.</p>
Comments	Due to the high number of intermediate results (102/481), these data may not be reliable.

ID	PM-U039
Authors	Nelson, S P and Jonas, M M
Title	Hepatitis C infection in children who received extracorporeal membrane oxygenation.
Journal	J Pediatr Surg.
Issue	31(5):644-8
Year	1996
Study design	Prospective cohort
Assay	ELISA (Elisa-2, Ortho Diagnostics, Raritan, NJ) Second-generation recombinant immunoblot assay (RIBA-2; Ortho/Chiron, Raritan, NJ)
Sample size	83
Study setting and period	Children's hospital in Boston, from August 1986 to January 1992
Characteristics of study subjects (Gender, age, ...)	Children who received extracorporeal membrane oxygenation (ECMO) therapy
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection and medical records
Results	187 surviving patients who received ECMO therapy as neonates have been contacted and 83 patients were tested for anti-HCV. Of the 83 patients, 7 (8%) were anti-HCV positive.
Comments	The design of the study does not allow to exclude transmission of HCV from other non-transfusion sources.

ID	PM-U040
Authors	Shuhart, M C and Myerson, D and Spurgeon, C L and Bevan, C A and Sayers, M H and McDonald, G B
Title	Hepatitis C virus (HCV) infection in bone marrow transplant patients after transfusions from anti-HCV-positive blood donors.
Journal	Bone Marrow Transplant.
Issue	17(4):601-6.
Year	1996
Study design	Prospective Cohort Study
Assay	Second generation PCR, Second generation ELISA or Second-generation RIBA
Sample size	12
Study setting and period	Bone marrow transplant patients at the Fred Hutchinson Cancer Research Center, 1992-1992
Characteristics of study subjects (Gender, age, ...)	5 males, Mean age: 30.58
Sampling method	All
Outcome	HCV RNA
Data collection method	Blood sample
Results	6 HCV RNA positive.
Comments	The risk of transmission of HCV from seropositive blood components was limited to those donors who were viraemic assessed by PCR.

ID	PM-U041
Authors	Thomas, D L and Gruninger, S E and Siew, C and Joy, E D and Quinn, T C
Title	Occupational risk of hepatitis C infections among general dentists and oral surgeons in North America.
Journal	Am J Med.
Issue	100(1):41-5.
Year	1996
Study design	Cross-sectional
Assay	Second-generation ELISA (Ortho Diagnostics Systems, Raritan, New Jersey) Second-generation Recombinant immunoblot (Chiron Corporation, Emeryville, California; and Ortho Diagnostic Systems).
Sample size	648
Study setting and period	50 states of the United States, in October 1992
Characteristics of study subjects (Gender, age, ...)	Oral surgeons and general dentists, aged 26-69 years
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	In the month prior to participation in the study, 7 (78%) of the 9 anti-HCV-positive persons reported no percutaneous injuries, compared to 428 (79.7%) of 537 anti-HCV- negative participants ( $P >0.20$ , chi-square test for trend).
Comments	The professionals may not be representative of all dental personnel, since this was not a random sample of the entire population of dentists.

ID	PM-U042
Authors	Villano, S A and Vlahov, D and Nelson, K E and Lyles, C M and Cohn, S and Thomas, D L.
Title	Incidence and risk factors for hepatitis C among injection drug users in Baltimore, Maryland.
Journal	J Clin Microbiol.
Issue	35(12):3274-7.
Year	1997
Study design	Prospective Cohort Study
Assay	Amplicor HCV Monitor Test kit; Roche Diagnostic Systems, Branchburg, N.J.
Sample size	142
Study setting and period	Between 1988 and 1989, 2,921 IDUs from the Baltimore area.
Characteristics of study subjects (Gender, age, ...)	Participants were at least 18 years of age and free of AIDS and acknowledged a history of injection drug use in the previous 10 years.
Sampling method	N/A
Outcome	HCV RNA
Data collection method	Blood sample.
Results	During a median follow-up of 6.5 years (range, 2.4 to 7.8 years), 47 of 142 participants became HCV seropositive. HCV RNA was detected in 42 participants.
Comments	Several factors may contribute to the high incidence of HCV relative to that of other blood-borne infections among IDUs.

ID	PM-U046
Authors	Hershaw, R C and Kalish, L A and Sha, B and Till, M and Cohen, M.
Title	Hepatitis C virus infection in Chicago women with or at risk for HIV infection: evidence for sexual transmission.
Journal	Sex Transm Dis.
Issue	25(10):527-32.
Year	1998
Study design	Cross-sectional study
Assay	EIA 2.0, Abbott Laboratories, Abbott Park, IL
Sample size	297
Study setting and period	October 1994 to November 1995.
Characteristics of study subjects (Gender, age, ...)	Newly women enrolled in the Women's interagency HIV study in Chicago.
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire
Results	Of 296 women, 123 (42%) were HCV Ab positive. Prevalence was 90% in women injected drugs compared with 12% in non-injectors (odds ratio 64.0, 95% CI: 29.9 to 137.0).
Comments	The nature of cross-sectional study cannot explain the causal effect.

ID	PM-U047
Authors	Granovsky, M O and Minkoff, H L and Tess, B H and Waters, D and Hatzakis, A and Devoid, D E and Landesman, S H and Rubinstein, A and Di Bisceglie, A M and Goedert, J J
Title	Hepatitis C virus infection in the mothers and infants cohort study.
Journal	Pediatrics.
Issue	102(2 Pt 1):355-9.
Year	1998
Study design	Prospective cohort
Assay	RT-PCR (HCV Amplicor; Roche Molecular Systems, Nutley, NJ)
Sample size	151
Study setting and period	Five obstetric clinics in Brooklyn and the Bronx, New York, from
Characteristics of study subjects (Gender, age, ...)	Children born to HCV positive mothers. Age range:1-4 years
Sampling method	NA
Outcome	HCV RNA
Data collection method	Blood collection and medical records
Results	151 infants, including four twin pairs, were born to HCV-Sero-positive women. Of these, 122 infants were followed-up for a minimum of 12 months. Seven of the 122 infants were HCV infected by the end of follow-up, giving an overall vertical transmission rate of 6% (95% CI =2%-11%). 3 of the 7 children had history of blood transfusion. Mother-infant pairs showed homology with respect to HCV major genotype 1 (subtypes 1a or 1b) in 4 out of 5 pairs.
Comments	One mother-infant pair (D) in our study had mismatched major genotypes. Misl labelling or contamination of samples could explain this discrepancy.

ID	PM-U048
Authors	Garfein, R S and Doherty, M C and Monterroso, E R and Thomas, D L and Nelson, K E and Vlahov, D.
Title	Prevalence and incidence of hepatitis C virus infection among young adult injection drug users.
Journal	J Acquir Immune Defic Syndr Hum Retrovirol.
Issue	18 Suppl 1:S11-9.
Year	1998
Study design	Prospective Cohort Study
Assay	EIA-2, Ortho Diagnostics, Raritan, NJ, USA.
Sample size	229
Study setting and period	August 1994 to April 1996 in Baltimore City.
Characteristics of study subjects (Gender, age, ...)	Among injection drug users aged between 18 to 29 (mean 23.5). 105 were male.
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and interview
Results	Of the 229 participation, 86 were HCV-seropositive.
Comments	The risk factors for HCV infection in this study were base on cross-sectional data; therefore, the temporal relation between injecting practices and HCV infection is unknown.

ID	PM-U049
Authors	Thomas, D L and Villano, S A and Riester, K A and Hershow, R and Mofenson, L M and Landesman, S H and Hollinger, F B and Davenny, K and Riley, L and Diaz, C and Tang, H B and Quinn, T C
Title	Perinatal transmission of hepatitis C virus from human immunodeficiency virus type 1-infected mothers. Women and Infants Transmission Study.
Journal	J Infect Dis.
Issue	177(6):1480-8.
Year	1998
Study design	Prospective cohort
Assay	RT-PC (AMPLICOR HCV Detection Kit; Roche Diagnostic Systems, Branchburg, NJ)
Sample size	155
Study setting and period	Institutions in New York City, Chicago, Massachusetts, and San Juan, from December 1989 to December 1995
Characteristics of study subjects (Gender, age, ...)	Children born to anti-HCV positive mothers
Sampling method	NA
Outcome	HCV RNA
Data collection method	Blood collection and questionnaire
Results	HCV RNA was detected during at least one visit for 13 (8.4%) of the 155 infants (95% CI = 4.5–13.9). Seven of the HCV RNA-positive infants were also infected with HIV-1.
Comments	The overlap in HCV RNA concentrations in transmitting and non-transmitting mothers suggests that there were factors other than HCV virus load that could have influenced HCV transmission.

ID	PM-U050
Authors	Flamm, S L and Parker, R A and Chopra, S
Title	Risk factors associated with chronic hepatitis C virus infection: limited frequency of an unidentified source of transmission.
Journal	Am J Gastroenterol.
Issue	93(4):597-600.
Year	1998
Study design	Case study
Assay	Enzyme immunoassay and/or second-generation recombinant immunoblot assay (RIBA 2).
Sample size	301
Study setting and period	Between July 1989 and April 1995, 301 consecutive patients (age 19–90 years) with chronic HCV infection referred to the hepatology section at Beth Israel Hospital were studied.
Characteristics of study subjects (Gender, age, ...)	Patients (age 19–90 years) with chronic HCV infection referred to the hepatology section at Beth Israel Hospital
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire
Results	Seventy-three patients had multiple risk factors, including eight who had three risk factors. The most common combination of multiple risk factors was history of IVDU and tattoo placement.
Comments	The risk factors for HCV infection in this study were based on interview; so, recalled bias might occurred.

ID	PM-U052
Authors	Goob, T C and Yamada, S M and Newman, R E and Cashman, T M
Title	Bloodborne exposures at a United States Army Medical Center.
Journal	Appl Occup Environ Hyg.
Issue	14(1):20-5.
Year	1999
Study design	Case study
Assay	N/A
Sample size	339
Study setting and period	Tripler Army Medical Center is in Honolulu, Hawaii. Annual admissions from 1992 through 1995.
Characteristics of study subjects (Gender, age, ...)	Among health worker who exposed to needlestick injuries.
Sampling method	All
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire
Results	Reported exposures revealed an average annual incidence of exposures from 1992 through 1995 to be 93.7 per 1000 health care workers who require universal precautions training. The incidence of sharps injuries was 81.2 per 1000 health care workers per year.
Comments	As suspected, an “unseen” group of exposures that go unreported were identified.

ID	PM-U053
Authors	Abraham, H D and Degli-Esposti, S and Marino, L
Title	Seroprevalence of hepatitis C in a sample of middle-class substance abusers.
Journal	J Addict Dis.
Issue	18(4):77-87
Year	1999
Study design	Cross-sectional
Assay	Second-generation ELISA
Sample size	334
Study setting and period	Alcohol and Drug Treatment Service of the Butler Hospital, from January 30 to July 1997
Characteristics of study subjects (Gender, age, ...)	Substance abusers seeking detoxification. Males=217
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	76.7% of all patients admitting intravenous drug use were seropositive for HCV, compared to 12.5% of patients denying any drug injections in a lifetime (OR=22.6). Similarly, 84.4% of all patients with a history of needle sharing were seropositive, compared to 21.4% of patients denying this behaviour (OR=19.8)
Comments	No adjusted analysis to control possible confusion bias

ID	PM-U054
Authors	Balasekaran, R and Bulterys, M and Jamal, M M and Quinn, P G and Johnston, D E and Skipper, B and Chaturvedi, S and Arora, S
Title	A case-control study of risk factors for sporadic hepatitis C virus infection in the southwestern United States.
Journal	Am J Gastroenterol.
Issue	94(5):1341-6.
Year	1999
Study design	Case Control Study
Assay	The HCV serostatus of the 90 patients was determined using a second-generation enzyme linked immunoassay (ELISA II, Abbott, Chicago, IL) and confirmed by a second-generation recombinant immunoblot assay (RIBA 2, Ortho Diagnostics, Raritan, NJ), or by the presence of HCV RNA by branch DNA (Chiron, Emeryville, CA) or reverse transcription-polymerase chain reaction (RT-PCR) (Roche Diagnostic Systems, Branchburg, NJ) or both.
Sample size	116
Study setting and period	Among patients seen in gastroenterology outpatient clinics at university medical centre in the southwestern United States from January 1995 through August 1996.
Characteristics of study subjects (Gender, age, ...)	HCV infection who reported no history of transfusion or injection drug use.
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood, interviews and review of medical records.
Results	A variety of variables were significantly associated with increased risk of sporadic HCV infection, including a history of tattoos, needlestick exposure, a history of sexually transmitted disease, intercourse with an injection drug user, five or more lifetime sexual partners, intercourse during menses (for women), lower income, and heavy alcohol intake (.60 g/day).
Comments	The exclusion criteria contents social undesirable behaviour.

ID	PM-U057
Authors	Feldman, J G and Minkoff, H and Landesman, S and Dehovitz, J
Title	Heterosexual transmission of hepatitis C, hepatitis B, and HIV-1 in a sample of inner city women.
Journal	Sex Transm Dis.
Issue	27(6):338-42.
Year	2000
Study design	Cross-sectional
Assay	Abbott matrix test (Abbott Laboratories, Abbott Park, IL)
Sample size	502
Study setting and period	State University of New York Health Science Center, Brooklyn Kings County Hospital Center; from 1990 to December 1991
Characteristics of study subjects (Gender, age, ...)	Sexually active women who had no evidence of IDU and had never received blood transfusions. Black=90.6%. Age range=17-49 years
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	Of the 502 Sexually active women who had no evidence of IDU and had never received blood transfusions, 8 were anti-HCV positive (1.6%, 95% CI=0.7-3.1%). The median lifetime sex partners was 10 in the positive group and 3 in the negative group.
Comments	History of injecting drug use and blood transfusion was assessed by self-report of the patient. It is impossible to ascertain that parenteral transmission did not contribute to the finding.

ID	PM-U058
Authors	Austin, G E and Jensen, B and Leete, J and De L'Aune, W and Bhatnagar, J and Racine, M and Braun, J E
Title	Prevalence of hepatitis C virus seropositivity among hospitalized US veterans.
Journal	Am J Med Sci.
Issue	319(6):353-9.
Year	2000
Study design	Cross-sectional study
Assay	<ul style="list-style-type: none"> <li>- a second-generation EIA test for HCV)</li> <li>- Abbott Park, IL</li> <li>- the Abbott Matrix HCV 2.0 assay.</li> </ul>
Sample size	530
Study setting and period	Patients admitted to the Atlanta VA Medical Center between November 1993 and November 1994.
Characteristics of study subjects (Gender, age, ...)	Men:506
Sampling method	Random
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire
Results	Of these 62-repeat reactive, 56 (90.3%) were positive and 3 others (4.8%) indeterminate by the supplemental assay. The HCV seropositivity rate after supplemental testing was 11.8% for random admissions, 5.0% for surgical admissions, and 13.3% for patients admitted to the gastroenterology service. HCV was associated risk factors in HCV seropositive patients included a history of intravenous drug abuse, current or previous alcohol abuse, previous or concurrent liver disease, previous blood transfusions, haemodialysis, and multiple sex partners or unsafe sex.
Comments	This results probably overestimate the prevalence of hepatitis C in the healthy veteran population, both in greater Atlanta and nationally, and perhaps among VA medical center outpatients.

ID	PM-U059
Authors	Silverman, A L and Sekhon, J S and Saginaw, S J and Wiedbrauk, D and Balasubramaniam, M and Gordon, S C
Title	Tattoo application is not associated with an increased risk for chronic viral hepatitis.
Journal	Am J Gastroenterol.
Issue	95(5):1312-5.
Year	2000
Study design	Cross-sectional
Assay	Abbott HCV EIA 2.0.
Sample size	212
Study setting and period	William Beaumont hospital in Oakland County, Michigan.
Characteristics of study subjects (Gender, age, ...)	Young adults visiting the hospital. Males=53. Mean age: $30.9 \pm 7.9$ years
Sampling method	Random
Outcome	Anti HCV
Data collection method	Blood collection and questionnaire
Results	No significant difference was found between tattooed individuals (7/106) and nontattooed control patients (3/106) with respect to HCV prevalence. In addition, we saw no increase in the risk for viral hepatitis based on the number of tattoo applications.
Comments	6/7 (86%) of the seropositive individuals acknowledged other, well-established risk factors for HCV viremia. Such data support the contention that neither the occupation of tattooist nor a history of having been tattooed constitute credible risk factors for hepatitis C.

ID	PM-U060
Authors	Pfau, P R and Rho, R and DeNofrio, D and Loh, E and Blumberg, E A and Acker, M A and Lucey, M R.
Title	Hepatitis C transmission and infection by orthotopic heart transplantation.
Journal	J Heart Lung Transplant.
Issue	19(4):350-4.
Year	2000
Study design	Retrospective study
Assay	Abbott Laboratories HCV EIA 2.0
Sample size	5
Study setting and period	Patients who received donor hearts from HCV-infected donors between 1997 and 1998.
Characteristics of study subjects (Gender, age, ...)	Men: 2. Mean age: 58. Rang (48-61)
Sampling method	ALL
Outcome	Anti-HCV
Data collection method	Blood sample and review medical record
Results	Only 1 of 5 or 20% of the patients has developed antibody to hepatitis C.
Comments	Transplantation of a heart from an HCV-infected donor should be limited to critically ill and acutely end-stage patients, when organ shortage necessitates transplantation of a hepatitis C heart.

ID	PM-U061
Authors	Hisada, M and O'Brien, T R and Rosenberg, P S and Goedert, J J
Title	Virus load and risk of heterosexual transmission of human immunodeficiency virus and hepatitis C virus by men with hemophilia. The Multicenter Hemophilia Cohort Study.
Journal	J Infect Dis.
Issue	181(4):1475-8
Year	2000
Study design	Prospective cohort
Assay	Recombinant immunoblot assay (RIBA-II or -III; Chiron, Emeryville, CA)
Sample size	393
Study setting and period	17 treatment centers in the United States and Western Europe, from 1982 to 1988
Characteristics of study subjects (Gender, age, ...)	Female sexual partners of anti-HCV-positive haemophiliacs. Mean age=33 years
Sampling method	NA
Outcome	Anti HCV
Data collection method	Blood collection and questionnaire
Results	Of the 393 hemophilic men, 343 (87%) were infected with both HIV and HCV, 6 (2%) with HIV alone, and 42 (11%) with HCV alone; only 2 (1%) were infected with neither virus. 21(5%) of the 393 female partners were HCV positive at baseline. Only 1 (2%) of the 42 men with HCV infection alone transmitted HCV to his partner, compared with 20 (6%) of the 343 dually infected men ( $P=0.21$ ).
Comments	HCV transmission occurred mainly in female with dually infected partners (HCV+HIV). Although HIV is associated with an increase in HCV load, it is unlikely to fuel an epidemic of sexually transmitted HCV.

ID	PM-U062
Authors	Ramsey C. Cheung, M.D.
Title	Epidemiology of hepatitis C virus infection in American veterans.
Journal	Am J Gastroenterol.
Issue	95(3):740-7.
Year	2000
Study design	Cross-sectional study
Assay	EIA II, Abbott Lab
Sample size	8558
Study setting and period	All veterans who had anti-HCV (EIA II) tested during a 6-yr period (7/92 to 6/98) were included in this study.
Characteristics of study subjects (Gender, age, ...)	Veterans of the U.S. military.
Sampling method	All
Outcome	Anti-HCV
Data collection method	Review medical records and questionnaire.
Results	Of 8558 veterans tested for anti-HCV (EIA II), 2985 (35%) veterans were positive with a mean age of 48.4 years (range, 28–89 years). Sixty percent were between the age of 41 and 50 years. Risk factors for HCV infection identified in 409 consecutive veterans were intravenous drug abuse (81%), unknown (11%), blood transfusion (3%), sexual/ household contact (2%), transfusion and intravenous drug use (2%), and tattoo (1%).
Comments	Hepatitis C infection was much more common among veterans, within a very narrow age distribution and intravenous drug use was the major risk factor.

ID	PM-U063
Authors	Murphy, E L and Bryzman, S M and Glynn, S A and Ameti, D I and Thomson, R A and Williams, A E and Nass, C C and Ownby, H E and Schreiber, G B and Kong, F and Neal, K R and Nemo, G J
Title	Risk factors for hepatitis C virus infection in United States blood donors. NHLBI Retrovirus Epidemiology Donor Study (REDS)
Journal	Hepatology.
Issue	31(3):756-62.
Year	2000
Study design	Case-control
Assay	Enzyme immunoassay and recombinant immunoblot
Sample size	1797
Study setting and period	5 large U.S. blood centers, from 1994 and 1995
Characteristics of study subjects (Gender, age, ...)	Blood donors. Males=968
Sampling method	NA
Outcome	Anti HCV
Data collection method	Questionnaire and blood collection
Results	HCV seropositivity was most strongly associated with ever having injected illicit drugs, with 387(51%) HCV sero-positives versus only 9 (1%) controls admitting to this risk factor (OR=134; 95% CI: 68-268). 23% of positive cases had history of blood transfusion, 22% accidental puncture, 74% surgery, 16% shared razors or toothbrush, 9% acupuncture.
Comments	The low and differential (between cases and controls) response rate raises the possibility of response bias, which may have led to under- or overestimation of the magnitude of the associations observed.

ID	PM-U065
Authors	Yee, L J and Weiss, H L and Langner, R G and Herrera, J and Kaslow, R A and van Leeuwen, D J
Title	Risk factors for acquisition of hepatitis C virus infection: a case series and potential implications for disease surveillance.
Journal	BMC Infect Dis.
Issue	1:8. Epub 2001 Jul 24
Year	2001
Study design	Cross-sectional
Assay	NA
Sample size	148
Study setting and period	University of Alabama at Birmingham Liver Center and the University of South Alabama Gastroenterology and Hepatology Division
Characteristics of study subjects (Gender, age, ...)	Patients with chronic hepatitis C. Males=88. Mean age=45±8.1 years
Sampling method	NA
Outcome	NA
Data collection method	Blood collection and interviews
Results	Number and % of HCV-positive patients exposed to each risk factor: Injection Drug or intranasal cocaine use: 71 Sharing of razors and toothbrushes: 65 Body/ear piercing: 63 Recipient of blood (products) before 1992: 62 Sexual exposure: 55 Tattooing: 25
Comments	HCV infection assessment tools were not mentioned.

ID	PM-U066
Authors	Neagius, A and Miller, M and Friedman, S R and Des Jarlais, D C
Title	Sexual transmission risk among noninjecting heroin users infected with human immunodeficiency virus or hepatitis C virus.
Journal	<a href="#">J Infect Dis.</a>
Issue	1;184(3):359-63.
Year	2001
Study design	Prospective Cohort
Assay	Second generation antibody test (HCV EIA 2.0; Abbott).
Sample size	107
Study setting and period	Data are from an ongoing prospective cohort study of NIUs in New York City.
Characteristics of study subjects (Gender, age, ...)	≥18 years old, had used noninjected heroin ≥1 time in the prior 30 days, and either had never injected drugs or had not done so in the prior 6 months.
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection and interviews
Results	Among 155 HCV-infected NIUs, lower risk partners were reported by 54% of never IDUs and 45% of former IDUs (not significant).
Comments	The study was conducted among the HCV positive patients; so, the risk of HCV transmission can not be calculated.

ID	PM-U067
Authors	Upfal, M J and Naylor, P and Mutchnick, M M
Title	Hepatitis C screening and prevalence among urban public safety workers.
Journal	J Occup Environ Med.
Issue	43(4):402-11.
Year	2001
Study design	Cross-sectional
Assay	Enzyme-linked immunoassay test for the hepatitis C antibody (EIA-2)
Sample size	2447
Study setting and period	City of Detroit
Characteristics of study subjects (Gender, age, ...)	Police, fire and Emergency Medical Services (EMS) professionals. Males=1862.
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaires
Results	4.9% of participants who were transfused were HCV-positive and 1% of non-transfused were infected. 1.1% of participants who were tattooed were HCV-positive and 1.2% of non-tattooed were infected. 3.1% of participants who received surgery before 1990 were HCV-positive compared to 0.8% in those who were not.
Comments	Opportunities for enrolment in the study varied depending on the logistics involved in reaching all of the precincts, firehouses, offices, and other employee locations. Workers may have been unavailable to participate because of absence from work or job duties, leading to participation bias.

ID	PM-U068
Authors	Haley, R W and Fischer, R P.
Title	Commercial tattooing as a potentially important source of hepatitis C infection. Clinical epidemiology of 626 consecutive patients unaware of their hepatitis C serologic status.
Journal	Medicine (Baltimore).
Issue	80(2):134-51.
Year	2001
Study design	Cross-sectional study
Assay	Both the first-generation (EIA-1) and second-generation (EIA-2) enzyme-linked immunosorbent assay (Roche Laboratories, Dallas, TX, and Abbott Laboratories, Chicago, IL).
Sample size	629
Study setting and period	The study included 629 consecutive patients from the southwestern United States who visited an orthopaedic spinal clinic in Dallas, Texas, between July 1, 1991, and November 15, 1992.
Characteristics of study subjects (Gender, age, ...)	the middle age groups
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood and questionnaire.
Results	Of the 626 patients analysed, 43 were seropositive for HCV infection, yielding a sample prevalence rate of 6.9% (standard error 1.0%).
Comments	Since the sample was composed almost exclusively of employed working people, the middle age groups, which have higher risks of HCV infection, were disproportionately represented compared with the total United States civilian population.

ID	PM-U070
Authors	Noell, J and Rohde, P and Ochs, L and Yovanoff, P and Alter, M J and Schmid, S and Bullard, J and Black, C
Title	Incidence and prevalence of chlamydia, herpes, and viral hepatitis in a homeless adolescent population.
Journal	Sex Transm Dis.
Issue	28(1):4-10.
Year	2001
Study design	Prospective Cohort Study
Assay	EIA 2.0, Abbott Laboratories.
Sample size	536
Study setting and period	Longitudinal with assessments at baseline, 3 months, and 6 months (1994-1997)
Characteristics of study subjects (Gender, age, ...)	N= 5 536; 319 males and 217 females.
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire.
Results	Baseline prevalence of C trachomatis was 4.17% for males and 6.30% for females. Prevalence of herpes simplex virus type 2 was 5.73% for males and 12.50% for females. Hepatitis B virus and hepatitis C virus prevalence were 3.60% and 5.0%, respectively. HIV seroprevalence was 0.3%. The incidence of sexually transmitted infections was significantly higher among females than among males (16.7% versus 9.8%) and was associated with inconsistent condom use and, for females, number of partners and sex with older partners.
Comments	Several limitations to this study must be noted. First, all data, except for STI data, are from self-reports. Second, because of lifestyles that are extremely transient and sometimes cryptic (i.e., hidden, frequently because of legal problems), it is not possible to obtain a truly representative sample of "homeless adolescents," and generalizations to other adolescent populations are not possible.

ID	PM-U071
Authors	Hagan, H and Thiede, H and Weiss, N S and Hopkins, S G and Duchin, J S and Alexander, E R
Title	Sharing of drug preparation equipment as a risk factor for hepatitis C.
Journal	Am J Public Health.
Issue	91(1):42-6.
Year	2001
Study design	Prospective cohort
Assay	Third-generation enzyme immunoassay (Abbott Laboratories, Chicago, Ill)
Sample size	317
Study setting and period	9 different locations in the Seattle area; from June 1994 to May 1997
Characteristics of study subjects (Gender, age, ...)	Injecting drug users. Males=191
Sampling method	Random
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	Follow-up was completed on 317 of the initially HCV-negative subjects. Fifty-three subjects seroconverted to HCV positive during the one-year follow-up period (16.7%).
Comments	Study retention was not associated with the injection risk behaviour we examined, so loss to follow-up could not have influenced the results to any important degree.

ID	PM-U072
Authors	Diaz, T and Des Jarlais, D C and Vlahov, D and Perlis, T E and Edwards, V and Friedman, S R and Rockwell, R and Hoover, D and Williams, I T and Monterroso, E R
Title	Factors associated with prevalent hepatitis C: differences among young adult injection drug users in lower and upper Manhattan, New York City.
Journal	Am J Public Health.
Issue	91(1):23-30.
Year	2001
Study design	Prospective Cohort Study
Assay	Abbott HCV EIA 2.0, Abbott Laboratories, Chicago, Ill.
Sample size	557
Study setting and period	The study population was recruited (during 1997–1998) as part of a cohort study from 2 of 6 Centers for Disease Control and Prevention.
Characteristics of study subjects (Gender, age, ...)	Persons between 18 and 29 years of age.
Sampling method	Community-based outreach
Outcome	Anti-HCV
Data collection method	Blood sample and interview.
Results	In both sites, testing positive for HCV antibody (anti-HCV) was associated with having injected for more than 3 years. Additionally, HCV infection was positively associated with injecting with someone known to have had hepatitis (but the association was significant only in the Lower East Side).
Comments	Several differences in factors associated with prevalent HCV infection existed among 2 populations of young injection drug users from the same city. Indirect transmission of HCV may occur.

ID	PM-U073
Authors	Hahn, Judith A and Page-Shafer, Kimberly and Lum, Paula J and Bourgois, Philippe and Stein, Ellen and Evans, Jennifer L and Busch, Michael P and Tobler, Leslie H and Phelps, Bruce and Moss, Andrew R
Title	Hepatitis C virus seroconversion among young injection drug users: relationships and risks.
Journal	J Infect Dis.
Issue	186(11):1558-64.
Year	2002
Study design	Prospective cohort
Assay	EIA (EIA-2; Abbott Laboratories) EIA-3 (Ortho Clinical Diagnostics)
Sample size	195
Study setting and period	San Francisco, From January 2000 to September 2001
Characteristics of study subjects (Gender, age, ...)	Injecting drug users. Males=125. Median age=22 years (IQR=19-25)
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaires
Results	Follow-up was completed on 195 of the initially HCV-negative subjects. 48 subjects seroconverted to HCV positive (24.6%). Borrowing a needle at least once during the most recent 3-month observation period was associated with increased risk of transmission (HR=2.1 (95%CI=1.2-3.7))
Comments	The present study may be limited by self-report, with biased results if some behaviours are consistently under- or overreported.

ID	PM-U074
Authors	Brillman, Judith C and Crandall, Cameron S and Florence, Christopher S and Jacobs, Joshua L.
Title	Prevalence and risk factors associated with hepatitis C in ED patients.
Journal	Am J Emerg Med.
Issue	20(5):476-80.
Year	2002
Study design	Cross-sectional study
Assay	Second-generation enzyme-linked immunoassay (ELISA).
Sample size	223
Study setting and period	From October 3, 1996 to October 24, 1996.
Characteristics of study subjects (Gender, age, ...)	All adult patients (over 17 years) who presented to an urban emergency department. Mean age:43.9
Sampling method	All
Outcome	Anti-HCV
Data collection method	Blood sample and interview
Results	Of 223 blood samples, 38 (17%) were positive for antibodies for HCV. One hundred twenty-one subjects (54%) agreed to the risk factor survey, 18(15%) of whom were HCV. Of the 18 HCV survey participants, 12 new diagnoses of HCV were made. A history of injection drug use was the most significant risk factor associated with HCV (OR 858.5, CI 61.8-22,026.5).
Comments	Recall bias may have occurred between patients who had prior knowledge of their HCV diagnosis relative to those with a new diagnosis. Selection bias may have occurred by excluding patients unable or unwilling to participate in the survey.

ID	PM-U075
Authors	Gyarmathy, V Anna and Neagius, Alan and Miller, Maureen and Friedman, Samuel R and Des Jarlais, Don C
Title	Risk correlates of prevalent HIV, hepatitis B virus, and hepatitis C virus infections among noninjecting heroin users.
Journal	J Acquir Immune Defic Syndr.
Issue	30(4):448-56.
Year	2002
Study design	Cross-sectional
Assay	EIA (Abbott HCV EIA 2.0)
Sample size	483
Study setting and period	New York City, from March 1996 to March 2001
Characteristics of study subjects (Gender, age, ...)	Non-Injecting and former injecting drug users. Males=336
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and interviews
Results	HCV prevalence among former injecting drug users was 58.2% and 12.5% in non-injecting drug users. In non-injecting drug users, HCV prevalence was 22.2% in those transfused before 1986 and 12.2% in those who were not. In non-injecting drug users, 18.2% of participants who were tattooed were HCV-positive and 9.2% of non-tattooed were infected.
Comments	The cross-sectional and self-report nature of the study does not allow to conclude with certainty.

ID	PM-U076
Authors	Marelli, Daniel and Bresson, Jessica and Laks, Hillel and Kubak, Bernard and Fonarow, Gregg and Tsai, Feng-Chun and Tran, Julie and Weston, Shiobhan R and Kobashigawa, Jon.
Title	Hepatitis C-positive donors in heart transplantation.
Journal	Am J Transplant.
Issue	2(5):443-7.
Year	2002
Study design	Case study
Assay	<ul style="list-style-type: none"> <li>- The second-generation enzyme-linked immunosorbent assay test (Abbott Laboratories HCV EIA 2.0),</li> <li>- The Amplicor system (Roche Molecular Systems)</li> </ul>
Sample size	20
Study setting and period	Medical records pertaining to patients receiving HCV-positive allografts between July 1994 and December 1999 were reviewed.
Characteristics of study subjects (Gender, age, ...)	Median age was 54years old (range18–62) for group I and 66years old (range26–63) for group II. Nineteen of the 20 patients were male.
Sampling method	All
Outcome	HCV RNA
Data collection method	Review medical records.
Results	All 17 survivors were HCV negative prior to transplant. Of these, 4/17 seroconverted. HCV RNA was detected in two of them. At a median follow-up of 26.4months, 2/11 current survivors continue to test anti-HCV positive and are RNA negative.
Comments	The risk for hepatic disease may be reduced by tailoring immune sup-pression specifically for such recipients, particularly if they are at low risk of rejection.

ID	PM-U077
Authors	Molle, Zarela L and Baqi, Noosha and Gretch, David and Hidalgo, Guillermo and Tejani, Amir and Rabinowitz, Simon S
Title	Hepatitis C infection in children and adolescents with end-stage renal disease.
Journal	Pediatr Nephrol.
Issue	17(6):444-9.
Year	2002
Study design	Cross-sectional
Assay	PCR
Sample size	37
Study setting and period	Division of Pediatric Nephrology at State University New York, Health Science Center at Brooklyn.
Characteristics of study subjects (Gender, age, ...)	End-stage renal disease (ESRD) children. Males=19. Age range=6.8-21.6 years
Sampling method	NA
Outcome	HCV RNA
Data collection method	Blood collection and medical records
Results	Among the 37 patients with ESRD enrolled, 16 were on HD, 1 was on peritoneal dialysis, and 20 had functioning renal transplants. Of the 37 patients, 7 (19%) were positive for HCV. 4 of the HCV patients were on haemodialysis and 3 patients had a functioning transplant. Of the 4 Haemodialysis patients with HCV, 2 had previously been transplanted. In total, 5 of 27 (19%) patients who had received transplanted kidneys were positive for HCV infection
Comments	HCV itself is a primary cause of renal disease, usually via an antibody mediated membranoproliferative glomerulonephritis. Assessment of the cause of ESRD reveals that it is unlikely that HCV infection be a major contributor to the kidney failure.

ID	PM-U078
Authors	Sivapalasingam, Sumathi and Malak, Sharp F and Sullivan, John F and Lorch, Jonathan and Sepkowitz, Kent A.
Title	High prevalence of hepatitis C infection among patients receiving hemodialysis at an urban dialysis center.
Journal	Infect Control Hosp Epidemiol.
Issue	23(6):319-24.
Year	2002
Study design	Cross-sectional study
Assay	Second-generation enzyme-linked immunosorbent assay (ELISA) (HCV EIA 2.0, Abbott Diagnostics, Abbott Park, IL).
Sample size	227
Study setting and period	Patients undergoing haemodialysis at the Rogosin Kidney Center on December 15, 1998.
Characteristics of study subjects (Gender, age, ...)	Among the 227 patients receiving haemodialysis, 113 (50%) were male, 97 (43%) were black non-Hispanic, 57(25%) were white non-Hispanic, 49 (22%) had diabetes, and 114 (50%) had hypertension.
Sampling method	All
Outcome	Anti-HCV
Data collection method	Laboratory records.
Results	The seroprevalence of antibody to HCV (anti-HCV) was 23.3% (53 of 227) in the population. In univariate analysis, factors associated with HCV seropositivity included male gender, younger age, history of IVDU, history of intranasal cocaine use, history of multiple sexual partners, human immunodeficiency virus coinfection, increased time receiving dialysis, history of renal transplant, and positive antibody to hepatitis B core antigen. Multivariate logistic regression analysis showed that longer duration receiving dialysis and a history of IVDU were the only risk factors that remained independently associated with HCV seropositivity.
Comments	HCV is markedly more common in this urban cohort of patients receiving haemodialysis compared with patients receiving dialysis nationally and is associated with a longer duration of receiving dialysis and a history of IVDU.

ID	PM-U079
Authors	Thorpe, Lorna E and Ouellet, Lawrence J and Hershow, Ronald and Bailey, Susan L and Williams, Ian T and Williamson, John and Monterroso, Edgar R and Garfein, Richard S
Title	Risk of hepatitis C virus infection among young adult injection drug users who share injection equipment.
Journal	Am J Epidemiol.
Issue	155(7):645-53.
Year	2002
Study design	Prospective cohort
Assay	ELISA (Abbott HCV enzyme immunoassay 2.0; Abbott Laboratories, Chicago, Illinois)
Sample size	353
Study setting and period	Chicago, Illinois, from August 1997 to April 1999
Characteristics of study subjects (Gender, age, ...)	Young adult IDUs aged 18–30 years. Males= 225
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaires
Results	Follow-up was completed on 353 of the initially HCV-negative subjects. 29 subjects seroconverted to HCV positive after 6 months follow-up period (8.2%). Needles sharing was not associated with HCV transmission (aHR=2.1 (0.9-4.9))
Comments	Systematic differences in recruitment techniques by risk group could have introduced selection biases into the study.

ID	PM-U080
Authors	Cody, Sara H and Nainan, Omana V and Garfein, Richard S and Meyers, Hildy and Bell, Beth P and Shapiro, Craig N and Meeks, Emory L and Pitt, Harriett and Mouzin, Eric and Alter, Miriam J and Margolis, Harold S and Vugia, Duc J
Title	Hepatitis C virus transmission from an anesthesiologist to a patient.
Journal	Arch Intern Med.
Issue	162(3):345-50.
Year	2002
Study design	Cross-sectional study
Assay	HCV 2.0; Abbott Laboratories, Abbott Park, Ill.
Sample size	348
Study setting and period	-
Characteristics of study subjects (Gender, age, ...)	-
Sampling method	All
Outcome	Ant-HCV
Data collection method	Bool sample and medical records.
Results	Of the 348 surgical patients, 6 were positive for antibody to HCV. Of the 6 patients, 2 patients had been identified of 97.8% to 100% of quasi-species sequences.
Comments	The study suggest that the anaesthesiologist acquired HCV infection from patient B and transmitted HCV to patient A.

ID	PM-U081
Authors	Hammer, Gwendolyn P and Kellogg, Timothy A and McFarland, Willi C and Wong, Ernest and Louie, Brian and Williams, Ian and Dilley, James and Page-Shafer, Kimberly and Klausner, Jeffrey D
Title	Low incidence and prevalence of hepatitis C virus infection among sexually active non-intravenous drug-using adults, San Francisco, 1997-2000.
Journal	Sex Transm Dis.
Issue	30(12):919-24.
Year	2003
Study design	Retrospective cohort
Assay	Second-generation enzyme immunoassay (Abbott HCV EIA 2.0; Abbott Laboratories, Abbott Park, IL)
Sample size	746
Study setting and period	San Francisco, from October 1997 to March 2000
Characteristics of study subjects (Gender, age, ...)	Non-Injecting drug users men having sex with men.
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	6/303 (2%) MSM having unprotected anal sex were HCV-positive in comparison with 9/443(2%) who were not. 1/9 (11%) tattooed MSM were HCV-positive in comparison with 14/737 (2%) who were not.
Comments	The risk behaviour information was self-reported and was not always collected consistently or completely. Furthermore, a large proportion of MSM are not represented

ID	PM-U082
Authors	Tortu, Stephanie and McMahon, James M and Hamid, Rahul and Neagius, Alan.
Title	Women's drug injection practices in East Harlem: an event analysis in a high-risk community.
Journal	AIDS Behav.
Issue	7(3):317-28.
Year	2003
Study design	Cross-sectional study
Assay	Abbott HCV EIA 2.0.
Sample size	185
Study setting and period	Women were recruited from the streets of East Harlem from 1997 to 1999
Characteristics of study subjects (Gender, age, ...)	All women
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and structure interviews.
Results	Prevalence was 28% for HIV infection, 80% for HBV, and 70% for HCV.
Comments	It is not possible to obtain a random sample of street-based injection drug users. In addition, data regarding the most recent injection events are self-reported and, although we feel the use of the "most recent event" reporting strategy minimized recall and generalizations, the data may be subject to other reporting biases. Socially desirable response bias is always a concern when dealing with stigmatized behavior.

ID	PM-U083
Authors	Diamond, Catherine and Thiede, Hanne and Perdue, Thomas and Secura, Gina M and Valleroy, Linda and Mackellar, Duncan and Corey, Lawrence and Seattle Young Men's Survey Team, [Collective Name]
Title	Viral hepatitis among young men who have sex with men: prevalence of infection, risk behaviors, and vaccination.
Journal	Sex Transm Dis.
Issue	30(5):425-32.
Year	2003
Study design	Cross-sectional
Assay	EIA (HCV EIA, Abbott Laboratories)
Sample size	824
Study setting and period	Seattle–King County, Washington, from October 1997 to February 2000
Characteristics of study subjects (Gender, age, ...)	Male having sex with men King County residents aged 15 to 29 years
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	Ten MSM (1%) were HCV-seropositive. Of the 72 men who had ever used injection drugs, 10% were HCV-seropositive. Seven (70%) of the 10 men with HCV had ever use injection drugs, compared with 8% of uninfected men ( $P<0.001$ )
Comments	The survey results were self-reported, and there may have been misreporting due to social desirability bias.

ID	PM-U084
Authors	Butterfield, Marian I and Bosworth, Hayden B and Meador, Keith G and Stechuchak, Karen M and Essock, Susan M and Osher, Fred C and Goodman, Lisa A and Swanson, Jeffrey W and Bastian, Lori A and Horner, Ronnie D and Five-Site Health and Risk Study Research Committee.
Title	Gender differences in hepatitis C infection and risks among persons with severe mental illness.
Journal	Psychiatr Serv. 2003 Jun;
Issue	54(6):848-53.
Year	2003 Jun.
Study design	Cross-sectional study
Assay	Abbott enzyme immunoassay kit.
Sample size	777
Study setting and period	We recruited participants from five sites between June 1997 and December 1998.
Characteristics of study subjects (Gender, age, ...)	Persons with severe mental illness. Women mean age: 42.5±9.9 Men mean age: 42.2±10.3
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire
Results	Men had higher rates of lifetime drug related risk behaviours: needle use (23.1 percent compared with 12.5 percent), needle sharing (17.6 percent compared with 7.7 percent), and crack cocaine use (45.2 percent compared with 30.8 percent).
Comments	Gender differences in the lifetime rates of drug risks explain the higher rates of hepatitis C infection among men with severe mental illness.

ID	PM-U085
Authors	Osher, Fred C and Goldberg, Richard W and McNary, Scot W and Swartz, Marvin S and Essock, Susan M and Butterfield, Marian I and Rosenberg, Stanley D and Five-Site Health and Risk Study Research Committee, [Collective Name]
Title	Substance abuse and the transmission of hepatitis C among persons with severe mental illness.
Journal	Psychiatr Serv.
Issue	54(6):842-7.
Year	2003
Study design	Cross-sectional
Assay	ELISA (Abbott HCV 2)
Sample size	668
Study setting and period	Connecticut, Maryland and New Hampshire and Department of Veterans Affairs Medical Center in Durham, North Carolina; from June 1997 to December 1998
Characteristics of study subjects (Gender, age, ...)	Patients with severe mental illness, aged 18-60 years.
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	More than 20% (134) of the sample endorsed lifetime needle use. Lifetime needle use was associated with HCV infection (aOR=57.29 (20.23-162.22)). Lifetime sharing of needles was associated with HCV infection (OR=19.04 (10.95-33.1)).
Comments	Retrospective questioning about substance use behaviours has its limitations when used in the general population, and these limitations may be magnified in a population of persons with severe mental illness.

ID	PM-U087
Authors	Haley, Robert W and Fischer, R Paul
Title	The tattooing paradox: are studies of acute hepatitis adequate to identify routes of transmission of subclinical hepatitis C infection?
Journal	Arch Intern Med.
Issue	163(9):1095-8.
Year	2003
Study design	Cross-sectional
Assay	First- and second-generation enzyme-linked immunosorbent assays
Sample size	626
Study setting and period	Referral clinic for spinal disorders in Dallas, Tex, from 1991 to 1992
Characteristics of study subjects (Gender, age, ...)	Patients with spinal disorders visiting the hospital
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection and interview
Results	In the multiple logistic regression models, having a commercially applied tattoo was strongly associated with HCV seropositivity (aOR=6.5, 95% CI=2.9-14.4). Having a history of injection-drug use was associated with HCV seropositivity (aOR=7.2, 95% CI=3.1-16.5).
Comments	The study collects no control group with which to perform fundamental epidemiological analyses, such as calculating relative risks and performing multi-variate risk factor analyses.

ID	PM-U088
Authors	Mishra, Girish and Sninsky, C and Roswell, Robert and Fitzwilliam, S and Hyams, Kenneth C.
Title	Risk factors for hepatitis C virus infection among patients receiving health care in a Department of Veterans Affairs hospital.
Journal	Dig Dis Sci.
Issue	2003 Apr
Year	48(4):815-20.
Study design	Cross-sectional study
Assay	Third-generation enzyme linked immunoassay (EIA 3.0).
Sample size	274
Study setting and period	Subjects were recruited over a 12-month period from April 1999 to April 2000.
Characteristics of study subjects (Gender, age, ...)	Mean age was 57 years (range, 24-83 years).
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire.
Results	Among 274 evaluated outpatients, anti-HCV was found in 27 (9.9%). The prevalence of anti-HCV was 3.7% among 190 individuals who reported no illicit drug use compared to 24.7% among 81 subjects who had used drugs ( $P < 0.001$ ). The prevalence of anti-HCV was 4.8% among 208 veterans who had never been incarcerated compared to 27.9% among 61 veterans who had been incarcerated ( $P < 0.001$ ).
Comments	Selection bias because individuals who thought they had been exposed to HCV may be more concerned and likely to volunteer for testing.

ID	PM-U092
Authors	Montoya, Isaac D and Atkinson, John S and Lichtiger, Benjamin and Whitsett, Donna D
Title	Prevalence of hepatitis C in a drug using and non-using welfare population.
Journal	Health Policy
Issue	64 (2): 221-8
Year	2003
Study design	Cross-sectional study
Assay	Enzyme linked immunoassay
Sample size	380
Study setting and period	National Institute on Drug Abuse (NIDA) funded study of TANF and/or Food Stamp recipients in Houston, from November 1999 to February 2000
Characteristics of study subjects (Gender, age, ...)	Chronic drug users and non-drug users. Males=10 18 years or older
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Overall, 12% of all participants tested positive for the presence of HCV antibodies. A significantly greater proportion of chronic drug users (31%) than non-drug users (4%) tested positive for the presence of Hepatitis C antibodies. Those who tested positive for hepatitis C had significantly lower rates of employment.
Comments	Potential infection with Hepatitis C may constitute an employment barrier for many welfare recipients.

ID	PM-U093
Authors	Gérard Krause, MD, DrMed; Mary Jo Trepka, MD, MPH; Robert S. Whisenhunt; Dolly Katz, PhD; Omana Nainan, PhD; Steven T. Wiersma, MD, MPH; Richard S. Hopkins, MD, MSc
Title	Nosocomial transmission of hepatitis C virus associated with the use of multidose saline vial
Journal	Infection control and hospital epidemiology
Issue	24(2):122-7.
Year	2003
Study design	Retrospective cohort study
Assay	Enzyme-linked immunoassay and genotyping and sequencing (PCR)
Sample size	41
Study setting and period	Florida hospital during November 1998
Characteristics of study subjects (Gender, age, ...)	HCV positive patient aged 18-93. Male=12 (24 patients were tested, 17 patients were not tested)
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Of the 41 patients, 24 (59%) participated in the study. HCV genotype 1b infections were found in 5 patients. Three of 4 patients who received saline flushes from a multidose saline vial on November 16 had acute HCV infection, whereas none of the 9 patients who did not receive saline flushes had HCV infection (P = .01). No other significant exposures were identified. The HCV sequence was available for 1 case of acute HCV and differed by a single nucleotide (0.3%) from that of the indeterminate case
Comments	This outbreak of HCV probably occurred when a multidose saline vial was contaminated with blood from an HCV-infected patient. Hospitals should emphasize adherence to standard procedures to prevent blood-borne infections. In addition, the use of single-dose vials or prefilled saline syringes might further reduce the risk for nosocomial transmission of blood-borne pathogens.

ID	PM-U094
Authors	Murray, Karen F and Richardson, Laura P and Morishima, Chihiro and Owens, James W M and Gretch, David R
Title	Prevalence of hepatitis C virus infection and risk factors in an incarcerated juvenile population: a pilot study.
Journal	Paediatrics
Issue	111(1):153-7
Year	2003 Jan;
Study design	Cross sectional
Assay	HCV antibody testing, genotyping and sequencing (PCR)
Sample size	305
Study setting and period	The Echo Glen Children's Centre (EGCC), from September 1999 to January 2001
Characteristics of study subjects (Gender, age, ...)	Juvenile Population n=305, age range: 11–18 years, male=194
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Seventy-four percent (n=305) of youths consented to participate in the seroprevalence study. HCV risk behaviours were common in this population: sexual activity (70%), intravenous drug use (6%), intranasal drug use (32%), body piercing (53%), and tattoos (33%). Six study youths (2%) were HCV antibody positive; 4 of these subjects were also HCV RNA positive. HCV-positive status was significantly associated with history of intravenous drug use and having had a sexually transmitted disease. Only 17% of study participants could correctly identify behaviours that might put them at risk for HCV.
Comments	The prevalence of HCV in incarcerated youths is higher than in the general paediatric population but not yet at adult levels of prevalence.

ID	PM-U095
Authors	Comstock, R Dawn and Mallonee, Sue and Fox, Jan L and Moolenaar, Ronald L and Vogt, Tara M and Perz, Joseph F and Bell, Beth P and Crutcher, James M
Title	A large nosocomial outbreak of hepatitis C and hepatitis B among patients receiving pain remediation treatments.
Journal	INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY
Issue	25(7):576-83.
Year	7July 2004
Study design	Retrospective cohort study
Assay	Enzyme immunoassay and PCR
Sample size	795
Study setting and period	From April 1999 to July 2002, the Oklahoma State Department of Health
Characteristics of study subjects (Gender, age, ...)	AMONG PATIENTS RECEIVING PAIN REMEDIATION TREATMENTS n=795. Male =275 Of the 795 patients tested, 86 (10.8%) were infected with HCV and 71 (82.6%) with clinic visit dates from April 12, 1999, through July 22, 2002, met the case definition (HCV attack rate, 9.1%)
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Of 908 patients, 795 (87.6%) were tested, and 71 HCV-infected patients (8.9%) Multiple HCV genotypes were identified. Significantly higher HCV infection rates were found among individuals treated after an HCV-infected patient during the same visit (adjusted odds ratio [AOR], 6.2; 95% confidence interval [CI95], 2.4–15.8);
Comments	Reuse of needles–syringes was the mechanism for patient-to-patient transmission of HCV and HBV in this large nosocomial outbreak

ID	PM-U097
Authors	Tortu, Stephanie and McMahon, James M and Pouget, Enrique R and Hamid, Rahul
Title	Sharing of noninjection drug-use implements as a risk factor for hepatitis C.
Journal	SUBSTANCE USE & MISUSE
Issue	39, No. 2, pp. 211–224,
Year	2004
Study design	Case control study
Assay	ELISA (Abbott HCV EIA 2.0; Abbott Laboratories, Abbott Park, IL)
Sample size	123
Study setting and period	Participants were street recruited from East Harlem, New York City, between October 1997 and June 1999.
Characteristics of study subjects (Gender, age, ...)	Among women drug users with no history of drug injection. Male=0, mean age 38.7 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Of 123 drug users in the sample, 24 (19.5%) tested anti-HCV positive.
Comments	Our results are intriguing and suggest that noninjection drug-use implement sharing among substance users may be an important risk factor for hepatitis C transmission.

ID	PM-U099
Authors	Mast, Eric E and Hwang, Lu-Yu and Seto, Dexter S Y and Nolte, Frederick S and Nainan, Omana V and Wurtzel, Heather and Alter, Miriam J
Title	Risk factors for perinatal transmission of hepatitis C virus (HCV) and the natural history of HCV infection acquired in infancy.
Journal	J Infect Dis.
Issue	192(11):1880-9.
Year	2005
Study design	Cohort study
Assay	testing for antibody to HCV, PCR
Sample size	244
Study setting and period	In Houston during November 1993–July 1996.
Characteristics of study subjects (Gender, age, ...)	244 infants born to HCV-positive mothers were followed from birth until age 12 months
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Overall, 9 of 190 (4.7% [95% confidence interval {CI}, 2.3%–9.1%]) infants born to mothers who were HCV RNA positive at delivery became infected, compared with 0 of 54 infants born to HCV RNA-negative mothers ( ).
Comments	If duration of membrane rupture and internal fetal monitoring are confirmed to be associated with transmission, interventions may be possible to decrease the risk of transmission.

ID	PM-U101
Authors	Hand, W Lee and Vasquez, Yvonne
Title	Risk factors for hepatitis C on the Texas-Mexico border.
Journal	Drug Alcohol Depend.
Issue	79(3):389-95.
Year	2005
Study design	Cross-sectional study
Assay	enzyme immunoassay
Sample size	320
Study setting and period	Texas Tech University Health Sciences Centre clinics or at the Thomason Hospital in El Paso, Texas. March 1, 2000, through February 28, 2002
Characteristics of study subjects (Gender, age, ...)	Tattooing people. Males=237 Average age=45.4
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Fifty-seven percent of HCV patients had 1 or more tattoos as compared with 22% of controls ( $p < 0.0001$ ).
Comments	The potentially important role of nonsterile tattooing practices in HCV transmission merits additional investigation regarding precise risk settings, frequency, and mechanisms of infection.

ID	PM-U102
Authors	Howe, Chanelle J and Fuller, Crystal M and Ompad, Danielle C and Galea, Sandro and Koblin, Beryl and Thomas, David and Vlahov, David
Title	Association of sex, hygiene and drug equipment sharing with hepatitis C virus infection among non-injecting drug users in New York City
Journal	Drug Alcohol Dependance.
Issue	79(3):389-95
Year	2005
Study design	Cohort study
Assay	HCV antibody Assay
Sample size	740
Study setting and period	In New York city from 2000 to 2003
Characteristics of study subjects (Gender, age, ...)	Non-injecting drug users. Male=500. Age=35-24 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Of 740 enrollees, 3.9% were HCV positive. The median age (interquartile range) was 30 (35-24) years, 70% were male and 90% were Black or Hispanic. After adjustment, HCV seropositive were significantly more likely than seronegative to be older than 30 [adjusted odds ratio (AOR)=5.71], tattooed by a friend/relative/acquaintance [AOR=3.61] and know someone with HCV [AOR=4.29], but were less likely to have shared nail or hair clippers, razors or a toothbrush [AOR=0.32].
Comments	Non-commercial tattooing may be a mode of HCV transmission among NIDUs and education on the potential risk in using non-sterile tattooing equipment should be targeted toward this population. While no evidence was found for HCV transmission through NIDU equipment sharing or sexual risk behavior, further research is still warranted.

ID	PM-U103
Authors	Macedo de Oliveira, Alexandre and White, Kathryn L and Leschinsky, Dennis P and Beecham, Brady D and Vogt, Tara M and Moolenaar, Ronald L and Perz, Joseph F and Safranek, Thomas J
Title	An outbreak of hepatitis C virus infections among outpatients at a hematology/oncology clinic.
Journal	Ann Intern Med.
Issue	142(11):898-902.
Year	2005
Study design	Cohort study
Assay	HCV antibodies by using enzyme immunoassay, PCR
Sample size	367
Study setting and period	Patients who visited the clinic from March 2000 through December 2001. Hematology/oncology clinic in eastern Nebraska.
Characteristics of study subjects (Gender, age, ...)	Using clinic records, we identified all patients who visited the clinic from March 2000 through December 2001. Age=NA
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Among the 367 patients in the cohort analysis, 140 (38%) received 1 or more saline flushes during the study period. Of those, 99 (71%) became infected.
Comments	Non-commercial tattooing may be a mode of HCV transmission among NIDUs and education on the potential risk in using non-sterile tattooing equipment should be targeted toward this population. While no evidence was found for HCV transmission through NIDU equipment sharing or sexual risk behavior, further research is still warranted.

ID	PM-U104
Authors	Williams, James L and Cagle, Henry H and Christensen, Carol J and Fox-Leyva, Leslie K and McMahon, Brian J
Title	Results of a hepatitis C general transfusion lookback program for patients who received blood products before July 1992.
Journal	Transfusion
Issue	45(6):1020-6.
Year	2005
Study design	Cohort study
Assay	HCV immunoblotting (MATRIX, Abbott Laboratories), recombinant immunoblot assay, or qualitative polymerase chain reaction
Sample size	764
Study setting and period	Alaska Native Medical Center between January 1980 and July 1992.
Characteristics of study subjects (Gender, age, ...)	Of 764 patients notified and screened by this program, 41 (5%) were anti-HCV-positive and 19 (2%) were HCV RNA-positive. Male=290. Age= NA
Sampling method	NA
Outcome	Anti-HCV, HCV RNA
Data collection method	Blood collection
Results	Overall, 3169 transfusion recipients were identified, with 1356 (43%) living and targeted for notification. Of 764 patients notified and screened by this program, 41 (5%) were anti-HCV-positive and 19 (2%) were HCV RNA-positive. There was a higher probability of detecting anti-HCV with each subsequent increase of a transfusion event. Among 298 lookback patients, 33 percent were unaware of having received a blood transfusion.
Comments	This general transfusion lookback program successfully notified and screened patients at a reasonable cost. Further investigation would be helpful in determining the role these programs or other measures could play in promoting HCV screening in persons receiving transfusions before July 1992, especially among those who are unaware of their transfusion history.

ID	PM-U106
Authors	Zou, Shimian and Fujii, Karen and Johnson, Stephanie and Spencer, Bryan and Washington, Nicole and Iv, Edward Notari and Musavi, Fatemeh and Newman, Bruce and Cable, Ritchard and Rios, Jorge and Hillyer, Krista L and Hillyer, Christopher D and Dodd, Roger Y and ARCNET Study Group, [Collective Name]
Title	Prevalence of selected viral infections among blood donors deferred for potential risk to blood safety.
Journal	Transfusion.
Issue	46(11):1997-2003
Year	2006
Study design	Cohort study
Assay	HCV antibodies by using enzyme immunoassay, PCR
Sample size	497
Study setting and period	Donors who were deferred from donating blood due to health history question(s) were recruited at four different regions of the American Red Cross Blood Services, from 1999 to 2004.
Characteristics of study subjects (Gender, age, ...)	The study targeted blood donors who presented to ARC Blood Services and were deferred from donating blood due to answering "yes" to health history question(s) at four different centres of the ARC Blood Services
Sampling method	NA
Outcome	Anti-HCV, HCV RNA
Data collection method	Blood collection
Results	Of 497 deferred donors enrolled, 29 donors were deferred for having had "yellow jaundice, liver disease, or hepatitis since the age of 11" (Question 3), 1 of whom had hepatitis C virus antibodies (anti-HCV) and hepatitis B core antigen antibodies (anti-HBc), 2 had anti-HBc, and 1 had anti-HCV ( $p < 0.05$ for both markers). Among 37 donors deferred for having "ever tested positive for hepatitis" (Question 4), 1 had hepatitis B surface antigen and anti-HBc and 3 had anti-HBc ( $p < 0.05$ for both markers). Of 14 donors deferred for "having ever used a needle, even once, to take any illegal or nonprescription drug" (Question 12), 1 had anti-HCV, human T-lymphotropic virus-I antibodies and anti-HBc, 1 had anti-HCV and anti-HBc, and 2 had anti-HCV ( $p < 0.05$ for all three markers).
Comments	Blood donors deferred for standard blood donor questions regarding risk of viral hepatitis as well as those with a history of intravenous drug use were more likely to have higher hepatitis marker rates than those who were not deferred. No significant findings were identified for other markers or questions.

ID	PM-U107
Authors	Brewer, Devon D and Hagan, Holly and Sullivan, Daniel G and Muth, Stephen Q and Hough, Eileen S and Feuerborn, Nathan A and Gretch, David R
Title	Social structural and behavioural underpinnings of hyperendemic hepatitis C virus transmission in drug injectors.
Journal	Journal of Infectious Disease
Issue	194(6):764-72
Year	2006
Study design	Case Control study
Assay	HCV antibody testing
Sample size	59
Study setting and period	drug injectors in Seattle. Between December 2000 and January 2002.
Characteristics of study subjects (Gender, age, ...)	a case-control study of HCV seroconversion in IDUs, focusing on transmission within networks. Case subjects were IDUs with incident HCV infection. Male=31. Mean age 26 years.
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Seventy-eight percent of recent injection partnerships involved behaviour that could transmit HCV. Case subjects and control subjects were similar demographically and behaviourally. Case subjects, however, had more HCV-infected partners and consequently engaged in injection risk behaviour with more infected partners.
Comments	Without dramatic reductions in injection risk behaviours, shattering of cohesive injection networks, and/or broad coverage of an effective vaccine, HCV will likely remain hyperendemic in drug injectors.

ID	PM-U108
Authors	Gonzales, Rachel and Marinelli-Casey, Patricia and Shoptaw, Steven and Ang, Alfonso and Rawson, Richard A
Title	Hepatitis C virus infection among methamphetamine-dependent individuals in outpatient treatment.
Journal	Journal of Substance Abuse Treatment
Issue	31(2):195-202.
Year	2006
Study design	Cohort study
Assay	HCV antibody testing
Sample size	723
Study setting and period	The sample consisted of treatment-seeking MA-dependent patients (N = 723) who participated in large multisite studies funded by the National Institute of Drug Abuse and the Centre for Substance Abuse Treatment from 1999 through 2005
Characteristics of study subjects (Gender, age, ...)	This study examined the prevalence of hepatitis C infection among a sample of 723 MA-dependent individuals who sought outpatient treatment from 1999 through 2005. Roughly 15% of the total sample and 44% of the injectors were found to be infected with HCV. Male=401. Average age=34.5
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Of the 723 participants, 56% were males; their average age was 34.5 years. In addition, of all the participants, 71% were Whites, 12% were Hispanics, 11% were Asians/Pacific Islanders, 2% were African Americans, 2% were American Indians/Native Americans, and 3% were of other ethnic backgrounds. Smoking was the most commonly reported route of administration (66%), followed by IDU (20%) and intranasal use (14%). History of lifetime MA use among the sample averaged $9.69 \pm 6.8$ years.
Comments	Findings suggest a need for targeted education and prevention efforts about hepatitis C among high-risk MA users, including HCV testing coupled with referrals to HCV treatments.

ID	PM-U109
Authors	Hwang, Lu-Yu and Kramer, Jennifer R and Troisi, Catherine and Bull, Lara and Grimes, Carolyn Z and Lyerla, Rob and Alter, Miriam J
Title	Relationship of cosmetic procedures and drug use to hepatitis C and hepatitis B virus infections in a low-risk population.
Journal	Hepatology
Issue	44(2):341-51.
Year	2006
Study design	Cross-sectional
Assay	HCV antibody testing
Sample size	5282
Study setting and period	To confirm that these college students were an appropriate population to achieve the study objectives, an anonymous pilot survey of selected behaviours was conducted in April 1999 among students in general curriculum courses on four campuses in the Houston metropolitan area
Characteristics of study subjects (Gender, age, ...)	Eligible participants were students at least 18 years of age enrolled between February 2000 and May 2001 at eight campuses of two- and fours year institutions of higher education in Houston and Austin, Texas. Male=1990. Age= median age 21
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Among the 5,066 students who reported never injecting drugs, frequency of intranasal drug use (12%) or receiving at least one tattoo (24.8%) or body piercing (21.0%) was relatively high; however, prevalence of HCV infection was low: 0.8% in those who reported intranasal drug use, 0.6% each in those who reported at least one tattoo or body piercing, and 0.4% in those who reported three or more tattoos
Comments	In conclusion, the prevalence of HCV infection is low among young adults with no history of IDU and routine HCV testing is not indicated based solely on having a history of cosmetic procedures such as tattooing or practices such as snorting drugs.

ID	PM-U110
Authors	Nyamathi, Adeline M and Dixon, Elizabeth L and Wiley, Dorothy and Christiani, Ashley and Lowe, Ann
Title	Hepatitis C virus infection among homeless men referred from a community clinic.
Journal	Western Journal of Nursing Research
Issue	28(4):475-88
Year	2006
Study design	Case control study
Assay	HCV antibody testing
Sample size	198
Study setting and period	The sample consisted of 198 homeless men referred from the John Wesley Community Health (JWCH) Medical Clinic in the skid row area of Los Angeles, from 2002 to 2003
Characteristics of study subjects (Gender, age, ...)	Participants in the study were eligible if they were male, between the ages of 18 and 65, resided in the skid row area, and had been tested for HCV at the JWCH or a nearby clinic. Male=198.
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Compared to homeless persons found to be HCV negative, those who were HCV positive were more likely to be older and Latino. HCV positive men were more likely than HCV-negative men to report a history of having been incarcerated, of serving in the military, and of being in fair or poor health. HCV-positive men were also more likely to test positive for HIV. No associations were found between HCV infection and education or marital status.
Comments	Among men not reporting lifetime injection drug use, factors such as sharing toothbrushes, having multiple tattoos, being in fair or poor health, and past incarceration are associated with HCV infection. These findings may need to be considered when making screening decisions and counseling homeless male patients about HCV.

ID	PM-U111
Authors	Wang, Chia C and Krantz, Elizabeth and Klarquist, Jared and Krows, Meighan and McBride, Lanamarie and Scott, Edward P and Shaw-Stiffel, Thomas and Weston, Scott J and Thiede, Hanne and Wald, Anna and Rosen, Hugo R
Title	Acute hepatitis C in a contemporary US cohort: modes of acquisition and factors influencing viral clearance.
Journal	Journal of Infectious Disease
Issue	196(10):1474-82.
Year	2007
Study design	Cross sectional
Assay	HCV antibody testing and PCR
Sample size	67
Study setting and period	Patients with acute HCV were recruited from academic medical centres (Seattle, Pittsburgh and Portland), blood banks (Seattle, Memphis, and Los Angeles), and an IDU research site (Seattle), from 2003 to 2005
Characteristics of study subjects (Gender, age, ...)	Of 67 persons with acute HCV infection. Male=35. Age= 31(17-82)
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Of 67 persons with acute HCV infection, most were asymptomatic (64%) and injection drug users (66%). Thirteen had an unknown mode of transmission; of these, 11 reported high-risk sexual behaviour. Ten acquired acute HCV infection within 3 months of an iatrogenic exposure; 3 had confirmed iatrogenic infection, and 4 had no other risk factors identified. The spontaneous viral clearance rate after 6 months of infection was 18% (95% confidence interval, 11%-31%). The rate of viral clearance varied significantly by sex (34% vs. 3% for women vs. men; P<.001).
Comments	High-risk sexual or iatrogenic exposures may be important contemporary risk factors for HCV infection. The spontaneous viral clearance rate (18%) in this contemporary study was similar to that reported for past studies of transfusion-associated HCV infection. Women were more likely to clear acute HCV infection than men.

ID	PM-U113
Authors	Buffington, Joanna and Murray, Paula J and Schlanger, Karen and Shih, Linda and Badsgard, Tracy and Hennessy, Robin R and Wood, Robert and Weisfuse, Isaac B and Gunn, Robert A
Title	Low prevalence of hepatitis C virus antibody in men who have sex with men who do not inject drugs.
Journal	Public Health Rep.
Issue	122 Supple 2:63-7.
Year	2007
Study design	Case control study
Assay	Enzyme immunoassay
Sample size	5154
Study setting and period	During 1999–2003, public health STD clinics or HIV testing programs in Seattle, San Diego, and New York City offered counselling and testing for anti-HCV for varying periods to all clients.
Characteristics of study subjects (Gender, age, ...)	Men Who Have Sex with Men Who Do Not Inject Drugs. Male=1699, Average age= 40 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Anti-HCV prevalence among IDUS (men and women) was between 47% and 57% at each site, with an overall prevalence of 51% (451/887). Of 1,699 non-IDU MSM, 26 (1.5%) tested anti-HCV positive, compared with 126 (3.6%) of 3,455 other non-IDU men (prevalence ratio 0.42, 95% confidence interval 0.28, 0.64).
Comments	The low prevalence of anti-HCV among non-IDU MSM in urban public health clinics does not support routine HCV testing of all MSM.

ID	PM-U114
Authors	McMahon, James M and Pouget, Enrique R and Tortu, Stephanie
Title	Individual and couple-level risk factors for hepatitis C infection among heterosexual drug users: a multilevel dyadic analysis.
Journal	J Infect Dis.
Issue	195(11):1572-81
Year	2007
Study design	Cross sectional study
Assay	anti-HCV screening assays
Sample size	265
Study setting and period	The analysis was performed on risk exposure and HCV screening data obtained from 265 drug-using couples in East Harlem, New York City between February 2001 and July 2003.
Characteristics of study subjects (Gender, age, ...)	drug-using heterosexual couples recruited by outreach workers from the streets of East Harlem, New York City. Age=40.3± 7.8
Sampling method	NA
Outcome	Anti- HCV
Data collection method	Blood collection
Results	In multivariable analysis, significant individual risk factors for HCV included a history of injection drug use, tattooing, and older age. At the couple level, HCV infection tended to cluster within couples, and this interdependence was accounted for by couples' drug-injection behaviour. Individual and couple-level sexual behaviour was not associated with HCV infection.
Comments	Our results are consistent with prior research indicating that sexual contact plays little role in HCV transmission. Rather, couples' injection behavior appears to account for the clustering of HCV within heterosexual dyads.

ID	PM-U117
Authors	Neagius, Alan and Gyarmathy, V Anna and Miller, Maureen and Frajzyngier, Vera and Zhao, Mingfang and Friedman, Samuel R and Des Jarlais, Don C
Title	Injecting and sexual risk correlates of HBV and HCV seroprevalence among new drug injectors.
Journal	Drug Alcohol Depend.
Issue	89(2-3):234-43.
Year	2007
Study design	Cross sectional study
Assay	HCV enzyme immunoassay test
Sample size	259
Study setting and period	Between February 1999 and February 2003, cross-sectional data were obtained from new IDUs recruited in the Lower East Side/East Village area of New York City
Characteristics of study subjects (Gender, age, ...)	Among new drug injectors. Male n=176. Age=23.3 (3.2)
Sampling method	NA
Outcome	Anti- HCV
Data collection method	Blood collection
Results	Seven (2.7%) participants (three women and four men) tested HIV seropositive, while 20% and 32%, respectively, were seropositive for HBV and HCV, with men significantly more likely to test HBV seropositive, and women HCV seropositive. The most frequently co-occurring seropositive tests were for HBV and HCV. Among the seropositive, those who self-reported ever being infected included 3 of 7 (43%) who tested HIV seropositive, 13 of 50 (26%) who tested HBV seropositive, and 31 of 83 (37%) who tested HCV seropositive.
Comments	In this new IDU sample, HBV and HCV seroprevalence differed by gender and were considerably higher than HIV seroprevalence. Early interventions, targeting injecting and sexual risks and including HBV vaccination, are needed among new IDUs to prevent HBV, HCV and, potentially, HIV epidemics.

ID	PM-U118
Authors	Cagle, Henry H and Jacob, Jack and Homan, Chriss E and Williams, James L and Christensen, Carol J and McMahon, Brian J
Title	Results of a general hepatitis C lookback program for persons who received blood transfusions in a neonatal intensive care unit between January 1975 and July 1992.
Journal	Arch Pediatr Adolescent Med.
Issue	161(2):125-30.
Year	2007
Study design	Retrospective cohort study
Assay	Enzyme-linked immunosorbent assay and PCR
Sample size	1797
Study setting and period	To notify persons who received a blood transfusion in a neonatal intensive care unit between January 1975 and July 1992 of their risk for hepatitis C infection and to encourage them to seek hepatitis C antibody testing.
Characteristics of study subjects (Gender, age, ...)	persons who received blood transfusions in a neonatal intensive care unit between January 1975 and July 1992.
Sampling method	NA
Outcome	Anti- HCV
Data collection method	Blood collection
Results	Alaska Native Medical Centre (n=401) and private sector (n=1396) persons were targeted for notification. Letters were mailed to 277 Alaska Native Medical Centre (69%) and 374 private sector (27%) persons, with 151 (55%) and 65 (17%) screened for hepatitis C, respectively. Among those screened(n=216),7(3%) were hepatitis C antibody positive, with 6 (3%) also hepatitis virus-RNA positive. Among 147 persons who responded, 75 (51%) were unaware they had received a transfusion.
Comments	Compared with the private sector, a higher proportion of persons were identified and tested from the integrated health care system and more than half of respondents were unaware of their transfusion history. It would be prudent to screen neonatal intensive care unit patients who received transfusions before July 1992 for hepatitis C virus infection.

ID	PM-U120
Authors	Dowd, Kimberly A and Hershow, Ronald C and Yawetz, Sigal and Larussa, Philip and Diaz, Clemente and Landesman, Sheldon H and Paul, Mary E and Read, Jennifer S and Lu
Title	Maternal neutralizing antibody and transmission of hepatitis C virus to infants.
Journal	J Infect Dis.
Issue	198(11):1651-5. doi: 10.1086/593067.
Year	2008
Study design	Case control study
Assay	Enzyme-linked immunosorbent assay and PCR
Sample size	N=63
Study setting and period	Study subjects were participants in the Women and Infants Transmission Study(WITS)[2].From 1989 to 2005, HIV-infected women were enrolled at institutions in New York City, Chicago, Boston, Houston, and San Juan, Puerto Rico
Characteristics of study subjects (Gender, age, ...)	Study subjects were participants in the Women and Infants Transmission Study. Average age=37 week
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Of the 63 case and control patients, 59 mothers had paired visits (for 4 subjects, plasma was available only from a single visit). Of these 59 subjects, 51 (86.44%) had ID50 values that were identical (35 subjects [59.32%]) or that differed by 1 dilution (16 subjects [27.12%]). The ID50 values of the remaining 8 subjects (13.56%) differed by 2 dilutions.
Comments	We and others have found that the risk of MTCT of HCV is increased in mothers with a higher HCV load and in those with concomitant HIV infection. In some, but not most, studies, the mode of transmission also appears to be a factor

ID	PM-U123
Authors	Centers for Disease Control and Prevention (CDC), [Collective Name]
Title	Acute hepatitis C virus infections attributed to unsafe injection practices at an endoscopy clinic--Nevada
Journal	MMWR Morb Mortal Wkly
Issue	57(19):513-7
Year	2008
Study design	Case control study
Assay	Enzyme-linked immunosorbent assay and PCR
Sample size	120
Study setting and period	Unsafe Injection Practices at an Endoscopy Clinic --- Nevada, 2007
Characteristics of study subjects (Gender, age, ...)	People who had procedures at the endoscopy clinic. Age= 37-72 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	he six persons with acute hepatitis C had onset of symptoms in late October 2007 and November 2007, 35--90 days after undergoing procedures at clinic A (Figure 1) and within the typical incubation period of 15--160 days. None had significant risk factors for HCV infection and none had other common exposures. One of the procedures was performed in July 2007; the other five were performed on the same day in September 2007. Five persons (four with procedures on the same day) for whom blood specimens were available at the time of this report had HCV genotype 1a. The four who had procedures on the same day had viral sequences with 99%--100% genetic similarity at HVR1, pointing to a common source of infection. The viral sequence from the HCV-infected person who had the procedure in July 2007 was not genetically related to the other cluster, suggesting a separate transmission incident.
Comments	Most outbreaks of health-care--associated HCV have involved patient-to-patient transmission attributed to unsafe injection practices (3,5). The reuse of syringes and needles or mishandling of medication vials usually have been implicated (6--8). In some situations, syringes or needles used on HCV-infected persons were directly reused on other persons. In other instances, syringes or needles used on HCV-infected persons were reused to draw medication from a vial from which medicine was then drawn and administered to multiple persons, as was found in this investigation.

ID	PM-U124
Authors	Lessa, Fernanda and Tak, Sangwoo and Devader, Shannon R and Goswami, Rekha and Anderson, Mary and Williams, Ian and Gensheimer, Kathleen F and Srinivasan, Arjun
Title	Risk of infections associated with improperly reprocessed transrectal ultrasound-guided prostate biopsy equipment.
Journal	Infect Control Hosp Epidemiology
Issue	29(4):289-93.
Year	2008
Study design	Case study
Assay	HCV enzyme immunoassay test and PCR
Sample size	409
Study setting and period	A healthcare facility in Maine from January 30, 2003, through January 27, 2006.
Characteristics of study subjects (Gender, age, ...)	We offered testing for HBV, HCV, and HIV infection to patients who had undergone prostate biopsies. Age= 48-88 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Of the 409 patients who were tested for HCV infection, 407 (99.5%) tested negative for the HCV antibody; 2 (0.5%) who tested "borderline positive" for the HCV antibody had HCV RNA-negative serum samples.
Comments	This investigation provides a better understanding of the risks associated with improperly reprocessed transrectal ultrasound prostate biopsy equipment and serves as a methodologic tool for future investigations.

ID	PM-U125
Authors	Latka, Mary H and Hagan, Holly and Kapadia, Farzana and Golub, Elizabeth T and Bonner, Sebastian and Campbell, Jennifer V and Coady, Micaela H and Garfein, Richard S and Pu, Minya and Thomas, Dave L and Thiel, Thelma K and Strathdee, Steffanie A
Title	A randomized intervention trial to reduce the lending of used injection equipment among injection drug users infected with hepatitis C.
Journal	American Journal of Public Health.
Issue	98(5):853-61.
Year	2008
Study design	Randomized trial
Assay	HCV enzyme immunoassay test and PCR
Sample size	N=418
Study setting and period	The Study to Reduce Intravenous Exposures (STRIVE) was conducted from 2002 through 2004 in Baltimore, Maryland; New York City; and Seattle, Washington
Characteristics of study subjects (Gender, age, ...)	Among Injection Drug Users Infected with Hepatitis C. Male n=319. Age=18-35 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Compared with the control group, intervention-group participants were less likely to report distributive risk behaviors at 3 months (odds ratio [OR]=0.46; 95% confidence interval [CI]=0.27, 0.79) and 6 months (OR=0.51; 95% CI=0.31, 0.83), a 26% relative risk reduction, but were no more likely to cite their HCV-positive status as a reason for refraining from syringe lending
Comments	This behavioural intervention reduced unsafe injection practices that may propagate HCV among injection drug users.

ID	PM-U126
Authors	Neagus, Alan and Zhao, Mingfang and Gyarmathy, V Anna and Cisek, Linda and Friedman, Samuel R and Baxter.
Title	Greater drug injecting risk for HIV, HBV, and HCV infection in a city where syringe exchange and pharmacy syringe distribution are illegal.
Journal	Journal Urban Health
Issue	85(3):309-22.
Year	2008
Study design	Retrospective cohort study
Assay	HCV enzyme immunoassay test
Sample size	N=526
Study setting and period	This study compares the parenteral risk for HIV and hepatitis B (HBV) and C (HCV) infection among IDUs in Newark, NJ, USA, where syringe distribution programs were illegal during the period when data were collected, and New York City (NYC) where they were legal in 2004–2006 years.
Characteristics of study subjects (Gender, age, ...)	Participants were recruited from May 2004 through December 2006 for a study of the neighbourhood and social network context of HIV and hepatitis risk among IDUs and their sex partners. Male n=397. Age=32.8 (8.8)
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Participants who self-reported a positive serostatus included 32% for HCV. Of those tested 320 (66%) HCV positive. HCV positive (82%vs.53%;AOR=3.0;95%CI=1.8, 4.9).
Comments	In localities where sterile syringe distribution is illegal, IDUs are more likely to obtain syringes from unsafe sources and to engage in injecting risk behaviours. Legalizing and rapidly implementing sterile syringe distribution programs are critical for reducing parenterally transmitted HIV, HBV, and HCV among IDUs.

ID	PM-U127
Authors	Hahn, Judith A and Page-Shafer, Kimberly and Ford, Jamye and Paciorek, Alan and Lum, Paula J
Title	Traveling young injection drug users at high risk for acquisition and transmission of viral infections.
Journal	Drug Alcohol Depend.
Issue	93(1-2):43-50.
Year	2007
Study design	Cross sectional study
Assay	HCV enzyme immunoassay test
Sample size	N=355
Study setting and period	We conducted a cross-sectional study of young (under age 30) IDU in San Francisco (2004-2006).
Characteristics of study subjects (Gender, age, ...)	Traveling young injection drug users. Age=15-19 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	In an analysis of interactions with travel, younger travellers were more likely to be HCV positive than younger non-travellers. The 51 who were eligible but not enrolled were similar to the 89 enrolled in age (p=0.57), sex (p=0.20), and self-reported HCV status (p=0.23).
Comments	Traveling young IDU are at exceptionally high risk for acquiring and transmitting viral infections, while their mobility makes it challenging to effectively deliver interventions.

ID	PM-U128
Authors	Frederick, Toni and Burian, Pamela and Terrault, Norah and Cohen, Mardge and Augenbraun, Michael and Young, Mary and Seaberg, Eric and Justman, Jessica and Levine, Alexandra M and Mack, Wendy J and Kovacs, Andrea
Title	Factors associated with prevalent hepatitis C infection among HIV-infected women with no reported history of injection drug use: the Women's Interagency HIV Study (WIHS).
Journal	AIDS Patient Care STDS.
Issue	23(11):915-23.
Year	2009
Study design	Cohort study
Assay	HCV enzyme immunoassay test and PCR
Sample size	N=3636
Study setting and period	Women were recruited from six national sites (Los Angeles, San Francisco, Chicago, two sites from New York City, and Washington, D.C.) from HIV clinics, street outreach, referral from other studies, and word of mouth. Between October 2001 and November 2002.
Characteristics of study subjects (Gender, age, ...)	Among HIV-Infected Women with No Reported History of Injection Drug Use. Age= average age 35 years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Among 3636 women with HCV results, 31.5% were HCV antibody positive (HCV) including 13.5% with no reported history of IDU or blood transfusions. Multivariate logistic regression analyses stratified on IDU showed that among women with no history of IDU, sex with an IDU male was independently associated with HCV positivity (odds ratio [OR] 2.8, 95% confidence [CI] 2.1, 3.8, p<0.0001).
Comments	In conclusion, our study demonstrates an overall HCV prevalence of 6.5% among HIV-infected and high-risk HIV negative women without a history of IDU or receipt of blood transfusions.

ID	PM-U129
Authors	Burt, Richard D and Thiede, Hanne and Hagan, Holly
Title	Serosorting for hepatitis C status in the sharing of injection equipment among Seattle area injection drug users.
Journal	Drug Alcohol Depend.
Issue	105(3):215-20.
Year	2009
Study design	Cross sectional study
Assay	HCV enzyme immunoassay test
Sample size	N=337
Study setting and period	We surveyed Seattle area IDU recruited by respondent-driven sampling as part of the National HIV/AIDS Behavioural Surveillance system in 2005.
Characteristics of study subjects (Gender, age, ...)	Among Seattle area injection drug users. Age= 15-30 Years
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection
Results	Of 337 participants, 91% reported ever having been tested for HCV. Fifty-three percent of participants who shared any injection equipment in the last 12 months reported knowing the HCV status of the last person with whom they shared injection equipment. Thirty-seven percent of self-reported HCV-positive participants reported that their last injection equipment sharing partner was also HCV-positive and 7% reported a HCV-negative partner. Among self-reported HCV-negative participants, 11% reported a HCV-positive partner and 23% a negative partner. The disproportionate tendency to share injection equipment with a partner of like HCV status persisted after control for characteristics associated with HCV positivity in stratified and logistic regression analyses. Among participants sharing injection equipment, 39% reported that they had intentionally shared injection equipment with a partner based on knowledge of their concordant HCV status.
Comments	We conclude that a measurable degree of serosorting by HCV status is occurring among Seattle area IDU. Promotion of serosorting among HCV-positive IDU may be a useful harm reduction strategy for IDU who continue to practice sharing injection equipment. If judged efficacious, serosorting would provide a further rationale to encourage and support HCV testing among IDU.

ID	PM-U132
Authors	Centers for Disease Control and Prevention (CDC), [Collective Name]
Title	Hepatitis C virus transmission at an outpatient hemodialysis unit--New York, 2001-2008
Journal	MMWR Morb Mortal Wkly Rep.
Issue	58(8):189-94.
Year	2009
Study design	Cross-sectional
Assay	EIA followed by recombinant immunoblot assay or nucleic acid testing for HCV RNA
Sample size	162
Study setting and period	One New York City hemodialysis unit, from 2001–2008
Characteristics of study subjects (Gender, age, ...)	Haemodialysis patients
Sampling method	NA
Outcome	Anti HCV
Data collection method	Medical records
Results	Of the 162 patients, HCV infection status at hemodialysis unit admission could be documented through medical records and previous test results for 110 (68%). Twenty (18%) of the 110 had chronic HCV infection at admission. Ninety (82%) were anti-HCV negative at admission, of whom nine (10%) were determined to have acquired incident HCV infection, seroconverting to anti-HCV positive during 2001-2008.
Comments	

ID	PM-U133
Authors	Russell, Marcia and Chen, Meng-Jinn and Nocajski, Thomas H and Testa, Maria and Zimmerman, Scott J and Hughes, Patricia S
Title	Risky sexual behavior, bleeding caused by intimate partner violence, and hepatitis C virus infection in patients of a sexually transmitted disease clinic.
Journal	Am J Public Health.
Issue	99 Suppl 1:S173-9
Year	2009
Study design	Case-control
Assay	HCV antibodies with Abbott anti-HCV EIA 2.0 (Abbott Laboratories, Abbott Park, IL).
Sample size	515
Study setting and period	Inner-city STD clinic in western New York State, from January 2001 through January 2004
Characteristics of study subjects (Gender, age, ...)	STD clinic patients. Males=323
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood collection and interviews
Results	Multivariate analyses indicated that Black race (odds ratio [OR] = 2.4; 95% confidence interval [CI] = 1.3, 4.4), injection drug use (OR = 20.3; 95% CI = 10.8, 37.8), sharing straws to snort drugs (OR = 1.8; 95% CI = 1.01, 3.0), sharing razors (OR = 7.8; 95% CI = 2.0, 31.0), and exposure to bleeding caused by intimate partner violence (OR = 5.5; 95% CI = 1.4, 22.8) contributed significantly to the prediction of HCV infection; risky sexual behavior and exposure to blood or sores during sexual intercourse did not.
Comments	The cross-sectional design does not allow any conclusions to be drawn about the temporality of the observed associations, and some of the risky behaviors observed could have occurred after patients had acquired their HCV infection.

ID	PM-U142
Authors	Christian, W Jay and Hopenhayn, Claudia and Christian, Amy and McIntosh, Deana and Koch, Alvaro
Title	Viral hepatitis and injection drug use in Appalachian Kentucky: a survey of rural health department clients.
Journal	Public Health Rep.
Issue	125(1):121-8
Year	2010
Study design	Cross-sectional
Assay	The local health departments where this research was conducted generally used an HCV antibody (anti-HCV) screening test to detect exposure to HCV
Sample size	92
Study setting and period	The surveys were administered from September 2006 to April 2007
Characteristics of study subjects (Gender, age, ...)	Health department clients in Appalachian Kentucky. Males=33. Mean age=32.9 years
Sampling method	Random
Outcome	Anti-HCV
Data collection method	Data collection activities specific to this study consisted of a survey instrument that was self-administered by participating subjects. This survey was linked to a prescreening questionnaire routinely administered at the health departments to anyone receiving HBV or HCV testing, and which becomes part of their medical file at each health department.
Results	In total, 92 health department clients participated in the study survey. Of these, test results were available for 80 of the clients. Very few subjects who enrolled in this study tested positive for hepatitis B. Twelve out of 80 participants (15%) tested positive for previous exposure to hepatitis C. No participants reported having human immunodeficiency virus.
Comments	Participants in the study might differ substantially from those who were tested but elected not to participate.

ID	PM-U147
Authors	Centers for Disease Control and Prevention (CDC), [Collective Name]
Title	Notes from the field: risk factors for hepatitis C virus infections among young adults--Massachusetts, 2010.
Journal	MMWR Morb Mortal Wkly Rep.
Issue	28;60(42):1457-8.
Year	2011
Study design	Cross-sectional
Assay	NA
Sample size	28
Study setting and period	Massachusetts Department of Public Health (MDPH), from July to December 31, 2010.
Characteristics of study subjects (Gender, age, ...)	Mean age of the 28 respondents was 21.9 years (range: 19–24 years); 15 (54%) patients were female, 23 (82%) were white, nine (32%) did not finish high school, nine (32%) were unemployed, and 25 (89%) had health insurance
Sampling method	NA
Outcome	NA
Data collection method	Cross-sectional
Results	Twenty-six (93%) had used drugs; of these, 100% reported marijuana use, with a median age of initiation of 13 years (range: 9–17 years); 92% reported opioid analgesic abuse (oxycodone and/or Oxycontin), with a median age of initiation of 17 years (range:12–23 years); and 89% reported heroin use, with a median age of initiation of 18 years (range: 14–21 years). Nearly all respondents (95%) used opioid analgesics before switching to heroin. During the preceding 6 months, the most frequently injected drugs among respondents were heroin (50%) and opioid analgesics (30%).
Comments	Only a small number of persons agreed to be interviewed, which limits the ability to generalize these findings.

ID	PM-U149
Authors	Centers for Disease Control and Prevention (CDC).
Title	Sexual transmission of hepatitis C virus among HIV-infected men who have sex with men—New York City, 2005–2010.
Journal	MMWR Morb Mortal Wkly Rep..
Issue	60(28):945-50
Year	2011
Study design	Case-control
Assay	NA
Sample size	74
Study setting and period	Mount Sinai Medical Center in New York City, from October 2005–December 2010
Characteristics of study subjects (Gender, age, ...)	HIV-infected MSM, Median age=39 years
Sampling method	NA
Outcome	HCV RNA
Data collection method	Blood collection and interview
Results	Results from the multivariable analyses showed that receptive anal intercourse with no condom and with ejaculation of the partner (adjusted odds ratio [AOR] = 23.00 (2.17–243.84)) was significantly related to acquiring HCV infection
Comments	The findings in this report are subject to at least three limitations. First, recall of events such as ejaculation by sex partner up to 12 months before HCV diagnosis can be imperfect. For example, the findings should not be interpreted to definitively exclude acquisition of HCV by some men through unprotected receptive anal intercourse without ejaculation, even though this variable did not exert a significant independent effect on HCV infection in the multivariable analysis. Second, refusal to acknowledge injection-drug use is not uncommon, and other types of stigmatizing risk behavior also might be underreported. Such social desirability bias was addressed by using a self-administered questionnaire and assuring each patient that his responses would not be shared with his primary-care provider. Finally, study investigators relied on patient referrals from HIV-care providers outside Mount Sinai, and referral bias might have occurred; however, the number of referring providers was fairly sizable (n = 35).

ID	PM-U152
Authors	Ison MG1, Llata E, Conover CS, Friedewald JJ, Gerber SI, Grigoryan A, Heneine W, Millis JM, Simon DM, Teo CG, Kuehnert MJ; HIV-HCV Transplantation Transmission Investigation Team.
Title	Transmission of human immunodeficiency virus and hepatitis C virus from an organ donor to four transplant recipients.
Journal	Am J Transplant
Issue	2011 Jun;11(6):1218-25
Year	2011
Study design	Case study
Assay	HCV Matrix (Abbott Laboratories) or RIBA 3.0 (Chiron Corporation, Emeryville, CA, USA). Viral RNA was extracted from serum and a segment of HCV NS5b region, encompassing positions 8275.8616, was amplified using real-time nested PCR.
Sample size	4
Study setting and period	Hospital in the US, in 2007
Characteristics of study subjects (Gender, age, ...)	Transplant recipients from an HCV and HIV positive donor. Males=2
Sampling method	NA
Outcome	HCV RNA
Data collection method	Medical chart and blood collection
Results	In October 2007, a deceased donor renal transplant recipient who was sero-negative for HIV and HCV pretransplant, tested positive for both viruses 10 months after transplantation. 4 patients received his organs (kidneys, liver, heart and). All 4 developed HCV and HIV.
Comments	Recognition of recipient infection was delayed by lack of awareness of potential donor-origin of the infection and by reliance on serology instead of including NAT for recipient testing.

ID	PM-U155
Authors	Moore, Zack S and Schaefer, Melissa K and Hoffmann, Karen K and Thompson, Susan C and Xia, Guo-Liang and Lin, Yulin and Khudyakov, Yury and Maillard, Jean-Marie and Engel, Jeffrey P and Perz, Joseph F and Patel, Priti R and Thompson, Nicola D
Title	Transmission of hepatitis C virus during myocardial perfusion imaging in an outpatient clinic.
Journal	Am J Cardiol.
Issue	108(1):126-32.
Year	2011
Study design	Case report
Assay	Ortho VITROS anti-HCV chemiluminescent immunometric assay
Sample size	5
Study setting and period	North Carolina, 2007
Characteristics of study subjects (Gender, age, ...)	Myocardial Perfusion Imaging Patients
Sampling method	NA
Outcome	HCV RNA
Data collection method	Blood collection, Interviews
Results	Reports of health care--associated viral hepatitis transmission have been increasing in the United States. Transmission due to poor infection control practices during myocardial perfusion imaging (MPI) has not previously been reported. The aim of this study was to identify the source of incident hepatitis C virus (HCV) infection in a patient without identified risk factors who had undergone MPI 6 weeks before diagnosis. Practices at the cardiology clinic and nuclear pharmacy were evaluated, and HCV testing was performed in patients with shared potential exposures. Clinical and epidemiologic information was obtained for patients with HCV infection, and molecular testing was performed to assess viral relatedness. Evidence of HCV transmission among patients who had undergone MPI at the cardiology clinic on 2 separate dates was found, involving 2 potential source patients and a total of 5 newly infected patients. Molecular testing identified a high degree of genetic homology among viruses from patients with common procedure dates. The nuclear medicine technologist routinely drew up flush from multidose vials of saline solution using the same needle and syringe that had been used to administer radiopharmaceutical doses. Multipatient use of vials was not observed, but a review of purchasing invoices and interviews with staff members suggested that this had occurred. No evidence of transmission via contamination of radiopharmaceuticals at the nuclear pharmacy was found. In conclusion, transmission of HCV occurred because of unsafe injection practices during MPI.
Comments	

ID	PM-U156
Authors	Shimokura, Gayle and Chai, Feng and Weber, David J and Samsa, Gregory P and Xia, Guo-Liang and Nainan, Omania V and Tobler, Leslie H and Busch, Michael P and Alter, Miriam J
Title	Patient-care practices associated with an increased prevalence of hepatitis C virus infection among chronic hemodialysis patients.
Journal	Infect Control Hosp Epidemiol.
Issue	32(5):415-24
Year	2011
Study design	Cross-sectional
Assay	Immunoblot assay (RIBA® HCV 3.0 SIA, Chiron Corporation, Emeryville CA)
Sample size	2933
Study setting and period	Equal-probability 2-stage cluster sampling was used to select 87 facilities from all Medicare-approved providers treating 30-150 patients; 53 facilities and 2,933 of 3,680 eligible patients agreed to participate. 2000-2001
Characteristics of study subjects (Gender, age, ...)	Chronic Hemodialysis Patients. Males=1605. 43.9% were<60 years
Sampling method	Cluster sampling
Outcome	Anti-HCV
Data collection method	Blood collection, interviews
Results	The overall prevalence of HCV infection was 9.9% (95% confidence interval [CI], 8.2%-11.6%); only 2 of 294 HCV-positive patients were detected solely by HCV RNA testing. After adjusting for non-dialysis-related HCV risk factors, patient-care practices independently associated with a higher prevalence of HCV infection included reusing priming receptacles without disinfection (odds ratio [OR], 2.3 [95% CI, 1.4-3.9]), handling blood specimens adjacent to medications and clean supplies (OR, 2.2 [95% CI, 1.3-3.6]), and using mobile carts to deliver injectable medications (OR, 1.7 [95% CI, 1.0-2.8]). Independently related facility covariates were at least 10% patient HCV infection prevalence (OR, 3.0 [95% CI, 1.8-5.2]), patient-to-staff ratio of at least 7 : 1 (OR, 2.4 [95% CI, 1.4-4.1]), and treatment duration of at least 2 years (OR, 2.4 [95% CI, 1.3-4.4])
Comments	

ID	PM-U157
Authors	Nurutdinova, Diana and Abdallah, Arbi B and Bradford, Susan and O'Leary, Catina C and Cottler, Linda B
Title	Risk factors associated with Hepatitis C among female substance users enrolled in community-based HIV prevention studies.
Journal	BMC Res Notes
Issue	4:126.
Year	2011
Study design	Prospective cohort
Assay	Third-generation enzyme immunoassay (EIA-2.0; Abbott Laboratories, Abbott Park, IL)
Sample size	782
Study setting and period	St Louis, Missouri, between 1998 and 2004.
Characteristics of study subjects (Gender, age, ...)	Substance abusing predominantly African American females. Mean age=37.2±9 years
Sampling method	Random
Outcome	Anti-HCV
Data collection method	Blood collection and questionnaire
Results	This large community-based sample of predominantly African American substance abusing women showed high prevalence of HCV Ab positivity and low awareness of their HCV serostatus. Our study demonstrated that in addition to intravenous drug use (IDU), other factors were significantly associated with HCV Ab positivity such as having a tattoo and a lifetime history of crack use. Other potential routes of HCV transmission should be further studied among high risk female populations
Comments	

ID	PM-U158
Authors	Williams, Ian T and Bell, Beth P and Kuhnert, Wendi and Alter, Miriam J
Title	Incidence and transmission patterns of acute hepatitis C in the United States, 1982-2006.
Journal	Arch Intern Med
Issue	171(3):242-8.
Year	2011
Study design	Case report
Assay	NA
Sample size	2075
Study setting and period	6 US county health departments, from 1982 to 2006
Characteristics of study subjects (Gender, age, ...)	Acute HCV patients
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Blood collection, interview
Results	Of 2075 patients identified, the median age was 31 years, 91.5% had ALT values greater than 7_ULN, 77.3% were jaundiced, 22.5% were hospitalized, and 1.2% died. Incidence averaged 7.4 per 100 000 individuals (95% confidence interval [CI], 6.4-8.5 per 100 000) during 1982 to 1989 then declined averaging 0.7 per 100 000 (95% CI, 0.5-1.0 per 100 000) during 1994 to 2006. Among 1748 patients interviewed (84.2%), injection drug use (IDU) was the most commonly reported risk factor. The average number of IDU-related cases declined paralleling the decline in incidence, but the proportion of IDU-related cases rose from 31.8% (402 of 1266) during 1982 to 1989 to 45.6% (103 of 226) during 1994 to 2006. Among IDU-related cases reported during 1994 to 2006, 56 of 61 individuals (91.8%) had been in a drug treatment program and/or incarcerated
Comments	HCV-positivity was based on blood collection and clinical signs

ID	PM-U161
Authors	Allison, Robert D and Conry-Cantilena, Cathy and Koziol, Deloris and Schechterly, Cathy and Ness, Paul and Gibble, Joan and Kleiner, David E and Ghany, Marc G and Alter, Harvey J
Title	A 25-year study of the clinical and histologic outcomes of hepatitis C virus infection and its modes of transmission in a cohort of initially asymptomatic blood donors.
Journal	J Infect Dis.
Issue	206(5):654-61
Year	2012
Study design	Prospective cohort
Assay	Third-generation recombinant immunoblot assays (RIBA HCV2.0 SIA; Chiron, Emeryville, CA)
Sample size	686
Study setting and period	American Red Cross (ARC) and the National Institutes of Health (NIH), from 1990 to 1994
Characteristics of study subjects (Gender, age, ...)	Blood donors. Mean age=40±10 years. Males=375
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Blood collection, interviews
Results	Of 738 anti-HCV-positive subjects, 469 (64%) had positive RIBA results, 217 (29%) had negative results, and 52 (7%) had indeterminate results. Primary independent risk factors were injection drug use (odds ratio [OR], 35.0; $P < .0001$ ), blood transfusion (OR, 9.9; $P < .0001$ ), and intranasal cocaine use, including 79 "snorters" who repeatedly denied injection drug use or blood transfusion (OR, 8.5; $P < .0001$ ). Classification and regression tree and random forest analyses confirmed these risk factors.
Comments	Only volunteer blood donors were enrolled, this may constitute a selection bias.

ID	PM-U163
Authors	Hellinger, Walter C and Bacalis, Laura P and Kay, Robyn S and Thompson, Nicola D and Xia, Guo-Liang and Lin, Yulin and Khudyakov, Yury E and Perz, Joseph F
Title	Health care-associated hepatitis C virus infections attributed to narcotic diversion
Journal	Ann Intern Med.
Issue	156(7):477-82.
Year	2012
Study design	Case study
Assay	TaqMan HCV analyte-specific reagents (Roche Molecular Systems, Branchburg, New Jersey)
Sample size	3444
Study setting and period	Outpatient integrated multispecialty clinic in the U.S, from 2004 to 2010
Characteristics of study subjects (Gender, age, ...)	Patients treated by an HCV-infected health care worker.
Sampling method	NA
Outcome	HCV RNA
Data collection method	Blood collection and medical records
Results	Three transplant patients were unexpectedly found to have incident HCV infection. The HCV identified in all 3 patients had close genetic relatedness to the HCV identified in a technician in an interventional radiology area where the patients had received fentanyl. The technician admitted to diverting fentanyl in a manner that could cause contamination of syringes used for patient care. Nearly 4000 potentially exposed patients were screened, and 2 additional cases of HCV were identified.
Comments	6132 patients were identified as being at risk for exposure to HCV from the healthcare worker. Of these, 2203 (35.9%) had died. As of 9 March 2011, 3444 of the 3929 living patients (87.7%) had submitted blood specimens for HCV screening. The low rate of blood specimen collection among patients at risk may underestimate the number of infected patients.

ID	PM-U169
Authors	Wagner, Karla D and Simon-Freeman, Rebecca and Bluthenthal, Ricky N
Title	The Association Between Law Enforcement Encounters and Syringe Sharing Among IDUs on Skid Row: A Mixed Methods Analysis
Journal	AIDS Behav.
Issue	17(8): 2637-2643
Year	2013
Study design	Cross-sectional
Assay	NA
Sample size	187
Study setting and period	Los Angeles, CA; from 2008 to 2009
Characteristics of study subjects (Gender, age, ...)	Intravenous drug users. Males=121. Age range=19-67 years.
Sampling method	NA
Outcome	Self-report
Data collection method	Interview
Results	Participants had a median age of 44 years, range= 19-67 years and 35 % was female. The sample was ethnically diverse. Of 187 IDUs, 81 (43.3%) reported that they were HCV-positive.
Comments	Results of HCV was based on self-report, leading to a risk of huge classification bias.

ID	PM-U172
Authors	Terrault, Norah A and Dodge, Jennifer L and Murphy, Edward L and Tavis, John E and Kiss, Alexi and Levin, T R and Gish, Robert G and Busch, Michael P and Reingold, Arthur L and Alter, Miriam J
Title	Sexual transmission of hepatitis C virus among monogamous heterosexual couples: the HCV partners study.
Journal	Hepatology.
Issue	57(3): 881–889. doi:10.1002/hep.26164
Year	2013 March
Study design	cross-sectional study
Assay	enzyme immunoassay-say (EIA 2.0) (Abbott Laboratories, Abbott Park, IL)
Sample size	1000
Study setting and period	monogamous heterosexual couples
Characteristics of study subjects (Gender, age, ...)	median age of 49 years
Sampling method	Convenient
Outcome	Anti- HCV
Data collection method	Blood sample and questionnaire
Results	Overall, HCV prevalence among partners was 4% (n520), and nine couples had concordant genotype/serotype. Viral isolates in three couples (0.6%) were highly related, consistent with transmission of virus within the couple.
Comments	The results of this study provide quantifiable risk information for counselling long-term monogamous heterosexual couples in which one partner has chronic Coinfection. In addition to the extremely low estimated risk for HCV infection in sexual part-ners, the lack of association with specific sexual practices provides unambiguous and reassuring counselling messages.

ID	PM-U178
Authors	Larry Keen II, PhD1, Maria Khan, PhD2, Lisa Clifford, PhD1, Paul T. Harrell, PhD3, and William W. Latimer, PhD1
Title	Injection and Non-Injection Drug Use and Infectious Disease in Baltimore City: Differences by Race
Journal	Addict Behav
Issue	39(9): 1325–1328. doi: 10.1016/j.addbeh.2014.04.020
Year	2014 September
Study design	N/A
Assay	ELISA
Sample size	482 IDU and NIDU
Study setting and period	Baltimore, US
Characteristics of study subjects (Gender, age, ...)	Black and white race PWID, 59% of 482 are men
Sampling method	N/A
Outcome	Ant-HCV
Data collection method	Blood sample
Results	Stratifying by race, injectors were much more likely to be HCV-infected than Crack/Nasal Heroin users between both Whites ( $\chi^2 (2) = 35.37$ , $p = .001$ ) and Blacks ( $\chi^2 (2) = 88.06$ , $p = .001$ ). Among Whites, polydrug injectors accounted for nearly three-quarters of HCV diagnoses. Among Blacks, the distribution of HCV diagnoses between drug use subgroups was similar to the distribution presented in the White sample, with the highest rates seen in the polydrug injection subgroup and lowest rates in the non-injection smoking crack/nasal heroin subgroup. Across drug use subgroups, the prevalence of HCV was significantly higher among Whites compared to Blacks, $\chi^2 (2) = 140.87$ , $p = .001$ , respectively.
Comments	The current findings provide further support to the notion of injection drug use as an exceedingly high-risk behaviour for HCV and coinfection, specifically those who are polysubstance injectors.

ID	PM-U180
Authors	Blair C. McNamara, Phyllis T. Losikoff, Linda Huguenin, Grace E. Macalino, Josiah D. Rich, and Stephen H. Gregory
Title	Increasing Hepatitis C Prevalence and Associated Risk Behaviors among Incarcerated Young Adults
Journal	Journal of Urban Health
Issue	91(2):376-82. doi: 10.1007/s11524-013-9807-x.
Year	2014
Study design	N/A
Assay	HCV viral load tests (COBAS AmpliPrep/COBAS Tagman HCV test; Roche Diagnostics, Indianapolis, IN) and genotype determination (Versant HCV genotype assay2, Siemens Healthcare Diagnostics Inc.)
Sample size	68
Study setting and period	Rhode Island Department of Corrections (RIDOC) prison Facility from August 2010 to December 2011
Characteristics of study subjects (Gender, age, ...)	The mean age of all participants was 24 years
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	Blood collection, interviews
Results	The overall rate of HCV infection in this population was 24 %. – 17 inmates
Comments	HCV is the leading cause of liver failure and hepatocellular carcinoma in the US. Despite a decline and levelling in HCV incidence nationwide, alarming increases in HCV rate among adolescents and young adults have been reported during the period between the years 1992 and 2005.

ID	PM-U181
Authors	Chew, Kara W and Blum, Martha L and Javanbakht, Marjan and Clare, Laurel E and Bornfleth, Lorelei D and Bolan, Robert and Bhattacharya, Debika and Gorbach, Pamina M
Title	Low prevalence of hepatitis C co-infection in recently HIV-infected minority men who have sex with men in Los Angeles: a cross-sectional study
Journal	BMC Infectious Diseases
Issue	15:538
Year	2015
Study design	Cross-sectional
Assay	Superscript III Reverse Transcriptase (Invi-trogen)
Sample size	185
Study setting and period	Recently or newly HIV-infected MSM. The Los Angeles LGBT Center. Between February 2009 and May 2012
Characteristics of study subjects (Gender, age, ...)	Median age (interquartile range, IQR) was 28.3 (24.7–35.0 years) and the majority were of minority race or ethnicity (66.9 %) and recently HIV-infected (57.8 %).
Sampling method	N/A
Outcome	HCV RNA
Data collection method	Blood collection, interviews
Results	Only 3 (1.6 %) subjects had detectable HCV RNA. HCV viral load ranged from 67,000 to 2.2 million copies/ml.
Comments	This study found a lower than expected prevalence of HCV infection in LAC HIV-infected cohort of MSM.

ID	PM-U187
Authors	Suryaprasad, A and Basavaraju, S V and Hocevar, S N and Theodoropoulos, N and Zuckerman, R A and Hayden, T and Forbi, J C and Pegues, D and Levine, M and Martin, S I and Kuehnert, M J and Blumberg, E A and Organ Transplantation Hepatitis C Investigation Team
Title	Transmission of Hepatitis C Virus From Organ Donors Despite Nucleic Acid Test Screening
Journal	American Journal of Transplantation
Issue	15(7):1827-35. doi: 10.1111/ajt.13283. Epub 2015 May 5.
Year	2015
Study design	N/A
Assay	Roche Molecular Systems, Branchburg, NJ.
Sample size	12
Study setting and period	HCV transmission from donors at increased risk for HCV infection
Characteristics of study subjects (Gender, age, ...)	Organ recipients from donors at increased risk for HCV infection
Sampling method	N/A
Outcome	HCV RNA
Data collection method	Epidemiologic investigation and checking for HCV NAT
Results	6 of 12 recipients who receive organs from 3 donors with high risk of HCV (IDU)
Comments	molecular evidence of transmission could not be established in one investigation.

ID	PM-U190
Authors	Grau, Lauretta E and Zhan, Weihai and Heimer, Robert
Title	Prevention knowledge, risk behaviours, and seroprevalence among nonurban injectors of southwest Connecticut
Journal	Drug Alcohol Rev.;
Issue	35(5): 628–636. doi:10.1111/dar.12396
Year	2016 September
Study design	Prospective cohort
Assay	Bio-Rad Laboratories, Hercules, California.
Sample size	462
Study setting and period	November 2008 and January 2012
Characteristics of study subjects (Gender, age, ...)	among people who inject drug
Sampling method	convenience
Outcome	Anti-HCV
Data collection method	Blood sample
Results	39.2% - 193 person infected by HCV
Comments	The sample is one of convenience, and therefore the findings may have limited generalisability. PWID with higher incomes maybe under-represented.

ID	PM-U191
Authors	Ann C. Gaffey, MD, Stacey L. Doll, MPH, Arwin M. Thomasson, PhD, Chantel Venkataraman, BA, Carol W. Chen, MD, Lee R. Goldberg, MD, MPH, Emily A. Blumberg, MD, Michael A. Acker, MD, Francis Stone, Pavan Atluri, MD
Title	Transplantation of "high-risk" donor hearts: Implications for infection.
Journal	The Journal of Thoracic and Cardiovascular Surgery
Issue	152(1):213-20. doi: 10.1016/j.jtcvs.2015.12.062. Epub 2016 Jan 22.
Year	2016
Study design	Prospective cohort study.
Assay	Anti-HCV
Sample size	55 heart transplant recipients (heart from high-risk donor)
Study setting and period	The patients who received HRD grafts September 2008 to September 2014
Characteristics of study subjects (Gender, age, ...)	55 heart transplant recipients The average recipient age was 53.6 + 11.3 years and the majority of patients were male (n= 40, 72.7%)
Sampling method	N/A
Outcome	Anti-HCV
Data collection method	N/A
Results	Only one patient (1.9%) was noted to have Hepatitis C Virus
Comments	This potential source of suitable donor organs is shown to lead to excellent survival, without an increased incidence of perioperative or postoperative complications. Furthermore, the risk of transmission of infection from donors in this subgroup seems to be minimal.

ID	PM-U192
Authors	Danica E. Kuncio, E. Claire Newbern, Caroline C. Johnson, and Kendra M. Viner
Title	Failure to Test and Identify Perinatally Infected Children Born to Hepatitis C Virus-Infected Women
Journal	Clinical Infectious Diseases
Issue	62(8):980-5
Year	2016 (15 April)
Study design	Retrospective cohort study
Assay	N/A
Sample size	84 children
Study setting and period	children who were born to a Philadelphia resident during January 2011–July 2013 from HCV + mothers and already tested for HCV- RNA (study period is January 2011–February 2015)
Characteristics of study subjects (Gender, age, ...)	children who were born to a Philadelphia resident during January 2011–July 2013 from HCV + mothers and already tested for HCV- RNA up to 20
Sampling method	All
Outcome	HCV RNA
Data collection method	Blood sample and medical record
Results	4 of 84 children had HCV RNA
Comments	These findings illustrate that a significant number of women giving birth in Philadelphia test positive for HCV and that most of their at-risk children remain untested. To successfully identify all HCV- infected children and integrate them into HCV specific care, practices for HCV screening of pregnant women and their children should be improved.

ID	PM-U193
Authors	Daniel Muleta, MD1; Marion A. Kainer, MBBS1; Loretta MooreMoravian1; Andrew Wiese MPH1; Jennifer Ward MSc1; Sheila McMaster, MSN2; Duc Nguyen, MD3; Joseph C. Forbi, PhD4; Tonya Mixson-Hayden, PhD4; Melissa Collier, MD
Title	Hepatitis C Outbreak in a Dialysis Clinic — Tennessee, 2014
Journal	MMWR Morb Mortal Wkly Rep.
Issue	64(50-51):1386-7. doi: 10.15585/mmwr.mm6450a5.
Year	2016
Study design	Retrospective cohort study
Assay	PCR
Sample size	62
Study setting and period	2003-2012
Characteristics of study subjects (Gender, age, ...)	Hemodialysis patients
Sampling method	All
Outcome	HCV RNA
Data collection method	N/A
Results	15% (9 of 62) of patients were infected HCV
Comments	No specific event or practice was identified at the dialysis centre that could have led to HCV transmission.

ID	PM-U194
Authors	Nguyen, Duc B and Gutowski, Jennifer and Ghiselli, Margherita and Cheng, Tabitha and Bel Hamdounia, Shadia and Suryaprasad, Anil and Xu, Fujie and Moulton-Meissner, Heather and Hayden, Tonya and Forbi, Joseph C and Xia, Guo-Liang and Arduino, Matthew J and Patel, Ami and Patel, Priti R
Title	A Large Outbreak of Hepatitis C Virus Infections in a Hemodialysis Clinic
Journal	Infect Control Hosp Epidemiol.
Issue	37(2): 125–133. doi:10.1017/ice.2015.247.
Year	2016
Study design	Retrospective cohort study
Assay	PCR
Sample size	66
Study setting and period	PCR testing of patients April 2013
Characteristics of study subjects (Gender, age, ...)	Hemodialysis patients
Sampling method	All
Outcome	HCV RNA
Data collection method	Review document.
Results	26 (39%) were infected with HCV
Comments	This outbreak highlights the importance of rigorous adherence to recommended infection control practices in dialysis settings.

ID	PM-U197
Authors	Irwin, Linda and Kotton, Camille N and Elias, Nahel and Palafox, Julie and Basler, Debra and Shao, Sarah H and Lester, William and Zhang, Xiaofeng and Kimball, Brendan and Trencher, Carrie and Fishman, Jay A
Title	Utilization of increased risk for transmission of infectious disease donor organs in solid organ transplantation: Retrospective analysis of disease transmission and safety
Journal	Transpl Infect Dis.
Issue	19(6). doi: 10.1111/tid.12791. Epub 2017 Nov 3.
Year	2017
Study design	retrospective cohort study
Assay	NAT PCR
Sample size	257
Study setting and period	257 adult organ transplant recipients received organs from donors meeting the definition of "increased risk" (either CDC 1994 or PHS 2013 definition) from January 1, 2011 through December 31, 2016
Characteristics of study subjects (Gender, age, ...)	Organ transplant recipients
Sampling method	N/A
Outcome	HCV RNA
Data collection method	Data review
Results	0 of infected by HCV
Comments	This single-center study is limited by the relatively limited sample size and may not reflect the risks for viral transmission in other regions or on a national level.

ID	PM-U198
Authors	Gupta, Gaurav and Kang, Le and Yu, Jonathan W and Limkemann, Ashley J and Garcia, Victoria and Bandyopadhyay, Dipankar and Kumar, Dhiren and Fattah, Hasan and Levy, Marlon and Cotterell, Adrian H and Sharma, Amit and Bhati, Chandra and Reichman, Trevor and King, Anne L and Sterling, Richard
Title	Long term Outcomes and Transmission Rates in Hepatitis C Virus Positive Donor to Hepatitis C Virus Negative Kidney Transplant Recipients: Analysis of United States National Data
Journal	Clin Transplant
Issue	31(10).
Year	2017
Study design	Retrospective cohort study
Assay	ELISA
Sample size	421
Study setting and period	HCV + donor/recipient HCV-kidney transplants
Characteristics of study subjects (Gender, age, ...)	Male - 303 (72.2%) Mean age - 55.8 (12.26)
Sampling method	All
Outcome	Anti-HCV
Data collection method	Blood sample and questionnaire
Results	Nevertheless, 5- year patient survival from the time of wait listing was superior for D+/R- when compared to waitlisted controls (68% vs 43%; P < .001). Of the 126 D+/R- with available post-transplant HCV testing, HCV seroconversion was confirmed in 62 (49%), likely donor- derived. Five-year out-comes were similar between D+/R- that seroconverted vs D+/R- that did not (n = 64).
Comments	Limited data suggest that HCV transmission occurred in half of HCV D+/R- patients, although this might not have been the primary factor contributing to the poor observed outcomes.

ID	PM-U201
Authors	Eckhardt, Benjamin and Winkelstein, Emily R and Shu, Marla A and Carden, Michael R and McKnight, Courtney and Des Jarlais, Don C and Glesby, Marshall J and Marks, Kristen and Edlin, Brian R
Title	Risk factors for hepatitis C seropositivity among young people who inject drugs in New York City: Implications for prevention
Journal	PLoS One.
Issue	12(5):e0177341
Year	2017
Study design	Cross-sectional
Assay	HCV EIA2.0, Abbott Laboratories, Abbott Park, IL HCV 3.0 ELISA and RIBA HCV 3.0, Ortho Clinical Diagnostics, Raritan, NJ)
Sample size	714
Study setting and period	Lower East Side of Manhattan, New York City; from 2005 to 2012
Characteristics of study subjects (Gender, age, ...)	Young people who injected illicit drugs, and were age 18 to 35 or had injected drugs for up to 5 years 69% male, mean age 24.9 years
Sampling method	Convenience
Outcome	Anti-HCV
Data collection method	Standardized questionnaire and test for HCV antibody
Results	Of the 714 participants, 343 (48.0%, 95%CI 44.4–51.7) had a positive HCV antibody test, indicating either past or present HCV infection; 163(47.5%) of these, based on self-report, were new diagnoses.
Comments	The study relied on self-report, which is known to suffer from imperfect recall and socially desirable reporting. The cross-sectional nature of the study does not allow to conclude on the causality.

ID	PM-U208
Authors	Chappell, Catherine A and Hillier, Sharon L and Crowe, David and Meyn, Leslie A and Bogen, Debra L and Krans, Elizabeth E
Title	Hepatitis C Virus Screening Among Children Exposed During Pregnancy
Journal	Pediatrics.
Issue	141(6). pii: e20173273
Year	2018
Study design	Retrospective cohort
Assay	ELISA and PCR
Sample size	83
Study setting and period	Magee-Womens Hospital of the University of Pittsburgh Medical Center, between January 1, 2006, and December 31, 2014
Characteristics of study subjects (Gender, age, ...)	Infants born to HCV positive mothers. Age=20 months to 7 years
Sampling method	N/A
Outcome	HCV RNA
Data collection method	Medical records
Results	HCV RNA was present in 7 (8.4%) of the 83 exposed children receiving well-child care and with interpretable HCV test results. Of these 7 HCV-infected children, only 3 had optimal screening tests.
Comments	ICD-9 diagnostic codes were used for case identification of HCV in the pregnant women, which may have resulted in underreporting or inaccuracies in the diagnosis of HCV.

ID	PM-U209
Authors	D. C. Des Jarlais <sup>1*</sup> , H. L. F. Cooper <sup>2</sup> , K. Arasteh <sup>1</sup> , J. Feelemyer <sup>1</sup> , C. McKnight <sup>1</sup> , Z. Ross <sup>3</sup>
Title	Potential geographic "hotspots" for druginjection related transmission of HIV and HCV and for initiation into injecting drug use in New York City, 2011-2015, with implications for the current opioid epidemic in the US
Journal	PLoS One.
Issue	13(3): e0194799.
Year	2018
Study design	Cross-sectional
Assay	Abbott HCV enzyme immunoassay (EIA) 2.0
Sample size	910
Study setting and period	New York City, from 2011–2015.
Characteristics of study subjects (Gender, age, ...)	Injected drug users entering Mount Sinai Beth Israel substance use treatment programs. Male=737 (81.0%) Mean age=40±10.4 years
Sampling method	Snowball sampling
Outcome	Anti-HCV
Data collection method	Blood collection and interview
Results	62% HCV seropositive for HCV
Comments	Recruitment occurred through community outreach and "snowball" sampling, in which current participants are asked to recruit new participants.

ID	PM-U210
Authors	Staton, Michele and Ciciurkaite, Gabriele and Havens, Jennifer and Tillson, Martha and Leukefeld, Carl and Webster, Matthew and Oser, Carrie and Peteet, Bridgette
Title	Correlates of Injection Drug Use Among Rural Appalachian Women
Journal	J Rural Health.
Issue	34(1):31-41
Year	2018
Study design	Case-control
Assay	OraQUICK ADVANCE® Rapid HCV Antibody Test (OraSure Technologies, Inc., Bethlehem, Pennsylvania)
Sample size	399
Study setting and period	3 jails in rural Appalachian counties, from December 2012 to August 2015
Characteristics of study subjects (Gender, age, ...)	Incarcerated Appalachian women. Mean age=32.8±8.2 years
Sampling method	Random
Outcome	Anti-HCV
Data collection method	Blood collection and interview
Results	75.3% of the sample reported lifetime IDU. 62 patients were never injected. Recent (70.1%) and past (63.6%) injectors were more likely to screen positive for HCV antibodies, relative to non-injectors (26.7%, $P < .001$ ).
Comments	Self-report data included sensitive information like drug use and injection, which may increase the social desirability response bias.

ID	PM-U213
Authors	Abara, Winston E and Trujillo, Lindsay and Broz, Dita and Finlayson, Teresa and Teshale, Eyasu and Paz-Bailey, Gabriela and Glick, Sara and Al-Tayyib, Alia A and Robinson, William T and Masiello-Schuette, Stephanie and Sey, Ekow K and Anderson, Bridget J and Poe, Jonathon and Braunstein, Sarah
Title	Age-Related Differences in Past or Present Hepatitis C Virus Infection Among People Who Inject Drugs: National Human Immunodeficiency Virus Behavioral Surveillance, 8 US Cities, 2015.
Journal	J Infect Dis.
Issue	220(3):377-385
Year	2019
Study design	Cross-sectional
Assay	OraQuick HCV Rapid Antibody Test (OraSure Technologies)
Sample size	4094
Study setting and period	8 cities (Chicago, Illinois; Dallas, Texas; Denver, Colorado; Los Angeles, California; Nassau-Suffolk, New York; New Orleans, Louisiana; New York City; and Seattle, Washington), in 2015
Characteristics of study subjects (Gender, age, ...)	People Who Inject Drugs Male – 2877 (70.6%) Age are not given
Sampling method	NA
Outcome	Anti-HCV
Data collection method	Questionnaire and blood collection
Results	2,258 (55.2%) were anti-HCV positive. 1085 reported condomless anal sex in the past 12 months and among them 530 (48.8%) were HCV positive Anti-HCV prevalence was 61.4% (1356/832) among IDU sharing syringe and 52.1% (2714/1413) among those who did not.
Comments	The findings from this analysis may not be generalizable to all People Who Inject Drugs because the participants are not a representative sample of all PWID.

ID	IC-F004
Authors	清野 義郎, 松川 昌勝, 佐々木 博海
Title	フィブリノーゲン注による出産後の C 型肝炎の集団発生
Journal	市立三沢病院医誌,
Issue	
Year	1991
Study design	症例報告
Assay	
Sample size	9
Study setting	
Characteristics of study subjects (Gender, age, ...)	産婦人科医院で出産を終えた女性 9 名 (平均年齢 29.0 歳)
Sampling method	
Outcome	HCV 抗体
Data collection method	採血
Results	<p>出産後のフィブリノーゲン投与が原因と考えられた C 型肝炎 9 例の集団発生を報告した。血液製剤の投与は、産後の出血に対して出産当日、全例にフィブリノーゲンが、5 例に輸血の投与が行われた。フィブリノーゲンの投与量は 2g が 2 例、5g が 6 例、10g が 1 例であった。</p>
Comments	症例報告であり、フィブリノーゲン使用による HCV の感染率を論じた報告ではない。

ID	IC-F007
Authors	飯田 晋一郎
Title	フィブリノーゲン製剤使用後の肝炎発生数等に関する三菱ウェルフアーマ（株）からの追加報告について
Journal	
Issue	
Year	2002
Study design	横断研究
Assay	
Sample size	7220
Study setting	
Characteristics of study subjects (Gender, age, ...)	フィブリノーゲン製剤使用患者
Sampling method	
Outcome	肝炎
Data collection method	アンケート
Results	<p>フィブリノーゲン製剤の納入先医療機関及び個々の医師に対し、当該製剤投与者の肝炎発生状況等についてアンケート調査（回収期限平成 13 年 4 月 30 日）を実施した。フィブリノーゲン製剤使用症例数は、計（静注+糊）7220 件であり、その中の肝炎発生例数は、229 件であり、肝炎発生率は 3.2% となった。</p>
Comments	本調査の Outcome は、C 型肝炎ではなく、肝炎である。

ID	IC-F008
Authors	村上省三・二之宮景光・大河内一樹・雄・金子実
Title	輸血源よりみた血清肝炎発生に関する考察
Journal	日本輸血学会
Issue	14巻4,5,6号
Year	1967
Study design	横断研究
Assay	
Sample size	
Study setting	大学病院
Characteristics of study subjects (Gender, age, ...)	輸血患者
Sampling method	
Outcome	肝炎
Data collection method	
Results	供血源と肝炎の発生について調査したところ、献血単独輸血で肝炎を発病したものの中にフィブリノゲン製剤の投与が行われていたこと、胸部外科でフィブリノゲン製剤の投与を受けた6症例のうち4症例に肝炎の発声を認め、この製剤の危険性を示唆。
Comments	本調査の Outcome は、C型肝炎ではなく、肝炎である。

ID	IC-FF009
Authors	二之宮景光・吉村敬三・水野明第2外科杉浦光雄・上野明
Title	手術後肝障害発生に及ぼす各因子に関する研究
Journal	日本輸血学会
Issue	16巻4,5号,
Year	1968
Study design	症例報告
Assay	
Sample size	
Study setting	病院
Characteristics of study subjects (Gender, age, ...)	
Sampling method	
Outcome	肝炎
Data collection method	
Results	輸血後肝炎発生の状況について、フィブリノゲン製剤を投与したものの中で、3例について発生を認めたとして、さほど出血も甚だしくなく必然性の乏しい2,3の症例に対して行われたフィブリノゲン製剤の漫然とした投与は反省すべきものと示唆。
Comments	本調査の Outcome は、C型肝炎ではなく、肝炎である。

ID	IC-F016
Authors	長谷川 泉・田中 靖人・折戸 悅朗・小 笹 貴士・藤原 圭・ 桜井 万弓・鈴木 誠司・加藤 孝宣・大野 智義・上田 龍三・ 溝上 雅史
Title	血液 Fibrinogen 製剤による HCV 感染の検討
Journal	肝臓学会〔会議録〕
Issue	44巻, pA430
Year	2003
Study design	横断研究
Assay	
Sample size	13
Study setting	
Characteristics of study subjects (Gender, age, ...)	1986-1987年に Fibrinogen 製剤が投与された患者
Sampling method	
Outcome	HCV-RNA
Data collection method	採血
Results	1986~87年当時の Fibrinogen 製剤を入手し、この製剤からの HCV RNA の検出を試みた。さらに当時 Fibrinogen 製剤が投与された 13人の患者血清から RNA を抽出して比較検討した。1986~87年にかけて 製造された非加熱製剤及び加熱製剤、さらに前述の患者 13名から informed consent の元、採取された血清を用いた。 SepaGene 抽出 kit を用いて HCV-RNA を抽出し、5-UTR と NS5B 領域の RT-PCR にて確認後、cloning を行い各検体内の genotype の比率を検討した。患者 13名の血清全てから HCV-RNA が検出された。今回解析を行った同じ Lot. No. の製剤を投与された可能性が極めて高い 4名の血清中の genotype は全て 1a であった。cloning の結果、Fibrinogen 製剤に含有された genotype は 1a、1b、2b であった。分子系統樹より 4名の内 3名が非加熱製剤より抽出された clone と cluster し、感染が示唆された。GS-RTD PCR の結果から非加熱製剤では 1a のウイルス量が他の genotype と比べて高値であった。
Comments	会議録であり、対象者背景の情報が不十分

ID	IC-F018
Authors	豊田 尚子・梶村 克成・高木 基成・佐川 公矯
Title	非加熱血液凝固因子製剤の投与を疑われた患者の c 型肝炎ウイルススクリーニング検査
Journal	肝臓〔原著論文〕
Issue	44巻, pA430
Year	2003
Study design	横断研究
Assay	
Sample size	105
Study setting	久留米大学病院
Characteristics of study subjects (Gender, age, ...)	患者からの問い合わせを久留米大学病院感染対策委員会の担当者が電話で受け、投与された疑いのある患者（男 31, 女 74）
Sampling method	患者からの問い合わせがあり、投与疑いのある患者
Outcome	抗 HCV, HCV-RNA
Data collection method	
Results	1) スクリーニング検査を受けた患者のうち、HCV 抗体陽性率が 12.4%、HCV キャリアは 9.5% であった。2) カルテ検査ができた患者の中では、非加熱血液凝固因子製剤の用途は確認できなかつた。3) カルテ検索において、手術を受けた経歴のある患者で HCV 抗体陽性者は、輸血を受けていた。4) 輸血歴が確認できた患者の HCV 抗体陽性率は 33.3% であり、HCV ウィルスキャリアは 13.3% であった。
Comments	非加熱血液凝固因子製剤の投与は確認されず、輸血を受けた患者に高率に HCV 感染が発生していた。

ID	IC-F019
Authors	和泉透・室井一男・坂田洋一・雨宮洋一・小澤敬也
Title	フィブリノゲン製剤投与を受けた造血器腫瘍患者におけるC型肝炎ウイルスのgenotype
Journal	日本輸血学会雑誌〔会議録〕
Issue	45巻2号Page236
Year	1999.04
Study design	横断研究
Assay	
Sample size	49
Study setting	
Characteristics of study subjects (Gender, age, ...)	血清中HCV-RNAが陽性であった造血器腫瘍患者49例。内訳は急性リンパ性白血病(ALL)6例・急性前骨髄球性白血病(APL)9例、急性骨髄性白血病(APLを除く)9例、非ホジキンリンパ腫(NHL)25例(B細胞性リンパ腫22例、成人T細胞白血病/リンパ腫1例、リンパ芽球性リンパ腫2例)
Sampling method	
Outcome	HCV-RNA
Data collection method	
Results	49例中、フィブリノゲン製剤の投与歴を12例(ALL5例、APL6例、NHL1例)に認めた。全症例におけるgenotypeの分布はI/II/III/IV/不明=9/30/6/1/3例であった。Fbg製剤投与歴を考慮すると、投与歴(+)群ではI/II/不明=6/5/1例、投与歴(-)群ではI/II/III/IV/不明=3/25/6/1/2例であり、I型は投与歴(+)群で有意に高頻度であった。Fbg投与歴(+)群において特にHCV(I型)感染の頻度が高く、輸入血を原料とした血漿分画製剤投与との関係について検討が必要と考えられた。
Comments	フィブリノゲン製剤の投与歴別にみたHCV患者のHCV Genotype頻度分布

ID	IC-F020
Authors	和泉透
Title	フィブリノゲン製剤投与を受けた急性白血病患者におけるC型及びG型肝炎ウイルスについて
Journal	日本輸血学会雑誌〔会議録〕
Issue	44巻2号Page155
Year	1998
Study design	横断研究
Assay	PT-PCR法
Sample size	38
Study setting	
Characteristics of study subjects (Gender, age, ...)	1992年以降に入院したALL、APL患者
Sampling method	
Outcome	HCV-RNA
Data collection method	採血
Results	全38例中、HCV-RNAは15例(39.5%)、HGV-RNAは11例(28.9%)に検出された。12例(ALL/APL=6/6)にFbg製剤投与歴があり、そのうち11例(91.7%、genotype; I/II/不明=5/5/1)にHCV感染を認めた。これに対しFbg製剤非投与26例では4例(15.4%、genotype; I/II/不明=1/2/1)にHCV感染を認めた。Fbg製剤投与歴のある症例はHCV感染率が有意に高かった( $p<0.0001$ )。全38例についてHCV感染とHGV感染に関する危険因子を単変量解析で検討したところ、HCV感染についてはFbg製剤投与歴と1992年2月以前の輸血歴が、HGV感染については輸血の総投与量のみが危険因子と考えられた。
Comments	Fbg製剤投与群のHCV感染(11/12: 91.7%)とFbg製剤非投与群のHCV感染(4/26: 15.4%)の違いよりFbg投与がHCV感染の危険因子になることを示唆した。

ID	IC-F022
Authors	和泉 透
Title	フィブリノーゲン製剤投与と C 型肝炎ウイルス感染
Journal	日本輸血学会雑誌 [会議録]
Issue	43巻2号 p198
Year	1997
Study design	横断研究
Assay	
Sample size	20
Study setting	
Characteristics of study subjects (Gender, age, ...)	1992 年以降に入院した ALL 患者
Sampling method	
Outcome	HCV-RNA
Data collection method	
Results	20 例中、初診時 HCV-RNA(-) であった症例は 11 例、不明 9 例。最近の検体では 20 例中 5 例が陽性で、うち 3 例は初診時陰性であり、経過中に HCV-RNA が陽性化したことが確認された。この 3 例の HCV の genotype はすべて I 型であった(その他 2 例はすべて II 型)。I 型が検出された 3 例中 2 例に Fbg 製剤の投与歴を認め、この 2 例について断続的に保存されていた検体を検討したところ、HCV-RNA が Fbg 製剤投与後それぞれ 1 週後、3 週後の検体ではじめて陽性化していることを確認した。この 2 例では HCV-RNA が陽性化した時期にほぼ一致して、肝機能障害が出現していた。最終的に HCV-RNA(-) であった 15 症例の内訳は Fbg 製剤の投与なし 13 例、不明 2 例であった。
Comments	HCVI 型が検出された 2 例での Fbg 製剤による HCV 感染の可能性が示唆された

ID	IC-F023
Authors	白幡 晴
Title	血液凝固因子製剤による非血友病 HIV/HCV 感染者全国調査成績
Journal	日本未熟児新生児学会雑誌 [会議録]
Issue	7巻3号 Page480
Year	1995.10
Study design	横断研究 (アンケート調査)
Assay	
Sample size	1325 施設
Study setting	
Characteristics of study subjects (Gender, age, ...)	200 床以上の病床を有し、かつ小児科のある施設
Sampling method	
Outcome	
Data collection method	アンケート
Results	1987 年までに第 IX 因子複合濃縮製剤を輸注したことがあると回答したのは、41 施設であった。輸注された患者数は、10 例未満が 32 施設、10~50 例位が 5 施設、50 以上が 2 施設、症例数の記載がなかったのが 2 施設で、10 例以下 1 例、10~50 例を 10 例、50 例以上を 50 例 (但し、患者数が明記されているところはその数字) として計算すると、すくなくとも 201 例以上に同製剤が投与されていた。検査を実施した 9 施設で、あらたに 9 例の HCV 陽性者が見つかっている。
Comments	血液凝固因子製剤による非血友病 HIV/HCV 感染者の全国調査

ID	IC-F024
Authors	石本 盛治・藤村 吉博・福井 弘・金田 美喜夫・吉岡 章・嶋 裕子・中島 克子・市場 邦通
Title	血友病及びその類縁疾患患者による C 型肝炎ウイルス(HCV)抗体の検出
Journal	日本輸血学会雑誌 [原著論文]
Issue	37巻1号 Page1-6
Year	1991.02
Study design	横断研究
Assay	ELISA
Sample size	167
Study setting	
Characteristics of study subjects (Gender, age, ...)	1978年2月から1990年7月の血友病及びその類縁疾患患者 167例
Sampling method	
Outcome	HCV 抗体
Data collection method	
Results	血友病及びその類縁疾患患者 167 例につき HCV 抗体の測定を行った。1) HCV 抗体陽性者は血友病 A 126 例中 82 例(65%)、血友病 B 17 例中 10 例(59%)、vWD 17 例中 8 例(47%)、及び先天性血小板機能異常症 7 例中 1 例(14%)であった。2) HCV 抗体と HIV-1 抗体の陽性者間の相関は認められなかった。3) HCV 抗体陽性群での血液凝固因子製剤の平均年間投与量は 37,570 単位と、陰性群の 23,689 単位に比し明らかに多かった。4) HCV 抗体陽性率は 10 歳以上、50 歳未満の社会的活動期にある年齢層で高かった。5) 経過中に HCV 抗体が陰転化した血友病 A 症例 5 例と、逆に陽転化した血友病 A インヒビター症例が 1 例観察された。
Comments	HCV 抗体陽性群が陰性群に比べて血液凝固因子製剤の平均年間投与量が多いことが明らかになった。

ID	IC-F025
Authors	堀之内 寿人
Title	熱処理フィブリノーゲン製剤によると思われる非 A 非 B 型肝炎の 1 例
Journal	日本消化器病学会雑誌 [会議録]
Issue	85巻8号 p1618
Year	1988
Study design	症例報告
Assay	
Sample size	1
Study setting	
Characteristics of study subjects (Gender, age, ...)	
Sampling method	
Outcome	
Data collection method	
Results	熱処理フィブリノーゲン製剤によると思われる非 A 非 B 型肝炎の 1 例
Comments	会議録であり、症例の背景などの情報不足

ID	IC-F026
Authors	井上 憲昭
Title	加熱処理フィブリノーゲン製剤（フィブリノーゲン HT（ミドリ））による非A非B型肝炎の5例
Journal	日本内科学会雑誌〔会議録〕
Issue	78巻5号 p726
Year	1989
Study design	症例報告
Assay	
Sample size	5
Study setting	産婦人科
Characteristics of study subjects (Gender, age, ...)	
Sampling method	
Outcome	
Data collection method	
Results	産科で5名に投与された加熱製剤によって全員（5名）が非A非B型肝炎を発症した。内2名に輸血が併用されていた。
Comments	会議録であり、症例の背景などの情報不足

ID	Animal-01
Authors	Wyke RJ et al
Title	Transmission of non-A non-B hepatitis to chimpanzees by factor-IX concentrates after fatal complications in patients with chronic liver disease.
Journal	Lancet
Issue	1(8115):520-4
Year	1979
Study design	Experimental
Assay	NA
Sample size	3
Study setting	London School of Hygiene and Tropical Medicine
Characteristics of study subjects (Gender, age, ...)	Young male chimpanzees
Sampling method	NA
Blood Coagulation Factor	Factor-IX concentrate (1500 units) and Plasma (NANBH carrier) (2ml)
Deactivation method	NA
Outcome	Non-A Non-B
Results	All developed hepatitis after 10 weeks' incubation. Liver biopsy when serum-aminotransferase was at its highest level showed features consistent with acute hepatitis.

ID	Animal-02
Authors	Yoshizawa H et al
Title	Virus-like particles in a plasma fraction (fibrinogen) and in the circulation of apparently healthy blood donors capable of inducing non-A/non-B hepatitis in humans and chimpanzees.
Journal	Gastroenterology
Issue	79(3):512-20
Year	1980
Study design	Experimental
Assay	NA
Sample size	4
Study setting	Tokyo(Japan)
Characteristics of study subjects (Gender, age, ...)	Chimpanzees
Sampling method	NA
Blood Coagulation Factor	Fibrinogen
Deactivation method	NA
Outcome	Non-A Non-B (Virus-like particles)
Results	Inoculation to 4 chimpanzees of an etiologic agent in a fibrinogen preparation derived from pooled plasma, which had been implicated for hepatitis in 2 humans. All 4 chimpanzees developed Non-A Non-B hepatitis.

ID	Animal-03
Authors	Bradley DW et al
Title	Non-A/non-B hepatitis in experimentally infected chimpanzees: cross-challenge and electron microscopic studies.
Journal	Journal of medical virology
Issue	6(3):185-201
Year	1980
Study design	Experimental
Assay	NA
Sample size	8
Study setting	Four of these animals, Don, Bern, P'nut, and Bill were housed and maintained at the HLD and three (DS, BM, and SE) were used under contractual agreement between Abbott Laboratories, North Chicago, Illinois, and LEMSIP, Sterling Forest, New York, and Vilab 11, Liberia. The remaining animal, George, was housed at the primate Unit of the London School of Hygiene and Tropical Medicine.
Characteristics of study subjects (Gender, age, ...)	Chimpanzees
Sampling method	NA
Blood Coagulation Factor	Factor VIII, Factor IX and "H" stain
Deactivation method	NA
Outcome	Non-A Non-B
Results	Inoculation of eight chimpanzees with factor VIII, factor IX, or "H" strain plasma resulted in enzymatic and histopathologic evidence of non-A/non-B hepatitis in all eight animals.

ID	Animal-04
Authors	Wyke RJ and Williams R
Title	Clinical aspects of non-A, non-B hepatitis infection.
Journal	J Virol Methods
Issue	2(1-2):17-29
Year	1980
Study design	Experimental
Assay	NA
Sample size	2
Study setting	London(UK)
Characteristics of study subjects (Gender, age, ...)	Chimpanzees
Sampling method	NA
Blood Coagulation Factor	Factor IX concentrate
Deactivation method	NA
Outcome	Non-A Non-B
Results	Administration to 3 chimpanzees of factor IX concentrate from both commercial and non-commercial, that caused non-A, non-B hepatitis in humans. All 3 chimpanzees developed Non-A Non-B hepatitis.

ID	Animal-06
Authors	Stephan W and Prince AM and Kotitschke R
Title	Factor VIII concentrate from cold sterilized human plasma.
Journal	Dev Biol Stand
Issue	54:491-5
Year	1983
Study design	Experimental
Assay	NA
Sample size	4
Study setting	
Characteristics of study subjects (Gender, age, ...)	Chimpanzees
Sampling method	NA
Blood Coagulation Factor	Factor VIII concentrate
Deactivation method	$\beta$ propionolactone and UV irradiation
Outcome	Non-A Non-B
Results	2 chimpanzees received factor VIII concentrate treated by $\beta$ propionolactone and UV irradiation and 2 received untreated product. The 2 chimpanzees that received the treated product did not develop Non-A Non-B hepatitis. However, the 2 control chimpanzees developed Non-A Non-B hepatitis.

ID	Animal-07
Authors	Tabor E et al
Title	Transmission of agent of post-transfusion non-A, non-B hepatitis by cryoprecipitate prepared from plasma of symptomless chronic carrier.
Journal	Lancet
Issue	1(8314-5):63-4
Year	1983
Study design	Experimental
Assay	NA
Sample size	1
Study setting	This chimpanzee had been born in a U.S. breeding colony, had had no prior exposure to sources of hepatitis, and had not been previously inoculated with any blood, plasma, or plasma derivatives.
Characteristics of study subjects (Gender, age, ...)	Chimpanzees
Sampling method	NA
Blood Coagulation Factor	Cryoprecipitate
Deactivation method	NA
Outcome	Non-A Non-B
Results	This study shows that the NANB hepatitis agent transmitted by blood is not excluded from cryoprecipitate, and hence may also be present when cryoprecipitate is processed further into FVIII concentrate.

ID	Animal-08
Authors	Hollinger FB and Dolana G and Thomas W and Gyorkay F
Title	Reduction in risk of hepatitis transmission by heat-treatment of a human Factor VIII concentrate.
Journal	J Infect Dis
Issue	150(2):250-62
Year	1984
Study design	Experimental
Assay	NA
Sample size	6
Study setting	California(US)
Characteristics of study subjects (Gender, age, ...)	Chimpanzees
Sampling method	NA
Blood Coagulation Factor	Factor VIII concentrate
Deactivation method	Heating (60 degrees Celsius for more than 10 hours)
Outcome	Non-A Non-B
Results	4 chimpanzees received factor VIII concentrate treated by heating (60 degrees Celsius for more than 10 hours) and 2 received untreated product. The 4 chimpanzees that received the heated product did not develop Non-A Non-B hepatitis. However, the 2 control chimpanzees developed Non-A Non-B hepatitis.

ID	Animal-10
Authors	Heldebrant CM et al.
Title	Evaluation of two viral inactivation methods for the preparation of safer factor VIII and factor IX concentrates.
Journal	Transfusion.
Issue	25(6):510-5
Year	1985
Study design	Experimental
Assay	NA
Sample size	7
Study setting	California (US)
Characteristics of study subjects (Gender, age, ...)	Chimpanzees
Sampling method	NA
Blood Coagulation Factor	Factor VIII concentrate
Deactivation method	Heating (60 degrees Celsius for 20 hours or 98 degrees Celsius for more than 30 minutes)
Outcome	Non-A Non-B
Results	2 chimpanzees received factor VIII concentrate treated by heating (60 degrees Celsius for 20 hours). None of them developed Non-A Non-B hepatitis. 2 chimpanzees received factor VIII concentrate treated by heating (98 degrees Celsius for more than 30 minutes). None of them developed Non-A Non-B hepatitis. 1 chimpanzee received untreated factor VIII concentrate and developed Non-A Non-B hepatitis.

ID	Animal-12
Authors	Nainan OV and Lu L and Gao FX and Meeks E and Robertson BH and Margolis HS
Title	Selective transmission of hepatitis C virus genotypes and quasispecies in humans and experimentally infected chimpanzees.
Journal	J Gen Virol
Issue	87(Pt 1):83-91
Year	2006
Study design	Experimental
Assay	Nested RT-PCR
Sample size	12
Study setting	US
Characteristics of study subjects (Gender, age, ...)	Chimpanzees (1978-1991)
Sampling method	NA
Blood Coagulation Factor	Factor VIII concentrate
Deactivation method	NA
Outcome	HCV RNA
Results	Inoculation to 5 chimpanzees of a commercially available human anti-haemophilia factor VIII concentrate, manufactured in the 1970s, and implicated in the transmission of non-A, non-B hepatitis to a female patient. All 5 chimpanzees developed non-A, non-B hepatitis. Genotyping shown that all chimpanzees were infected by HCV genotype 1.

ID	PM-F002
Authors	Solomon, C and Gröner, A and Ye, J and Pendrak, I
Title	Safety of fibrinogen concentrate: analysis of more than 27 years of pharmacovigilance data.
Journal	Thromb Haemost.
Issue	113(4):759-71
Year	2015
Study design	Review of Case reports
Assay	Not mentioned
Sample size	106
Study setting	Worldwide, from January 1, 1986 to December 3, 2013
Characteristics of study subjects (Gender, age, …)	Patients with fibrinogen deficiency who received Haemocomplettan P/RiaSTAP®. Males: 49, Mean age: $38.0 \pm 21.7$ years
Sampling method	
Outcome	Hepatitis C
Data collection method	
Results	This study evaluates spontaneous reports of potential adverse drug reactions (ADRs) that occurred during post-marketing pharmacovigilance of Haemocomplettan P/RiaSTAP®, a fibrinogen concentrate. 106 adverse drug reactions were reported. 15 reports were suspected cases of hepatitis C transmission.
Comments	The study is a review of reports of adverse events that occurred worldwide during the study period. It may not be exhaustive due to possible underreporting of adverse events.

ID	PM-F008
Authors	Spotnitz, W D and Dalton, M S and Baker, J W and Nolan, S P
Title	Successful use of fibrin glue during 2 years of surgery at a university medical center.
Journal	Am Surg.
Issue	55(3):166-8.
Year	1989
Study design	Cross-sectional
Assay	Not mentioned
Sample size	413
Study setting	University of Virginia Medical Center (U.S) from 1985 to 1986
Characteristics of study subjects (Gender, age, …)	Patients undergoing surgery
Sampling method	
Outcome	Non-A non-B hepatitis
Data collection method	Not mentioned
Results	No case of hepatitis secondary to the use of fibrin glue has been reported
Comments	The main goal of this study was to report the success of the use of fibrin glue. The safety (blood-borne infection, including hepatitis) was less explored.

ID	PM-F009
Authors	Rousou, J and Levitsky, S and Gonzalez-Lavin, L and Cosgrove, D and Magilligan, D and Weldon, C and Hiebert, C and Hess, P and Joyce, L and Bergsland, J
Title	Randomized clinical trial of fibrin sealant in patients undergoing resternotomy or reoperation after cardiac operations. A multicenter study.
Journal	J Thorac Cardiovasc Surg
Issue	97(2):194-203.
Year	1989
Study design	Randomized clinical trial
Assay	N/A
Sample size	33
Study setting	Patients in 11 centers in the United States.
Characteristics of study subjects (Gender, age, ...)	N/A
Sampling method	N/A
Outcome	Non-A non B hepatitis
Data collection method	Blood Sample
Results	No patient had non-A, non-B hepatitis.
Comments	Fibrin sealant is safe a safe topical hemostatic agent from the point of view of transmission of viral diseases.

ID	PM-F012
Authors	Lupinetti, F M and Stoney, W S and Alford, W C and Burrus, G R and Glassford, D M and Petracek, M R and Thomas, C S
Title	Cryoprecipitate-topical thrombin glue. Initial experience in patients undergoing cardiac operations.
Journal	J Thorac Cardiovasc Surg.
Issue	90(4):502-5.
Year	1985
Study design	Cross-sectional
Assay	Not mentioned
Sample size	26
Study setting	Vanderbilt University Hospital and St. Thomas Hospital, Nashville (U.S) between April 1 and June 30. 1984
Characteristics of study subjects (Gender, age, ...)	Patients undergoing cardiac operation, 14 men and 12 women aged 30-79 years.
Sampling method	
Outcome	Non-A non B hepatitis
Data collection method	Patients were followed 9-12 months
Results	Cryoprecipitate-topical thrombin glue was used in patients undergoing cardiac operations who demonstrated bleeding that could not be safely controlled by placement of suture material, cautery, and surface application of collagen haemostats.
Comments	No case of hepatitis has been reported

## 別添4

ID	PM-F013
Authors	Lee, C A and Kernoff, P B and Karayiannis, P and Thomas, H C
Title	Acute fulminant non-A, non-B hepatitis leading to chronic active hepatitis after treatment with cryoprecipitate.
Journal	Gut.
Issue	26(6):639-41.
Year	1985
Study design	Case Report
Assay	RAI antigen/antibody system.
Sample size	1
Study setting	N/A
Characteristics of study subjects (Gender, age, ...)	The patient, a known carrier of haemophilia A with a basal level of 16 U/dl factor VIII: C, was 52 years old when she slipped and fell heavily on her right knee.
Sampling method	N/A
Outcome	Non-A non B hepatitis
Data collection method	Blood Sample
Results	A diagnosis of post-transfusion acute NANB hepatitis was made.
Comments	The patient infused cryoprecipitate. The fibrinogen was not clearly mentioned.

ID	PM-F014
Authors	Fukumoto, T and Matsushima, Y and Tomita, S and Inaba, Y
Title	[The use of fibrin glue in neurosurgical operations].
Journal	No Shinkei Geka.
Issue	13(4):367-73.
Year	1985
Study design	Case Report
Assay	NA
Sample size	22
Study setting	Tokyo (Japan), from 1982-1983
Characteristics of study subjects (Gender, age, ...)	Neurosurgical patients, Males=11
Sampling method	
Outcome	Non-A non B hepatitis
Data collection method	Blood Sample
Results	No hepatitis nor inflammatory was observed during the study.
Comments	No information about hepatitis assessment

ID	PM-F016
Authors	Sugg, U and Frösner, G G and Lissner, R and Stunkat, R and Schneider, W
Title	Post-transfusion hepatitis and its association with pooled clotting factors.
Journal	Eur J Clin Microbiol.
Issue	2(2):135-40
Year	1983
Study design	Prospective
Assay	Hepatitis A: anti-HAV IgM (Abbott Laboratories)
Sample size	Hepatitis B: HBsAg (Ausria II)
Study setting	97
Characteristics of study subjects (Gender, age, …)	University Surgical Clinic of Tubingen (Germany) between January and May 1979
Sampling method	Patients undergoing open heart surgery
Outcome	
Data collection method	Increase of ALT>55IU/l between day 14 and day 180 after surgery, without detection of hepatitis A or B
Results	Blood specimens were collected before surgery and 1, 7, 14 and 42 days after surgery. Specimens were then taken at four-week intervals up to the 30th week.
Comments	12 patients received clotting factors: fibrinogen only (1), factor IX complex only (1), fibrinogen and factor VIII (2), fibrinogen and factor IX complex (3), fibrinogen, factor VIII and factor IX complex (5) from different manufacturers.

ID	PM-F017
Authors	Tremolada, F and Chiappetta, F and Noventa, F and Valfrè, C and Ongaro, G and Realdi, G
Title	Prospective study of posttransfusion hepatitis in cardiac surgery patients receiving only blood or also blood products.
Journal	Vox Sang
Issue	44(1):25-30.
Year	1983
Study design	Prospective Study
Assay	N/A
Sample size	297
Study setting	Cardiac Surgery Department
Characteristics of study subjects (Gender, age, …)	open-heart surgery patients
Sampling method	N/A
Outcome	Hepatitis
Data collection method	
Results	4 out of 18 who received fibrinogen developed hepatitis and this incidence was not statistically different from that observed in recipients of blood units only
Comments	Risk Factor: patients who received at least one unit of whole blood or blood components while undergoing open-heart.

ID	PM-F020
Authors	Yoshizawa, H and Akahane, Y and Itoh, Y and Iwakiri, S and Kitajima, K and Morita, M and Tanaka, A and Nojiri, T and Shimizu, M and Miyakawa, Y and Mayumi, M
Title	Virus like particles in a plasma fraction (fibrinogen) and in the circulation of apparently healthy blood donors capable of inducing non-A/non-B hepatitis in humans and chimpanzees.
Journal	Gastroenterology.
Issue	79(3) :512-20
Year	1980
Study design	Case report
Assay	Hepatitis A: anti-HAV IgM (immune adherence hemagglutination)
Sample size	Hepatitis B: HBsAg (passive hemagglutination method)
Study setting	2
Characteristics of study subjects (Gender, age, …)	Tokyo (Japan)
Sampling method	Not mentioned
Outcome	NA
Data collection method	Increase of ALT without detection of hepatitis A or B
Results	Patients were followed 2 years with regular collection of biological samples
Comments	Report of 2 patients who developed signs and symptoms of non-A non-B hepatitis at 3 and 8 weeks after they received purified fibrinogen concentrate before its release as a commercial product. They were the only patients who received the preparation and the product was immediately withheld.

ID	PM-F025
Authors	Polesky, H F
Title	Post-transfusion hepatitis: a review and prospectus
Journal	Hum Pathol.
Issue	2(3):441-51.
Year	1971
Study design	Case Review
Assay	N/a
Sample size	61
Study setting	Minneapolis War Memorial Blood Bank
Characteristics of study subjects (Gender, age, …)	Hepatitis Patients
Sampling method	N/A
Outcome	Hepatitis
Data collection method	N/A
Results	23 patients among the 61 hepatitis patients had the history of receiving fibrinogen.
Comments	The post transfusion hepatitis rate needs to be evaluated. The study outcome is Hepatitis. We assume that is was hepatitis C.

ID	PM-F030
Authors	Boeve, N R and Winterscheid, L C and Merendino, K A
Title	Fibrinogen-transmitted hepatitis in the surgical patient.
Journal	Ann Surg.
Issue	170(5):833-8
Year	1969
Study design	Prospective
Assay	NA
Sample size	72
Study setting	University of Washington Hospital (U.S)
Characteristics of study subjects (Gender, age, ...)	Patients undergoing open heart surgery. 36 males and 36 females
Sampling method	
Outcome	Clinical signs and symptoms of hepatitis and elevation of SGOT.
Data collection method	Regular data collection from surgery to a minimum of 6 months after
Results	72 patients undergoing open heart surgery were followed up to 6 months after the surgery. 32 received fibrinogen transfusion. 10 cases of hepatitis were observed in those who received fibrinogen (10/32) and no case in those who did not (0/40).
Comments	Hepatitis diagnosis was based on the clinical signs and symptoms and elevation of SGOT. No serologic or virologic test was done to confirm the type of virus

ID	PM-F032
Authors	Mainwaring, R L and Brueckner, G G
Title	Fibrinogen-transmitted hepatitis; a controlled study.
Journal	JAMA.
Issue	195(6) : 437-41.
Year	1966
Study design	Case report
Assay	NA
Sample size	9
Study setting	University of Washington Hospital (U.S)
Characteristics of study subjects (Gender, age, ...)	Patients who received fibrinogen for bleeding following surgery or delivery
Sampling method	
Outcome	Clinical signs and symptoms of hepatitis and elevation of SGOT.
Data collection method	Monthly data collection
Results	Report of 9 patients who received fibrinogen for bleeding and followed monthly for 6 months.
Comments	Hepatitis developed in 5 of these patients. 4 patients received both whole blood and fibrinogen, and one received fibrinogen only

## 別添4

ID	PM-F034
Authors	CRONBERG, S and BELFRAGE, S and NILSSON, I M
Title	Fibrinogen-transmitted hepatitis.
Journal	Lancet.
Issue	1(7288) : 967-9.
Year	1963
Study design	Case series
Assay	NA
Sample size	15
Study setting	Hospital of Malmo (Sweden), between 1957-1961
Characteristics of study subjects (Gender, age, …)	Patients who received fibrinogen for bleeding following surgery or delivery. Six men and nine women. Age range: 22 to 77 years.
Sampling method	
Outcome	Clinical signs and symptoms of hepatitis and elevation of SGOT.
Data collection method	
Results	Report of 15 cases of hepatitis following administration of highly purified fibrinogen that contains 93% coagulable substance. The interval between administration of fibrinogen and onset of the disease was on the average more than 3 months.
Comments	

ID	PM-F035
Authors	ZAINO, E C
Title	Homologous serum hepatitis following the administration of fibrinogen.
Journal	Obstet. Gynecol.
Issue	15:404-5
Year	1960
Study design	Case Report
Assay	N/A
Sample size	2
Study setting	N/A
Characteristics of study subjects (Gender, age, …)	Pregnant Women
Sampling method	N/A
Outcome	Hepatitis
Data collection method	Blood sample
Results	All pregnant women had serum hepatitis positive after treated with fibrinogen.
Comments	The study outcome is Hepatitis. We assume that is was hepatitis C.

ID	PM-F036
Authors	RETTEW, P L and MEHARG, J G and BRUBAKER, E R
Title	Hepatitis following therapy for afibrinogenemia; report of three cases.
Journal	Obstet Gynecol.
Issue	10(2):169-71.
Year	1957
Study design	Case report
Assay	NA
Sample size	3
Study setting	Reading hospital, Pennsylvania (U.S) from 1954 to 1956
Characteristics of study subjects (Gender, age, …)	Women undergoing obstetric procedure (childbirth or abortion)
Sampling method	
Outcome	Clinical signs and symptoms of hepatitis
Data collection method	Medical records
Results	All 3 women developed clinical signs and symptoms of hepatitis 3 to 4 months following the administration of fibrinogen.
Comments	Diagnosis of hepatitis was based only on Clinical signs and symptoms. No laboratory test was performed.

ID	PM-F037
Authors	SKINNER, J S
Title	Serum hepatitis: occurrence following the use of human fibrinogen
Journal	Mo Med.
Issue	4(8):740-4.
Year	1957
Study design	Cross-sectional
Assay	N/A
Sample size	17
Study setting	Eight St Louis (U.S), from 1954-1956
Characteristics of study subjects (Gender, age, …)	Patients receiving fibrinogen and who survived 3 months or more. Age range:23-44 years.
Sampling method	N/A
Outcome	Hepatitis
Data collection method	Blood Sample
Results	Serum Hepatitis occurred in 6 of the 17 cases (35%).
Comments	The study outcome is Hepatitis. We assume that is was hepatitis C.

ID	GR-F012
Authors	Blanchette VS, Vorstman E, Shore A, Wang E, Petric M, Jett BW, Alter HJ.
Title	Hepatitis C infection in children with hemophilia A and B.
Journal	Blood.
Issue	78(2):285-9.
Year	1991
Study design	Prospective
Assay	Ortho HCV ELISA Test System (Ortho Diagnostics System, Inc, Raritan, NJ)
Sample size	54
Study setting	Hospital for Sick Children, Toronto (Canada) from 1987 to 1989
Characteristics of study subjects (Gender, age, ...)	Haemophilic children less than 18 years
Sampling method	
Outcome	Anti-HCV
Data collection method	At least 12 months follow-up with collection of clinical and biological data. Sera were stored at -70°C and tested for anti-HCV Ab later
Results	25 patients received single or limited dry heat-treated factor concentrates or regularly unheated or dry heat-treated factor VIII or IX concentrates. 23 developed hepatitis C.
Comments	Hepatitis occurred in 2/3 children who had a single exposure to dry heat-treated factor VIII or IX concentrates.

ID	GR-F020
Authors	Colombo M, Mannucci PM, Carnelli V, Savidge GF, Gazengel C, Schimpf K.
Title	Transmission of non-A, non-B hepatitis by heat-treated factor VIII concentrate.
Journal	Lancet.
Issue	2(8445):1-4.
Year	1985
Study design	Prospective
Assay	Hepatitis A: anti-HAV IgM (Abbott Laboratories) Hepatitis B: HBsAg (Abbott Laboratories)
Sample size	13
Study setting	Multicentric (Milan/Italy, Heidelberg/Germany, London/UK, and Paris/France), from 1982 to 1984
Characteristics of study subjects (Gender, age, ...)	Patients with haemophilia A aged 3 months to 58 years who were treated with factor VIII concentrate. They never received blood or blood products
Sampling method	
Outcome	Increase of ALT>2-5 times the upper normal limit, without detection of hepatitis A or B
Data collection method	12 months follow-up with collection of clinical and biological data: 2 weeks during the first month, every 3 weeks for 6 months, and thereafter monthly until the end of the year's follow-up.
Results	NANB hepatitis developed in 11 (84%) of the 13 patients who were regularly followed up.
Comments	Sample size low. Enrolment of only patients previously untreated with blood or blood products allowed to control bias due to previous exposure conferring protection against new attacks of NANB hepatitis.

ID	RF-F001
Authors	Rickard KA, Batey RG, Dority P, Johnson S, Campbell J, Hodgson J.
Title	Hepatitis and haemophilia therapy in Australia.
Journal	Lancet.
Issue	2(8290):146-8
Year	1982
Study design	Cross-sectional
Assay	Hepatitis A: Not mentioned
Sample size	Hepatitis B: HBsAg (Ausria II)
Study setting	243
Characteristics of study subjects (Gender, age, …)	Royal Prince Alfred Hospital (Australia) from January 1977 to June 1981
Sampling method	Haemophilic patients (226 men, 17 women) aged 1 to 71
Outcome	years (mean 28 years, median 30 years) who were treated with cryoprecipitate
Data collection method	
Results	Increase of ALT>100 IU/L, without detection of hepatitis A or B
Comments	Retrospective study of the patients' medical records

ID	RF-F002
Authors	Yokoi Y, Mizuno A, Sudo K et al.
Title	Gyouko inshi seizai to jutsugo kanen no hassei ni tsuite. [Plasma-derived coagulation factors and postoperative hepatitis.]
Journal	Jpn J Transfus Med.
Issue	30: 370-71.
Year	1984
Study design	Case report
Assay	
Sample size	83
Study setting	Tokyo University hospital (Japan), in 1981
Characteristics of study subjects (Gender, age, …)	Patients undergoing cardiac surgery
Sampling method	
Outcome	Non-A non-B hepatitis
Data collection method	Criteria for postoperative hepatitis : GOT and GPT values that have been normalized after surgery have risen to more than 200 units each after the second week
Results	Among the 83 patients undergoing cardiac surgery, 14 were given blood and unheated fibrinogen. 8 developed post-transfusion hepatitis.
Comments	It is also related to the amount of blood transfusion. From this study, hepatitis incidence tends to increase above 2000 ml

## 別添4

ID	RF-F003
Authors	Inoue N, Inoue A, Komatsu O, et al.
Title	Kanetsu shori fiburinogen sezai niyoru hi A hi B gata kanen no go rei. [Five cases of non-A non-B hepatitis due to heated fibrinogen concentrate.]
Journal	J Jpn Soc Intern Med.
Issue	78: 726
Year	1989
Study design	Case report
Assay	
Sample size	5
Study setting	Nagano Prefecture (Japan), 1987
Characteristics of study subjects (Gender, age, ...)	Women undergoing obstetric procedure, aged 27-38 years
Sampling method	
Outcome	Non-A non-B hepatitis
Data collection method	
Results	5 women treated with heated fibrinogen for obstetric bleeding 5 women developed Non-A non-B hepatitis
Comments	-

ID	RF-F004
Authors	Hasegawa I, Tanaka Y, Orito E, et al.
Title	Ketsueki fi brinogen sezai niyoru HCV kansen no kentou. [HCV infection due to fibrinogen concentrate.]
Journal	Kanzo
Issue	44 (suppl 2): A430
Year	2003
Study design	Case report
Assay	RT-PCR, SepaGene extraction kit
Sample size	13
Study setting	Japan
Characteristics of study subjects (Gender, age, ...)	Patients treated with heated and unheated fibrinogen
Sampling method	
Outcome	HCV RNA
Data collection method	
Results	13 patients given unheated or heated fibrinogen 13 had hepatitis C virus RNA in blood sample
Comments	-

## 別添4

ID	RF-F005
Authors	A.M. L Lever, D Brown, A.D. B Webster, H.C Thomas
Title	Non-A, Non-B Hepatitis Occurring In Agammaglobulinaemic Patients After Intravenous Immunoglobulin
Journal	Lancet.
Issue	8411, 10 November 1984, Pages 1062-1064
Year	1984
Study design	Cross-over trial
Assay	N/A
Sample size	12
Study setting	London (UK)
Characteristics of study subjects (Gender, age, ...)	Patients with hypogammaglobulinemia
Sampling method	N/A
Outcome	Non-A, Non-B
Data collection method	Blood Sample
Results	One patient had non-A, non-B.
Comments	It was assumed that the patient with non-A, non-B hepatitis had acquired the virus from previous plasma therapy.



### 3. FDA で承認されたフィブリノゲン製剤に関する報告資料

- 1) 2009 年に承認されたフィブリノゲン製剤 (RiaSTap™) に関する FDA の報告<sup>2</sup>

#### FDA LICENSE EVALUATION FOR RiaSTap™

**Trade name:** RiaSTap™

**Blood product:** Fibrinogen Concentrate (Human)

**DATE OF LICENSE APPROVAL:** 16 January 2009

**LICENSE NUMBER:** 1765

**MANUFACTURER:** CSL Behring GmbH (Germany)

**INDICATION:** Treatment of acute bleeding episodes in patients with congenital fibrinogen deficiency, including afibrinogenemia and hypofibrinogenemia

#### PRODUCT COMPOSITION

Fibrinogen: 900 to 1300 mg

Albumin: 400 to 700 mg

Arginine hydrochloride: 375 to 660 mg

Sodium chloride: 200 to 350 mg

Sodium citrate: 50 to 100 mg

#### BACKGROUND

Fibrinogen for intravenous use was marketed in the United States by several companies in the twentieth century. It was used to treat not only congenital fibrinogen deficiency, but also to treat obstetric (post-partum) bleeding. The FDA revoked all licenses for fibrinogen concentrates in 1977 because of the risk for hepatitis infection and a suspected lack of effectiveness in obstetric use. Several fibrin sealants are currently licensed in the U.S., but no fibrinogen for intravenous use is currently licensed.

RIASTAP™ manufacturer has been producing human fibrinogen concentrate since 1956 under the trade names "Human Fibrinogen Konzentrat" and "Human Fibrinogen Behringwerke Konzentrat". The product was renamed Haemocomplettan™ P in 1985, coinciding with significant improvements in purity and safety, particularly with regard to the implementation of a pasteurization step. The basic manufacturing process has remained unchanged from this time.

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<sup>2</sup> FDA website : <http://wayback.archive-it.org/7993/20170723024925/https://www.fda.gov/BiologicsBloodVaccines/BloodBloodProducts/ApprovedProducts/LicensedProductsBLAs/FractionatedPlasmaProducts/ucm094010.htm>

At the time of license submission, Haemocomplettan™ P was licensed in 7 European countries since 1986 and there has not been any proven viral transmission to treated patients. For the US market, RIASTAP™ will be used as the trade name.

### SOURCE OF PLASMA DONORS AND SCREENING

Only plasma sourced from the US and Germany is used in the manufacture of RIASTAP™.

All plasma used in the manufacture of RIASTAP™ is tested using FDA-licensed serological assays for hepatitis B surface antigen and antibodies to Human Immunodeficiency Virus (HIV)-1/2 and Hepatitis C Virus (HCV). Additionally, the plasma is tested with FDA-licensed Nucleic Acid Testing (NAT) for HCV and HIV-1 and found to be non-reactive (negative). For Hepatitis B Virus (HBV), an investigational NAT procedure is used; however, the significance of a negative result has not been established. In addition, the plasma has been tested by NAT for Hepatitis A Virus (HAV) and Parvovirus B19 (B19). Only plasma that passed virus screening is used for production, and the limit for B19 in the fractionation pool is set not to exceed 105 IU of B19V DNA per mL.

### VIRAL INACTIVATION PROCESS

The manufacturing process has been demonstrated to reduce the risk of virus transmission in an additive manner: pasteurization (600C for 20 hours), cryoprecipitation, and other absorption/precipitation steps that have been validated in a series of in vitro experiments for their capacity to inactivate or remove a wide range of viruses of diverse physicochemical characteristics including: HIV, HAV, B19, West Nile Virus (WNV), Herpes Simplex Virus type 1 (HSV-1), and the following model viruses: Bovine Viral Diarrhea Virus (BVDV) as a model virus for HCV and Canine Parvovirus (CPV) as a model virus for B19.

### BASIS FOR FDA LICENSURE

Licensure was based on clinical studies as well as findings from post-marketing experience in Europe from 1986 to 2008.

Six studies evaluating the efficacy and safety of RIASTAP™ were considered for the licensure. 5 were already completed and 1 was ongoing. Two completed studies (B13023\_2001 and CE1221\_1) and one ongoing study (B13023\_3001) are conducted under a U.S. IND to support the indication. Additional studies conducted in Europe are supportive for safety and efficacy in the proposed indication.

The following studies were considered (details in annexes):

- **Study 7D-402XX-RS** (Annex 1): collection of additional viral safety data from an earlier study conducted in subjects with congenital fibrinogen deficiency in Europe between June 1985 and June 1987.
- **Study 7MN-501FM** (Annex 2): Retrospective Phase 4 to evaluate the efficacy of Hemocomplettan™ P in congenital deficient patients including dysfibrinogenemia, between May 1985 and February 1992.
- **Study 7MN-101FM** (Annex 3): open-label, uncontrolled, prospective Phase 1 study in Europe, conducted between April to November 1993.
- **Study CE1221\_1** (Annex 4): retrospective physician survey conducted and provided data from 31 physicians regarding 100 patients that will be used as the historical control for a post-marketing study.

- **Study B13023\_2001** (Annex 5): prospective, open, uncontrolled trial to collect PK and safety data and demonstrate hemostatic efficacy, conducted between July 2007 and May 2008.
- **Study No. B13023\_3001**: ongoing post-marketing study (prospective, open, historically controlled Phase 4 study in 23 evaluable subjects) to validate a correlation between MCF the surrogate efficacy endpoint used in Study B13023\_2001, and clinical efficacy of stopping acute bleeding.

In addition, the sponsor reported findings from post-marketing experience in Europe from 1986 to 2008 (Annex 6).

#### FDA CONCLUSION

**Safety:** There was no proven viral transmission to treated patients since the use of Haemocomplettan™ P in 1986. FDA concludes that the safety profile appears to be acceptable. However, additional safety with regards to thromboembolism have to be evaluated in the Phase 4 study.

**Efficacy:** Overall, FDA concludes that when patients with congenital fibrinogenemia are given 70 mg/kg of RIASTAP, the expected in vivo recovery and half-life is observed when compared to the literature and other studies conducted with the product. MCF, the surrogate efficacy parameter, was increased in congenital deficient patients after RIASTAP administration, to levels that correlated well with expected fibrinogen levels. The clinical significance, i.e. correlation with hemostatic efficacy, will be evaluated in Phase 4 post-marketing study.

#### POST-MARKET RECOMMENDATION:

The study No. B13023\_2001, uses maximum clot finnness (MCF), as determined by thromboelastometry as a surrogate endpoint to demonstrate hemostatic efficacy. The assay for MCF as determined by thromboelastometry, using a method that abolishes platelet function, and measures clot firmness or strength (maximal amplitude of the clot in mm.) was validated by the sponsor as a measure of fibrinogen function in vitro. FDA accepted MCF as a surrogate marker that would likely predict clinical outcomes during treatment of bleeding episodes in patients with congenital fibrinogen deficiency. The surrogate endpoint will be validated by showing a correlation between MCF and clinical efficacy in a post-marketing Phase 4 study (Study No. B13023\_3001). This post-marketing protocol has been submitted to study sites for institutional review board (IRB) approval to initiate the study.

## ANNEXES: SUMMARY OF CLINICAL STUDIES FINDINGS.

The original articles for studies 7MN-101FM and 7D-402XX-RS were not found. The summary of the results of these studies are, based on the FDA Blood Products Advisory Committee Meeting report.

### ANNEX 1: STUDY 7D-402XX-RS

Study design	Additional virus safety data from an earlier study conducted in subjects with congenital fibrinogen deficiency
Objective	To assess the safety of Hemocomplettan™ P
Sample size	6
Study setting and period	Europe, between June 1985 and June 1987
Results	This study was primarily a viral safety study. Six subjects were evaluated for viral seroconversion. No subject seroconverted.

### ANNEX 2: STUDY 7MN-501FM

Authors	Wolhart Kreuz, Esther Meili, Kristiina Peter-Salonen, Sabine Haertel, Jan Devay, Udo Krzensk, Rudolf Egbring
Title	Efficacy and tolerability of a pasteurised human fibrinogen concentrate in patients with congenital fibrinogen deficiency
Journal	Transfusion and Apheresis Science
Issue	32:247–253
Year	2005
Study design	Phase 4 open, multicentre, non-controlled retrospective study
Sample size	12
Study setting and period	Europe between May 1985 and February 1992. Age range=1 day to 29 years.
Characteristics of study subjects (Gender, age, ...)	Patients suffering from afibrinogenaemia, haemostatically relevant hypofibrinogenaemia, or dysfibrinogenaemia associated with bleeding tendency. The dose for adults was 1–2 g, and for children 15–30 mg/kg body weight. For all patients included in the study, further infusions were administered as required.
Sampling method	NA
Outcome	<b>Safety:</b> The clinical efficacy was judged by the participating physicians. <b>Efficacy:</b> The haemostatic efficacy was assessed by both laboratory parameters and clinical observation.
Data collection method	Blood samples were obtained before fibrinogen administration and between 30 and 60 min after the infusion.
Results	<b>Safety:</b> A reversible anaphylactic reaction with severe hypotension, cyanosis of lips and extremities, abdominal pain, and pain in the back was reported in one subject. One SAE was reported for a subject with afibrinogenemia who developed venous thrombosis and non-fatal lung embolism after treatment outside of the study. The patient was being treated for a “collum femoris” fracture and received heparin treatment.

	<p>There was no evidence for viral transmission in any patient.</p> <p><b>Efficacy:</b> 89 infusions for prophylactic purposes were recorded, 86 of which were given to a single subject. The clinical efficacy was estimated as good in all 26 bleeding episodes and in 10 of 11 surgical interventions. In 1 case (a subject with pylorotomy), the efficacy was judged as moderate. The mean increase (i.e. the incremental IVR) of 1.5 mg/dL, (range 0.8 -2.3 mg/dL) was similar to that seen in the pivotal study B13023_2001.</p>
Comments	<p>Small sample size.</p> <p>Non-controlled study.</p>

### ANNEX 3: STUDY 7MN-101FM

Study design	Open-label, uncontrolled, prospective Phase 1 study
Objective	To determine the pharmacokinetics of a single IV dose 70mg/kg of Hemocomplettan P
Sample size	6
Study setting and period	Europe, from April-November 1993
Results	<p>Six subjects were enrolled in the study. Six Adverse Events were observed in four subjects: dyspnea (mild, possibly related), elevated temperature (mild, possibly related), pain along the vein (mild, not related), pallor, nausea, shivering (moderate, not related), dizziness (mild, possibly related). All the AEs were considered to be non-serious and needed no intervention.</p> <p>There was no report of viral transmission in any patient.</p>

### ANNEX 4: STUDY CE1221\_1

Authors	Peyvandi F, Haertel S, Knaub S, Mannucci PM.
Title	Incidence of bleeding symptoms in 100 patients with inherited afibrinogenemia or hypofibrinogenemia
Journal	J Thromb Haemost.
Issue	4(7):1634-7.
Year	2006
Study design	Retrospective clinical survey
Sample size	34 physicians and 100 patients
Study setting and period	Canada and USA and 8 European countries, between October 2002 and March 2003.
Characteristics of study subjects (Gender, age, ...)	Physicians known to treat patients with fibrinogen deficiency and 100 patients (53 males and 47 females, age range= 7 months to 75 years).
Sampling method	Convenience
Outcome	Efficacy and safety based on physicians' report
Data collection method	Questionnaire and medical records
Results	A total of 517 bleeding episodes (322 spontaneous, 100 trauma-related, 79 surgery-related and 16 'other' or 'unspecified') were reported.

	Of the 74 surgical procedures 52 (70%) were minor and 15 (20%) major, seven (10%) procedures were not specified. The types of replacement material were fibrinogen concentrates (in 52% of the procedures), and cryoprecipitate (in 42%). Fibrinogen concentrate and cryoprecipitate were judged to be equally effective (excellent/good haemostatic efficacy>90%). There was no report of viral transmission in any patient.
Comments	The study was retrospective and based upon a questionnaire, and has therefore all the limits and biases of this type of analysis. This study was not designed to collect safety information.

## ANNEX 5: STUDY B13023\_2001

Authors	Manco-Johnson MJ, DiMichele D, Castaman G, Fremann S, Knaub S, Kalina U, Peyvandi F, Piseddu G, Mannucci P for the Fibrinogen Concentrate Study Group.
Title	Pharmacokinetics and safety of fibrinogen concentrate
Journal	J Thromb Haemost
Issue	7: 2064-9
Year	2009
Study design	Prospective, open-label, uncontrolled phase II study of FCH (Haemocomplettan™ P and RiaSTAP; CSL Behring)
Assay	NA
Sample size	15
Study setting and period	Multinational, multicenter, at 10 centers in the USA and Italy, between July 2007 and May 2008.
Characteristics of study subjects (Gender, age, ...)	Patients with afibrinogenemia, five female (33.3%) and 10 male (66.7%). The population was 86.7% Caucasian, and the mean age was 30 years (range: 8-61 years). Each subject received a single intravenous infusion of 70 mg/kg of RIASTAP™
Sampling method	NA
Outcome	<b>Safety</b> was assessed on the basis of adverse events, changes in vital signs and physical examinations, and clinical laboratory assessments. Virus safety assessments included testing for human immunodeficiency virus (HIV-1 and HIV-2), hepatitis viruses A, B, and C and parvovirus B19 in blood samples that were collected before as well as 9 and 44 days after infusion. <b>Efficacy</b> : efficacy was assessed based on a surrogate endpoint, defined as the measuring maximum clot firmness (MCF) 1 h after infusion as compared with baseline.
Data collection method	Plasma samples for PK analysis were collected before infusion and 0.5, 1, 2, 4, 8, 24 and 48 h as well as 4, 6, 9 and 13 days after infusion. Virus safety assessments were collected before as well as 9 and 44 days after infusion.
Results	<b>Safety</b> : Two patients experienced four treatment-emergent adverse events (TEAEs), none of which was serious or led to

	<p>discontinuation from the study. All the TEAEs occurred between 2 and 13 days. All TEAEs were mild and not related to study medication except for one (headache) that occurred within 72 hours after infusion.</p> <p>There was no evidence for viral transmission in any patient.</p> <p><b>Efficacy:</b> The difference in the mean change in MCF from before infusion to 1 h after infusion (8.9 mm) was statistically significant (<math>P &lt; 0.0001</math>). MCF was zero at baseline for all patients, and increased to between 6.5 and 16.5 mm at 1 h after infusion of FCH.</p>
Comments	<p>Small sample size.</p> <p>Non-controlled study.</p>

#### ANNEX 6: POST-MARKETING ADVERSE EVENT DATA IN EUROPE: PASSIVE REPORTING

CSL Behring has received a total of 45 adverse event reports for Hemocomplettan P since it began marketing in Europe (1986-2008), corresponding to one report for every 3,414 doses distributed over this time period. Of the 45 AEs reported, there was 14 cases of suspected transmission of infectious disease. 13 cases were considered unrelated and 1 with insufficient data.

Case No.	Age (yrs)	Indication for treatment	Time between HFC Dose and Event	Lab Event (year)	Co-suspect Plasma/Blood Products/Events
V1	40	CD dysfib	9 yrs. from 1st dose	Anti-HCV+ (1995)	Non-virus inactivated products
V2	61	AD, cardiac surgery	10 mos. from dosing	Anti-HCV+ (1995)	Plasma, PRBCs
V3	NA	AD, gynecologic surgery	Hep C dx immediately after surgery	Anti-HCV+(1988)	No baseline test done
V4	68	AD, hemorrhagic shock	5 yrs. from dosing	HBsAg+ and HBcAg+(1996)	5 U plasma, 14 U PRBCs
V5	NA	AD, chemotherapy	NA	HCV+ (1994)	PRBCs, platelets
V6	40	AD, heart surgery	NA (treated in 1996)	HCV+ (NA)	Platelets
V7	22	AD, chemotherapy for ALL	11 mos.	Hep B+ (1997)	26 U PRBCs, 29U platelets, immunoglobulin, ATIII, human albumin from 06/96 to 08/97
V8	71	AD, hip surgery	21 mos. from dosing	HCV+ (1997)	PRBCs, PCC for massive intraoperative bleeding

V9	10	AD, chemotherapy for ALL	26 mos. from last dose in 04/94	HCV+ (06/96) (HCV neg in 05/96)	PRBCs, platelets
V10	NA	AD, surgery	Reported 14 yrs. from dosing	HCV+ (NA)	Plasma, patient was a nurse
V11	28	AD, C-section	4 mos. from dose on 12/31/01	Hep B serology consistent with older infection (03/02)	PRBCs, plasma, human albumin
V12	49	NA	NA	HCV+ (NA)	Multiple other blood products
V13	NA	CD	NA	HCV+ (NA)	Plasma
V14	44	AD, DIC/multiple trauma	25 to 37 mos. from single dose on 11/01	HCV+ (2004)	PRBCs, platelets, ATIII

## References

Wolfhart Kreuz, Esther Meili, Kristiina Peter-Salonen, Sabine Haertel, Jan Devay, Udo Krzensk, Rudolf Egbring. Efficacy and tolerability of a pasteurised human fibrinogen concentrate in patients with congenital fibrinogen deficiency. *Transfusion and Apheresis Science*. 32:247-253, 2005.

Peyvandi F, Haertel S, Knaub S, Mannucci PM. Incidence of bleeding symptoms in 100 patients with inherited afibrinogenemia or hypofibrinogenemia. *J Thromb Haemost*, 4(7):1634-7, 2006

Manco-Johnson MJ, DiMichele D, Castaman G, Fremann S, Knaub S, Kalina U, Peyvandi F, Piseddu G, Mannucci P. Pharmacokinetics and safety of fibrinogen concentrate. *J Thromb Haemost*, 7: 2064-9, 2009

FDA. Approval History, Letters, Reviews and Related Documents – RiaSTap [Online]; 2009. <http://wayback.archive-it.org/7993/20170723024925/https://www.fda.gov/BiologicsBloodVaccines/BloodBloodProducts/ApprovedProducts/LicensedProductsBLAs/FractionatedPlasmaProducts/ucm094010.htm>

2) 2017年に承認されたフィブリノゲン製剤（FIBRYNA®）に関するFDAの報告<sup>3</sup>

**FDA LICENSE EVALUATION FOR FIBRYNA®, Fibrinogen (Human)**

**I. Product Name**

FIBRYNA®, Fibrinogen (Human)

**II. Indications**

FIBRYNA is a human fibrinogen concentrate indicated for the treatment of acute bleeding episodes in adults and adolescents with congenital fibrinogen deficiency, including afibrinogenemia and hypofibrinogenemia. FIBRYNA is not indicated for dysfibrinogenemia.

**III. Composition**

Each bottle contains approximately 1g of fibrinogen. The diluent for reconstitution of the lyophilized powder is sterile Water for Injection.

The nominal composition of FIBRYNA is as follows:

- Human Fibrinogen: 20 mg
- Sodium Chloride 6 mg
- Sodium Citrate Dihydrate 1.5 mg
- Glycine 10 mg
- L-Arginine Hydrochloride 10 mg

**IV. Background**

There is another human fibrinogen product licensed in the U.S. for the treatment of congenital fibrinogen deficiency CFD – RiaSTAP®, manufactured by CSL Behring (CSLB). FIBRYNA will be the second product available in the U.S. for the treatment of bleeding episodes in adults and adolescents with CFD, including afibrinogenemia and hypofibrinogenemia. FIBRYNA has been approved by FDA in June 17, 2017. It has not been approved outside of the U.S.

**V. Transmissible Infectious Agents and Control**

FIBRYNA is made from human plasma. Products made from human plasma may contain infectious agents (e.g., viruses and the CJD agent that can cause disease. Also, unknown infectious agents may be present in such products (see Patient Counseling Information). The risk that such products will transmit an infectious agent has been reduced by screening plasma donors for prior exposure to certain viruses, by testing for the presence of certain current virus infections, and by a process demonstrated to inactivate and/or remove certain viruses during manufacturing.

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<sup>3</sup> U.S. food and drug administration, approved blood product, fibrinogen. Retrieved Jan 29, 2020, from <https://www.fda.gov/vaccines-blood-biologics/approved-blood-products/fibryna>

Production processes are controlled and monitored by specified process control parameters. Production processes have been investigated and validated concerning their ability to reduce microbes and prions. Residual microbes are reduced by in-process filtration steps and removed by the validated final bulk solution. Thereafter, aseptic filling is performed, and the product is freeze-dried. The final release tests include those for sterility and endotoxin.

To minimize the risk of transmissible spongiform encephalopathy (TSE) agent transmission, donors who are potentially at risk are excluded from plasma donation as specified in the current FDA guidance regarding donations collected in the U.S. Furthermore, the manufacturing steps including, and nanofiltration may contribute to the removal of potential TSE agent contamination.

As stated above, all plasma donations, mini-pools and manufacturing pools, are tested for viral markers in compliance with the requirements of FDA.

The results are sufficient to support the effectiveness of viral clearance in the commercial manufacturing process.

Furthermore, two studies formed the basis for the safety and efficacy of FIBRYNA for the proposed indications: **FORMA 01** and **FORMA 02**.

## VI. Clinical Study

The safety, pharmacokinetic (PK) and pharmacodynamic (PD) data from one completed clinical study (FORMA 01) were provided as supportive of the data from FORMA 02 study. FORMA 02 is an ongoing study ongoing (projected conclusion Quarter 4, 2020) in adult and adolescent subjects for the treatment of acute bleeding and perioperative prophylaxis.

### **Trial #1: FORMA 01: "Pharmacokinetic, Efficacy, and Safety Study of Octafibrin Compared to Haemocomplettan/Riastap".**

- a phase 2 crossover pharmacokinetic (PK) and PD
- Study type: Interventional.
- Study design: Allocation: Randomized; Intervention Model: Crossover Assignment; Masking: None (Open Label); Primary Purpose: Treatment
- Condition: Congenital Fibrinogen deficiency, Afibrinogenemia
- Intervention:
  - Biological: Octafibrin
  - Biological: Haemocomplettan® P or RiaSTAP™
- Enrollment: 22
  - 14 (64%) White, 8 (36%) Asian
  - 6 were 12 to <18 years of age; 4 were 12 to 16 years of age
  - 15 females (68%) and 7 males (32%)

The sample size was small. However, there were no notable differences in the post treatment plasma fibrinogen levels achieved either based on sex or by age. There were no deaths, no thrombotic events, hypersensitivity reactions or immune related adverse events noted in this study. There were no serious adverse events that were related to FIBRYNA.

**Trial #2: FORMA 02: "Efficacy and Safety Study of Octafibrin for On-demand Treatment of Acute Bleeding and to Prevent Bleeding During and After Surgery".**

- an ongoing uncontrolled Phase 3 safety and efficacy study of FIBRYNA
- Study type: Interventional
- Study design: Intervention Model: Single Group Assignment; Masking: None (Open Label); Primary Purpose: Treatment
- Condition: Congenital Fibrinogen Deficiency.
- Intervention: Drug: Octafibrin
- Enrollment: 25
  - 9 (69%) White, 3 (23%) Asian, 1 (8%) Other (Arab)
  - 1 was Hispanic/Latino
  - 2 were 12 to <18 years of age
  - 6 (46%) females and 7 (54%) males

There was no difference in clinical hemostatic efficacy when the data were analyzed by sex or race, and there were no apparent differences by age.

The primary efficacy was to be assessed based on the outcomes of the first bleeding event or during the perioperative period for any surgery. The pre-specified endpoint for study success was based on achieving a lower bound of the two sided 90% Blyth-Still-Castella CI of > 0.70.

Among 25 subjects, all 13 treated subjects are included in the safety population. No deaths or study discontinuation due to adverse events occurred in this study.

**VII. Conclusion:**

The efficacy and safety data are adequate to support marketing approval for the treatment of minor and major bleeding in adults and adolescents.

Due to the limitations of the biologics license application (BLA) safety data, and the known risks from the published literature, the review team recommends a required post-marketing study to further characterize the thrombotic risks of FIBRYNA.

There was no anti-fibrinogen antibody development and no deaths. The two adverse events related to FIBRYNA were mild, including one event of

pyrexia and one hypersensitivity reaction. Overall, based on FORMA-01 and FORMA-02, the safety profile of FIBRYNA is acceptable.

## **VIII. Recommendation/Risk Benefit Assessment**

### **a) Recommended Regulatory Action**

The review committee recommends approval of this BLA. The manufacturing process for FIBRYNA, Fibrinogen (Human), is validated and adequately controlled. The clinical data for FIBRYNA provide substantial evidence of effectiveness and support a favorable benefit/risk determination for the use of FIBRYNA for adults and adolescents ( $\geq 12$  years) with CFD, including afibrinogenemia and hypofibrinogenemia, for the treatment of acute bleeding episodes. FIBRYNA is not indicated for dysfibrinogenemia.

### **b) Benefit/Risk Assessment**

FIBRYNA treatment results in replacement of plasma fibrinogen levels that control major and minor bleeding episodes in patients with congenital afibrinogenemia and hypofibrinogenemia. The risks of FIBRYNA are hypersensitivity reactions and thrombosis. Although there were not thrombotic risks from FIBRYNA in the two studies, the anticipated risks of thrombosis of FIBRYNA relate to the risks associated with FRT.

Overall, the benefits described above outweigh the risks related to FIBRYNA for the proposed indication.

#### 4. フルテキストスクリーニングで除外された文献と除外理由

##### Systematic review and meta-analysis on the HCV transmission route in Japan

###### List of excluded articles

No.	Serial number	Lang.	Title	Authors	Details	Reason for exclusion
1.	PM-J002	E	Characteristics of patients with chronic infection due to hepatitis C virus of mixed subtype: prevalence, viral RNA concentrations, and response to interferon therapy.	Ishida, Yuki and Hayashida, Tsunefusa and Sugiyama, Masaya and Tsuchiya, Kiyoto and Kikuchi, Yoshimi and Mizokami, Masashi and Oka, Shinichi and Gatanaga, Hiroyuki	<a href="#">J Acquir Immune Defic Syndr. 2019 Mar 1;80(3):350-357. doi: 10.1097/QAI.000000000000001919.</a>	Not about transmission route of HCV
2.	PM-J003	E	A consensus for occupational health management of healthcare workers infected with human immunodeficiency virus, hepatitis B virus, and / or hepatitis C virus.	Ishimaru, Tomohiro and Wada, Koji and Smith, Derek R	<a href="#">J Occup Health. 2017 May 25;59(3):304-308. doi: 10.1539/joh.16-0275-OP. Epub 2017 Apr 5.</a>	Review article
3.	PM-J004	E	Transmission of hepatitis C virus: self-limiting hepatitis or chronic hepatitis?	Saito, Takafumi and Ueno, Yoshiyuki	<a href="#">World J Gastroenterol. 2013 Nov 7;19(41):6957-61. doi: 10.3748/wjg.v19.i41.6957.</a>	Review article
4.	PM-J006	E	Significant background rates of HBV and HCV infections in patients and risks of blood transfusion from donors with low anti-HBc titres	Tani, Y and Aso, H and Matsukura, H and Tadokoro, K and Tamori, A and Nishiguchi, S and Yoshizawa, H and Shibata, H and JRC NAT	<a href="#">Vox Sang. 2012 May;102(4):285-93. doi: 10.1111/j.1423-</a>	Not about transmission route of HCV

			or high anti-HBc titres with high anti-HBs titres in Japan: a prospective, individual NAT study of transfusion-transmitted HBV, HCV and HIV infections.	Screening Research Group, [Collective Name]	<u>0410.2011.01561.x. Epub 2011 Nov 14.</u>	
5.	PM-J011	E	Risk factors for HCV infection. Focus on ethnic and cultural characteristics.	Pellicano, R and De Angelis, C and De Luca, L and Smedile, A and Berrutti, M and Astegiano, M and Rizzetto, M	<u>Minerva Gastroenterol Dietol.</u> 2009 Jun;55(2):159-62.	Not in Japan
6.	PM-J012	E	Incidence rates of hepatitis B and C virus infections among blood donors in Hiroshima, Japan, during 10 years from 1994 to 2004.	Tanaka, Junko and Mizui, Masaaki and Nagakami, Hideki and Katayama, Keiko and Tabuchi, Ayako and Komiya, Yutaka and Miyakawa, Yuzo and Yoshizawa, Hiroshi	<u>Intervirology.</u> 2008;51(1):33-41. doi: 10.1159/000118794. Epub 2008 Feb 29.	Not about transmission route of HCV
7.	PM-J014	E	Risk of authoritarianism: fibrinogen-transmitted hepatitis C in Japan.	Yasunaga, Hideo	<u>Lancet.</u> 2007 Dec 15;370(9604):2063-7.	Review article
8.	PM-J016	E	Hepatitis C virus infection in dialysis patients.	SuÅowicz, WÅadysÅaw and Radziszewski, Andrzej and Chowaniec, Eve	<u>Hemodial Int.</u> 2007 Jul;11(3):286-95.	Review article
9.	PM-J019	E	Infectious risks associated with the transfusion of blood components and pathogen inactivation in Japan.	Satake, Masahiro	<u>Int J Hematol.</u> 2004 Nov;80(4):306-10.	Review article
10	PM-J024	E	Hepatitis C virus infection: an overview.	Hwang, S J	<a href="https://www.ncbi.nlm.nih.gov/pubmed/11825001">https://www.ncbi.nlm.nih.gov/pubmed/11825001</a>	Review article

11	PM-J025	E	Association between SEN virus infection and hepatitis C in Japan.	Umemura, T and Alter, H J and Tanaka, E and Yeo, A E and Shih, J W and Orii, K and Matsumoto, A and Yoshizawa, K and Kiyosawa, K	<u>J Infect Dis. 2001 Nov 15;184(10):1246-51. Epub 2001 Oct 10.</u>	Not about transmission route of HCV
12	PM-J026	E	Incidence of hepatitis virus infection and severe liver dysfunction in patients receiving chemotherapy for hematologic malignancies.	Kawatani, T and Suou, T and Tajima, F and Ishiga, K and Omura, H and Endo, A and Ohmura, H and Ikuta, Y and Idobe, Y and Kawasaki, H	<u>Eur J Haematol. 2001 Jul;67(1):45-50.</u>	Not about transmission route of HCV
13	PM-J027	E	Effectiveness of manual cleaning and disinfection of gastroendoscopes with 3% glutaraldehyde for decreasing risk of transmission of hepatitis C virus.	Sakai, N and Tatsuta, M and Iishi, H and Yano, H and Osaka, S and Aoki, A	<u>Am J Gastroenterol. 2001 Jun;96(6):1803-6.</u>	Not about transmission route of HCV
14	PM-J030	E	Hepatitis C virus in blood and dialysate in hemodialysis.	Noiri, E and Nakao, A and Oya, A and Fujita, T and Kimura, S	<u>Am J Kidney Dis. 2001 Jan;37(1):38-42.</u>	Not about transmission route of HCV
15	PM-J033	E	Intrafamilial transmission of hepatitis C virus: a systematic review.	Ackerman, Z and Ackerman, E and Paltiel, O	<u>J Viral Hepat. 2000 Mar;7(2):93-103.</u>	Review article
16	PM-J036	E	The risk of hepatitis C virus infection among blood donors in Osaka, Japan.	Tanaka, H and Tsukuma, H and Hori, Y and Nakade, T and Yamano, H and Kinoshita, N and Oshima, A and Shibata, H	<u>J Epidemiol. 1998 Dec;8(5):292-6.</u>	Not about transmission route of HCV

17	PM-J040	E	Characteristics of patients with chronic infection due to hepatitis C virus of mixed subtype: prevalence, viral RNA concentrations, and response to interferon therapy.	Toyoda, H and Fukuda, Y and Hayakawa, T and Takayama, T and Kumada, T and Nakano, S and Takamatsu, J and Saito, H	<u>Clin Infect Dis. 1998 Feb;26(2):440-5.</u>	Not about transmission route of HCV
18	PM-J041	E	A 20-year case study of a kidney transplant recipient with chronic active hepatitis C: clinical course and successful treatment for late acute rejection induced by interferon therapy.	Ichikawa, Y and Kyo, M and Hanafusa, T and Kohro, T and Kishikawa, H and Fukunishi, T and Nagano, S and Shinji, Y	<u>Transplantation. 1998 Jan 15;65(1):134-8.</u>	Not about transmission route of HCV
19	PM-J043	E	Role of screening for hepatitis C virus in children with malignant disease and who undergo bone marrow transplantation.	Tada, K and Tajiri, H and Kozaiwa, K and Sawada, A and Guo, W and Okada, S	<u>Transfusion. 1997 Jun;37(6):641-4.</u>	Not about transmission route of HCV
20	PM-J050	E	Epidemiology of HCV infection in the general population and in blood transfusion.	BottÃ©, C and Janot, C	<u>Nephrol Dial Transplant. 1996;11 Suppl 4:19-21.</u>	Review article
21	PM-J055	E	Detection of hepatitis C virus RNA in the ultrasonic dissector irrigating solution used in liver surgery.	Higashi, H and Matsumata, T and Hayashi, J and Yanaga, K and Shimada, M and Shirabe, K and Taketomi, A and Kashiwagi, S and Sugimachi, K	<u>Br J Surg. 1994 Sep;81(9):1346-7.</u>	Not about transmission route of HCV
22	PM-J065	E	Hepatitis C and hepatitis B in the etiology of hepatocellular carcinoma in the Japanese population.	Tanaka, K and Hirohata, T and Koga, S and Sugimachi, K and Kanematsu, T and Ohryohji, F and Nawata, H and Ishibashi, H and Maeda, Y and Kiyokawa, H	<u>Cancer Res. 1991 Jun 1;51(11):2842-7.</u>	Not about transmission route of HCV

23	PM-J067	J	[Transfusion-transmitted diseases].	Shimoyama, Ryushi	[Hokkaido igaku zasshi] The Hokkaido journal of medical science	Review article
24	PM-J068	J	[HCV infection in medical environments].	Yano, K and Yatsuhashi, H and Yano, M	Rinsho byori. The Japanese journal of clinical pathology	Review article
25	PM-J069	J	[Viral hepatitis in hemodialysis patients].	Yanai, M	Rinsho byori. The Japanese journal of clinical pathology	Not about transmission route of HCV
26	PM-J070	J	[Hepatitis C: epidemiology and therapy--with special reference to long-term prognosis after IFN therapy].	Fujiyama, S and Tanaka, M	Rinsho byori. The Japanese journal of clinical pathology	Not about transmission route of HCV
27	PM-J072	J	[The blood-born viral infections].	Nakamura, Y	Rinsho byori. The Japanese journal of clinical pathology	Not about transmission route of HCV
28	PM-J073	J	[The basics for establishing a needlestick injury prevention program in hospitals].	Kidouchi, K and Kashiwamata, M and Nakamura, C and Katoh, T and Mizuno, Y and Watanabe, S	Kansenshogaku zasshi. The Journal of the Japanese Association for Infectious Diseases	Not about transmission route of HCV
29	PM-J074	J	[The screening of hepatitis virus and its efficacy].	Kuroki, T and Murai, J and Fujino, K and Ozaki, S and Nakagishi, M and Toukaiya, M	Rinsho byori. The Japanese journal of clinical pathology	Not about transmission route of HCV
30	PM-J075	J	[Epidemiological study of hepatitis B and C virus in Okinawa and Kyushu, Japan].	Kashiwagi, S	Rinsho byori. The Japanese journal of clinical pathology	Not about transmission

						route of HCV
31	PM-J077	J	[Sexually transmitted disease infection in HIV carriers].	Ishikawa, K and Takebe, Y and Kishimoto, R and Kurata, T and Kawana, T	Kansenshogaku zasshi. The Journal of the Japanese Association for Infectious Diseases	Not about transmission route of HCV
32	PM-J078	J	[Hepatitis virus C infection in children].	Miyoshi, Y and Tajiri, H	Nihon rinsho. Japanese journal of clinical medicine	Review article
33	PM-J081	J	[Hepatitis C virus infection as a sexually transmitted disease].	Kato, Hideaki and Mizokami, Masashi	Nihon rinsho. Japanese journal of clinical medicine	Review article
34	PM-J082	J	[HCV infection among narcotics/methamphetamine abusers].	Wada, Kiyoshi	Nihon rinsho. Japanese journal of clinical medicine	Review article
35	IC-J001	J	〔非 A 非 B 型肝炎の臨床と予防〕非 A 非 B 型肝炎の感染経路と予防	飯野 四郎(東京大学 第 1 内科)	日本臨床(0047-1852)46 卷 12 号 Page2729-2734(1988.12)	Review article
36	IC-J002	J	非 A 非 B 型肝炎の感染経路	志方 俊夫(日本大学 第 1 病理)	日本臨床(0047-1852)46 卷増刊 Page737-740(1988.02)	Review article
37	IC-J003	J	HCV 母子感染例における HCV 粒子浮遊密度の変化(英語)	Okamoto Manabu(鳥取大学 医 小児科), Nagata Ikuo, Murakami Jun, Hino Shigeo, Shiraki Kazuo	Pediatrics International(1328-8067)41 卷 4 号 Page369-373(1999.08)	Not about transmission route of HCV
38	IC-J008	J	HCV 母子感染例における NS5A 領域の変異と IFN 感受性に関する検討	田原 卓浩(国立大蔵病院), 向出 雅一, 山内 寿靖, 他	日本小児栄養消化器病学会 雜誌 11 卷 2 号 Page157-160(1997.10)	Not about transmission route of HCV
39	IC-J009	J	B 型,C 型及び非 B 非 C 型の各種慢性肝疾患	小島 真樹(相川内科病院), 金澤 一也,	肝臓(0451-4203)38 卷 9 号	Other viral

			者における HGV の感染頻度と感染経路	袴田 拓, 他	Page535-540(1997.09)	hepatitis
40	IC-J011	J	妊婦における HCV 浮遊密度の検討	岡本 学(鳥取大学 小児科), 村上 潤, 細田 淑人, 他	肝臓(0451-4203)38巻2号 Page109-110(1997.02)	Not about trasmission route of HCV
41	IC-J018	J	献血者由来の C 型肝炎ウイルス(HCV)キャリアの分析 痘学的並びに臨床病理学的側面から	霜山 竜志(北海道赤十字血液センター), 木本 知子, 伊原 弘美, 他	日本輸血学会雑誌(0546-1448)40巻3号 Page454-459(1994.08)	Not about trasmission route of HCV
42	IC-J021	J	PCR 法による血清及び唾液中の HCV RNA の検出頻度の比較	小松 文夫(東京医科歯科大学 輸血), 刈谷 由子	日本輸血学会雑誌(0546-1448)39巻4号 Page760-765(1993.08)	Not about trasmission route of HCV
43	IC-J024	J	肝がん対策としての肝炎ウイルス対策 B 型肝炎ウイルス母子感染の予防と輸血後非A非B型肝炎の予防	吉沢 浩司(広島大学 衛生)	癌の臨床(0021-4949)39巻4号 Page415-421(1993.03)	Not about trasmission route of HCV
44	IC-J030	J	C 型肝炎の感染経路	矢野 右人(国立長崎中央病院), 猪口 薫	医学のあゆみ(0039-2359)161巻5号 Page321-324(1992.05)	Review article
45	IC-J031	J	島根県八束町における HCV 抗体の疫学調査	周防 武昭(鳥取大学 第2内科), 生田 裕次郎, 長谷川 真弓, 他	日本消化器病学会雑誌(0446-6586)89巻4号 Page1173-1178(1992.04)	Not about trasmission route of HCV
46	IC-J034	J	C 型肝炎の輸血外感染経路	田中 栄司(信州大学 第2内科), 古田 精市	日本臨床(0047-1852)49巻2号 Page351-356(1991.02)	Review article
47	IC-J035	J	Direct-acting antivirals 治療例における C 型肝炎ウイルス感染経路の検討 再感染リスク	湯川 芳美(大阪市立大学 大学院医学研究科肝胆膵病態内科学), 田守 昭博, 寺	肝臓(0451-4203)58巻8号 Page435-440(2017.08)	Not about trasmission route

			を踏まえて	西 優雅, 元山 宏行, 小塚 立蔵, 川村 悅史, 萩原 淳司, 打田 佐和子[小林], 森川 浩安, 榎本 大, 村上 善基, 福島 若葉, 河田 則文		of HCV
48	IC-J036	J	水戸市の一病院におけるC型慢性肝疾患患者の感染時期別・感染経路別のHCV genotypeの検討	相川 達也(相川内科病院), 津田 文男, 堀江 薫, 大西 浩史, 岡本 宏明	肝臓(0451-4203)58巻5号 Page307-309(2017.05)	Not about transmission route of HCV
49	IC-J038	J	水戸地域の一病院におけるC型慢性肝疾患患者の年代別のHCVセログループと感染経路の検討	相川 達也(相川内科病院), 上野 ちさと, 菊池 陽子, 津田 文男, 岡本 宏明	肝臓(0451-4203)56巻6号 Page303-305(2015.06)	Not about transmission route of HCV
50	IC-J040	J	帝王切開術はC型肝炎ウイルス母子感染予防に有効か?	衣笠 万里(尼崎医療生協病院 産婦人科), 玉井 華子, 卜 祖平, 清水 順, 神崎 徹	日本周産期・新生児医学会雑誌(1348-964X)49巻3号 Page925-930(2013.09)	Review article
51	IC-J045	J	C型肝炎ウイルスの真の母児感染率の再評価及び著者等の二つの前方視的研究の結果に基づいた新しいリスク因子	Hayashida Ayako(獨協医科大学 医学部産婦人科), Inaba Noriyuki, Oshima Kyoko, Nishikawa Masayoshi, Shoda Akiko, Hayashida Shihou, Negishi Masami, Inaba Fujiyuki, Inaba Michiyo, Fukasawa Ichio, Watanabe Hiroshi, Takamizawa Hiroyoshi	The Journal of Obstetrics and Gynaecology Research(1341-8076)33巻4号 Page417-422(2007.08)	Not about transmission route of HCV
52	IC-J049	J	【ウイルス性肝炎 基礎・臨床研究の進歩】C型肝炎ウイルス(HCV) 感染経路と予防対策 医療機関におけるHCV感染 C型肝炎針刺傷直後のIFN投与の有効性	鄭 浩柄(近畿大学 医学部消化器内科), 工藤 正俊	日本臨床(0047-1852)62巻増刊7 ウイルス性肝炎(上) Page315-318(2004.07)	Not about transmission route of HCV

53	IC-J050	J	針刺傷後の HCV 感染の危険と医療従事者の HCV 感染を予防するための短期インターフェロン(IFN)投与の有効性	Chung Hobyung(近畿大学 医 消化器内科 ), Kudo Masatoshi, Kumada Takashi, Katsushima Shinji, Okano Akihiro, Nakamura Takefumi, Osaki Yukio, Kohigashi Katsuji, Yamashita Yukitaka, Komori Hideshi, Nishiuma Shinichi	Journal of Gastroenterology(0944-1174)38 卷 9 号 Page877-879(2003.09)	Not about trasmission route of HCV
54	IC-J052	J	急性ウイルス性肝炎の臨床的検討 第 2 内科入院例について	毛 克弘(東邦大学 第 2 内科), 杉本 元信, 定本 貴明, 他	東邦医学会雑誌(0040-8670)33 卷 1 号 Page42-49(1986.05)	Not about trasmission route of HCV
55	IC-J053	J	全国の訪問看護師の血液・体液曝露の実態と今後の課題	渋谷 智恵(日本看護協会看護研修学校認定看護師教育課程感染管理学科)	日本環境感染学会誌(1882-532X)27 卷 6 号 Page380-388(2012.11)	Not about trasmission route of HCV
56	IC-J054	J	院内における HCV 抗体陽性血液への暴露事故及び予防的単回インターフェロンアルファ 2b 療法	Nukaya Haruhiko(社会保険中京病院 消化器科), Ohno Tomoyoshi, Sakakibara Kenji, Kato Atunaga, Hasegawa Izumi, Matunaga Seijiro, Endo Masayuki, Tanaka Yoshito, Hirashima Noboru, Tanaka Yasuhito, Orito Etsuro, Joh Takashi, Mizokami Masashi	Hepatology Research(1386-6346)37 卷 3 号 Page179-185(2007.03)	Not about trasmission route of HCV
57	IC-J055	J	京都第一赤十字病院総合周産期母子医療センターにおける母子感染例とその検討	藤原 葉一郎(京都市立病院 産婦人科), 中田 好則, 山田 俊夫, 山木 淳子, 伊藤 良治, 楠木 泉, 山本 浩之, 桧垣 仁美, 加藤 聖子, 光藤 伸人, 木原 美奈子, 中川 由美, 中林 佳信, 中内 昭平,	京都医学会雑誌(0453-0039)53 卷 2 号 Page37-43(2006.12)	Other viral hepatitis

				徳弘 由美子, 吉田 朋子		
58	IC-J056	J	C 型肝炎ウイルス(HCV)の超可変領域における変異に関する検討 母児感染をきたした 2 症例における長期経過観察から	Ishii Tsutomu(福島県立医科大学 医学部 小児科学), Ohto Hitoshi, Takeuchi Chikako, Ariga Hiromichi, Hirai Shigeru, Ujiie Niro, Suzuki Hitoshi, Okamoto Hiroaki	Pediatrics International(1328-8067)47 卷 3 号 Page278-285(2005.06)	Not about trasmission route of HCV
59	IC-J057	J	当院の誤刺発生状況と対応策	丹羽 鏡子(刈谷総合病院 臨床検査科), 酒井 昭嘉, 安田 誠	医学検査(0915-8669)55 卷 1 号 Page56-58(2006.01)	Not about trasmission route of HCV
60	IC-J058	J	HCV 抗体測定の意義と感染経路(3)	笹田 瞳美(神奈川歯科大学 臨病理), 木村 友七, 岩宮 万里子, 他	神奈川歯学(0454-8302)26 卷 4 号 Page426-430(1992.03)	Not about trasmission route of HCV
61	IC-J062	J	鍼治療と B 型・C 型肝炎感染に関する文献レビュー	古瀬 暢達(大阪府立大阪南視覚支援学校), 内野 容子, 山下 仁	全日本鍼灸学会雑誌(0285-9955)66 卷 3 号 Page166-179(2016.08)	Review article
62	IC-J064	J	HCV 母子感染 HCV-RNA 自然陰性化群と持続陽性群の臨床的比較	大和 靖彦(久留米大学 小児科), 木村 昭彦, 中嶋 英輔, 前田 公史, 熊谷 優美, 松石 豊次郎	日本小児栄養消化器肝臓学会雑誌(1346-9037)18 卷 1 号 Page11-14(2004.06)	Not about trasmission route of HCV
63	IC-J065	J	C 型急性肝炎に対するインターフェロン治療の検討	小西 一郎(愛媛大学 第 3 内科), 堀池 典生, 河相 恵子, 熊木 天児, 道堯 浩二郎, 田中 美和, 加藤 壽一, 恩地 森一	肝臓(0451-4203)44 卷 3 号 Page103-108(2003.03)	Not about trasmission route of HCV
64	IC-J067	J	【ウイルス性肝炎 基礎・臨床研究の進歩】 C 型肝炎ウイルス(HCV) 感染経路と予防対策 医療機関における HCV 感染 血友病患者	瀬戸 良文(兵庫医科大学 総合内科), 日笠 聰, 中村 秀次, 波田 壽一	日本臨床(0047-1852)62 卷増刊 7 ウイルス性肝炎(上) Page323-325(2004.07)	Not about trasmission route of HCV

			における HCV 感染 HIV 重複感染の影響も含めて			
65	IC-J077	J	Reverse transcription-nested PCR 法 genotyping により C 型肝炎ウイルス(HCV)・遺伝子型が同定された母子例についての考察	横田 俊平(横浜市立大学 小児科), 馬衛, 清水 広子, 他	日本小児科学会雑誌(0001-6543)98巻6号 Page1186-1192(1994.06)	Not about trasmission route of HCV
66	IC-J083	J	当院におけるアルコール性肝障害について特に HCV 抗体との関連について	林 純一(広島市民病院(社保)), 井上 純一, 中浜 一, 他	社会保険広島市民病院医誌(0911-1077)8巻1号 Page28-33(1992.10)	Not about trasmission route of HCV
67	IC-J086	J	インターフェロン併用集学的治療を行った C 型急性肝炎の 2 例	岩下 英之(福岡大学 医学部消化器内科), 駄迦堂 敏, 西澤 新也, 久能 志津香, 松本 照雄, 國本 英雄, 四本 かおる, 福永 篤志, 櫻井 邦俊, 平野 玄竜, 上田 秀一, 横山 圭二, 森原 大輔, 坂本 雅晴, 阿南 章, 竹山 康章, 入江 真, 岩田 郁, 大田 和弘, 早田 哲郎, 井上 和明, 与芝 真彰, 向坂 彰太郎	肝臓(0451-4203)53巻2号 Page101-108(2012.02)	Not about trasmission route of HCV
68	IC-J093	J	C 型肝炎ウイルスの母児感染(原著論文)	白木 和夫(鳥取大学 小児科), 長田 郁夫, 原田 友一郎, 他	犬山シンポジウム 17 回 Page65-69(1992.06)	Review article
69	IC-J095	J	OB-GYN ウィルス感染 C 型肝炎ウイルスの感染経路 母子感染を中心として(原著論文)	小島 俊行(焼津市立総合病院), 菊池 昭彦, 板倉 称, 他	産婦人科の実際 (0558-4728)42巻5号 Page717-725(1993.05)	Review article
70	IC-J096	J	C 型肝炎の対策と新しい展望 C 型肝炎の経路をめぐるアプローチ 性行為感染(原著論文)	溝上 雅史(名古屋市立大学 医 第 2 内科)	INFECTION CONTROL (0919-1011)4巻2号 Page170-	Review article

					173(1995.04)	
71	IC-J097	J	C型肝炎の対策と新しい展望 C型肝炎の経路をめぐるアプローチ 腎透析による感染(原著論文)	三井 健宏(増子記念病院), 増子 和郎	INFECTION CONTROL (0919-1011)4巻2号 Page154-158(1995.04)	Review article
72	IC-J098	J	C型肝炎ウイルスの感染経路とその予防戦略(原著論文)	田中 栄司(信州大学 第2内科)	看護技術 (0449-752X)39巻8号 Page784-788(1993.06)	Review article
73	IC-J099	J	C型肝炎ウイルスの感染経路 小児期を中心に(原著論文)	長田 郁夫(鳥取大学 小児科), 岡本学, 梶 俊策, 他	肝・胆・膵 (0389-4991)30巻5号 Page815-823(1995.05)	Review article
74	IC-J100	J	妊娠のHCV抗体とHCV母子感染(原著論文)	長田 郁夫(鳥取大学 小児科), 白木 和夫	産婦人科の実際 (0558-4728)41巻7号 Page905-912(1992.07)	Review article
75	IC-J101	J	C型肝炎ウイルスの母子感染(原著論文)	長田 郁夫(鳥取大学 小児科), 白木 和夫	Pharma Medica (0289-5803)10巻10号 Page99-104(1992.10)	Review article
76	IC-J102	J	産婦人科感染症 HCVの母子感染(原著論文)	長田 郁夫(鳥取大学 小児科), 白木 和夫	産婦人科の実際 (0558-4728)41巻5号 Page601-607(1992.05)	Review article
77	IC-J104	J	HCVの感染経路 医療従事者とC型肝炎ウイルス感染(原著論文)	清沢 研道(信州大学 第2内科), 小口 寿夫, 袖山 健, 他	肝・胆・膵 (0389-4991)24巻1号 Page31-34(1992.01)	Review article
78	IC-J105	J	C型肝炎ウイルス HCV母子感染 その頻度と要因(原著論文)	長田 郁夫(鳥取大学 小児科), 飯塚 俊之, 白木 和夫	肝・胆・膵 (0389-4991)26巻1号 Page63-69(1993.01)	Review article
79	IC-J106	J	C型肝炎の対策と新しい展望 C型肝炎の経路をめぐるアプローチ 母子感染(原著論文)	守屋 尚(広島大学 衛生), 佐々木 富美子, 大野 尚文, 他	INFECTION CONTROL (0919-1011)4巻2号 Page164-	Review article

					169(1995.04)	
80	IC-J107	J	小児期における B・C 型肝炎研究の現状 C 型肝炎ウイルスの家族内感染(原著論文)	守屋 尚(広島大学 衛生), 中西 敏夫, 大野 尚文, 他	小児内科 (0385-6305)27巻4号 Page545-548(1995.04)	Review article
81	IC-J108	J	[Hepatitis C virus infection as a sexually transmitted disease].	Kato, Hideaki and Mizokami, Masashi	Nihon rinsho. Japanese journal of clinical medicine	Review article
82	IC-J109	J	[HCV infection among narcotics/methamphetamine abusers].	Wada, Kiyoshi	Nihon rinsho. Japanese journal of clinical medicine	Review articlez

**Systematic review and meta-analysis on the HCV transmission route in USA**  
**List of excluded articles**

No.	ID	Title	Authors	Details	Reason for exclusion
1.	PM-U003	Post-transfusion viral hepatitis and the TTVs.	Holland, P V and Bancroft, W and Zimmerman, H	<a href="#">N Engl J Med. 1981 Apr 23;304(17):1033-5.</a>	Review article
2.	PM-U015	Viral hepatitis in health care personnel at The Johns Hopkins Hospital. The seroprevalence of and risk factors for hepatitis B virus and hepatitis C virus infection.	Thomas, D L and Factor, S H and Kelen, G D and Washington, A S and Taylor, E and Quinn, T C	<a href="#">Arch Intern Med. 1993 Jul 26;153(14):1705-12.</a>	Not about transmission route
3.	PM-U017	Community acquired viral hepatitis B and C in the United States.	Alter, M J	<a href="#">Gut. 1993;34(2 Suppl):S17-9</a>	Not about transmission route
4.	PM-U018	Incidence and prevalence of human immunodeficiency virus, hepatitis B virus, hepatitis C virus, and cytomegalovirus among health care personnel at risk for blood exposure: final report from a longitudinal study.	Gerberding, J L	<a href="#">J Infect Dis. 1994 Dec;170(6):1410-7.</a>	Not about transmission route
5.	PM-U020	Outbreak of hepatitis C associated with intravenous immunoglobulin administration--United States, October 1993-June 1994.	Centers for Disease Control and Prevention (CDC), [Collective Name]	<a href="#">JAMA. 1994 Aug 10;272(6):424-5.</a>	Review article

6.	PM-U026	Seroprevalence of human immunodeficiency virus-1, hepatitis B virus, and hepatitis C virus in patients having major surgery.	Montecalvo, M A and Lee, M S and DePalma, H and Wynn, P S and Lowenfels, A B and Jorde, U and Wuest, D and Klingaman, A and O'Brien, T A and Calmann, M	Infect Control Hosp Epidemiol. 1995 Nov;16(11):627-32.	Not about transmission route
7.	PM-U028	Detection of hepatitis C virus with RNA polymerase chain reaction in fulminant hepatic failure.	Villamil, F G and Hu, K Q and Yu, C H and Lee, C H and Rojter, S E and Podesta, L G and Makowka, L and Geller, S A and Vierling, J M	Hepatology. 1995 Nov;22(5):1379-86.	Not about transmission route
8.	PM-U030	Occupational risk of human immunodeficiency virus, hepatitis B virus, and hepatitis C virus infections among funeral service practitioners in Maryland.	Gershon, R R and Vlahov, D and Farzadegan, H and Alter, M J	Infect Control Hosp Epidemiol. 1995 Apr;16(4):194-7.	Not about transmission route
9.	PM-U033	Sexual, vertical and household transmission of hepatitis C.	Caldwell, S H and Dickson, R C and Driscoll, C and Sue, M	<a href="#">Va Med Q. 1995 Fall;122(4):270-4.</a>	Review article
10.	PM-U036	High incidence of hepatitis C virus infection in hemodialysis patients in units with high prevalence.	Pujol, F H and Ponce, J G and Lema, M G and Capriles, F and Devesa, M and Sirit, F and Salazar, M and VÃisquez, G and Monsalve, F and Blitz-Dorfman, L	J Clin Microbiol. 1996 Jul;34(7):1633-6.	Not in USA
11.	PM-U038	The risk of B51:U51f transfusion-transmitted viral infections. The Retrovirus Epidemiology Donor Study.	Schreiber, G B and Busch, M P and Kleinman, S H and Korelitz, J J	N Engl J Med. 1996 Jun 27;334(26):1685-90.	Not about transmission route

12.	PM-U043	Potential increased risk of virus transmission due to exclusion of older donors because of concern over Creutzfeldt-Jakob disease. The National Heart, Lung, and Blood Institute Retrovirus Epidemiology Donor Study.	Busch, M P and Glynn, S A and Schreiber, G B	<a href="#">Transfusion. 1997 Oct;37(10):996-1002.</a>	Not about transmission route
13.	PM-U044	Sex, drugs, and infections among youth. Parenterally and sexually transmitted diseases in a high-risk neighborhood.	Friedman, S R and Curtis, R and Jose, B and Neaigus, A and Zenilman, J and Culpepper-Morgan, J and Borg, L and Kreek, J and Paone, D and Des Jarlais, D C	Sex Transm Dis. 1997 Jul;24(6):322-6.	Not about transmission route
14.	PM-U045	Hepatitis C infection in patients undergoing liver retransplantation.	Rosen, H R and Martin, P	<a href="#">Transplantation. 1998 Dec 27;66(12):1612-6.</a>	Not about transmission route
15.	PM-U051	The occupational risk to dental anesthesiologists of acquiring 3 bloodborne pathogens.	Suljak, J P and Leake, J L and Haas, D A	<a href="#">Anesth Prog. 1999 Spring;46(2):63-70.</a>	Not about transmission route
16.	PM-U055	Mother-infant hepatitis C transmission: second generation research.	Thomas, D L	<a href="#">Hepatology. 1999 Mar;29(3):992-3.</a>	Review article
17.	PM-U056	The multiperson use of non-syringe injection equipment and risk of hepatitis c infection in a cohort of young adult injection drug users, chicago 1997-1999.	Thorpe, [Collective Name] and Ouellet, [Collective Name] and Hershow, [Collective Name] and Bailey, [Collective Name] and Williams, [Collective Name] and Monerosso, [Collective Name]	Ann Epidemiol. 2000 Oct 1;10(7):472-473.	Not about transmission route

18	PM-U064	Hepatitis C virus RNA (HCV-RNA) in blood donors and family members seropositive for anti-HCV antibodies.	Alvarez-Muñoz, M T and Vences-Aviles, M A and Damacio, L and Vázquez-Rosales, G and Torres, J and González-Bravo, F and Muñoz, O	Arch Med Res. 2001 Sep-Oct;32(5):442-5.	Not in USA
19	PM-U069	Risk of infection from needle reuse at a phlebotomy center.	Porco, T C and Aragón, T J and Fenyak, S E and Cody, S H and Vugia, D J and Katz, M H and Bangsberg, D R	<a href="#">Am J Public Health. 2001 Apr;91(4):636-8.</a>	Not about transmission route
20	PM-U086	Hepatitis C virus infection among noninjecting drug users in New York City.	Koblin, Beryl A and Factor, Stephanie H and Wu, Yingfeng and Vlahov, David	J Med Virol. 2003 Jul;70(3):387-90.	Not about transmission route
21	PM-U089	Intrafamilial transmission of hepatitis C virus in patients with hepatitis C and human immunodeficiency virus coinfection.	Keiserman, Daniela R and Both, Cristiane T and Mattos, Angelo A and Remiao, Jose and Alexandre, Claudio O P and Sherman, Kenneth E	<a href="#">Am J Gastroenterol. 2003 Apr;98(4):878-83</a>	Not in USA
22	PM-U090	Transmission of HIV and hepatitis C virus from a nursing home patient to a health care worker.	Beltrami, Elise M and Kozak, Anne and Williams, Ian T and Saekhou, Ae M and Kalish, Marcia L and Nainan, Omana V and Stramer, Susan L and Fucci, Mei-Chen H and Frederickson, Debra and Cardo, Denise M	Am J Infect Control. 2003 May;31(3):168-75.	Not about transmission route
23	PM-U091	Hepatitis C virus transmission from an antibody-negative organ and tissue donor--United States, 2000-2002.	Centers for Disease Control and Prevention (CDC), [Collective Name]	<a href="#">MMWR Morb Mortal Wkly Rep. 2003 Apr 4;52(13):273-4, 276.</a>	Review article

24	PM-U096	Correlates of hepatitis C virus infection in homeless men: a latent variable approach.	Stein, Judith A and Nyamathi, Adeline	Drug Alcohol Depend. 2004 Jul 15;75(1):89-95.	Not about transmission route
25	PM-U098	How great is the risk of transmitting the hepatitis C virus sexually?	Collantes, Rochelle S and Younossi, Zobair M	Cleve Clin J Med. 2004 Feb;71(2):160-1.	Not about transmission route
26	PM-U100	Sexually transmitted disease/HIV risk behaviour among women who have sex with women.	Pinto, Valdir Monteiro and Tancredi, Mariza Vono and Tancredi Neto, Antonio and Buchalla, CÃ¡ssia Maria	<a href="#">AIDS. 2005 Oct;19 Suppl 4:S64-9.</a>	Not in USA
27	PM-U105	Lack of evidence of sexual transmission of hepatitis C virus in a prospective cohort study of men who have sex with men.	Alary, Michel and Joly, Jean R and Vinclette, Jean and Lavoie, RenÃ© and Turmel, Bruno and Remis, Robert S	<a href="#">Am J Public Health. 2005 Mar;95(3):502-5.</a>	Not in USA
28	PM-U112	A longitudinal investigation into excess risk for blood-borne infection among young injection drug users (IUDs).	Miller, Cari L and Strathdee, Steffanie A and Li, Kathy and Kerr, Thomas and Wood, Evan	<a href="#">Am J Drug Alcohol Abuse. 2007;33(4):527-36</a>	Not in USA
29	PM-U115	Hepatitis-C prevalence in an urban native-American clinic: a prospective screening study.	Neumeister, Amy S and Pilcher, LaVada E and Erickson, Judi M and Langley, Lora L and Murphy, Mary M and Haukaas, Nicole M and Mailliard, Mark E and Larsen, Jennifer L	<a href="#">J Natl Med Assoc. 2007 Apr;99(4):389-92.</a>	Not about transmission route
30	PM-U116	Sexual and other noninjection risks for HBV and HCV seroconversions among noninjecting heroin users.	Neagius, Alan and Gyarmathy, V Anna and Zhao, Mingfang and Miller, Maureen and Friedman, Samuel R and Des Jarlais, Don C	<a href="#">J Infect Dis. 2007 Apr 1;195(7):1052-61. Epub 2007 Feb 23.</a>	Not about transmission route

31	PM-U119	Co-infection of hepatitis B and hepatitis C virus in human immunodeficiency virus-infected patients in New York City, United States.	Kim, Jong-Hun and Psevdos, George and Suh, Jin and Sharp, Victoria-Lee	World J Gastroenterol. 2008 Nov 21;14(43):6689-93.	Not about transmission route
32	PM-U121	Epidemiology of HCV infection.	Baldo, V and Baldovin, T and Trivello, R and Floreani, A	Curr Pharm Des. 2008;14(17):1646-54.	Not in USA
33	PM-U122	Sexual transmission is associated with spontaneous HCV clearance in HIV-infected patients.	Shores, Nathan J and Maida, Ivana and Soriano, Vincent and Núñez, Marina	J Hepatol. 2008 Sep;49(3):323-8. doi: 10.1016/j.jhep.2008.04.010. Epub 2008 May 5	Not about transmission route
34	PM-U130	Risk behaviors after hepatitis C virus seroconversion in young injection drug users in San Francisco.	Tsui, Judith I and Vittinghoff, Eric and Hahn, Judith A and Evans, Jennifer L and Davidson, Peter J and Page, Kimberly	Drug Alcohol Depend. 2009 Nov 1;105(1-2):160-3. doi: 10.1016/j.drugalcdep.2009.05.022. Epub 2009 Jul 31.	Not about transmission route
35	PM-U131	Transplantation of high-risk donor organs: a survey of US solid organ transplant center practices as reported by transplant infectious diseases physicians.	Ison, Michael G and Stosor, Valentina	<a href="#">Clin Transplant. 2009 Nov-Dec;23(6):866-73.</a> doi: <a href="https://doi.org/10.1111/j.1399-0012.2009.00997.x">10.1111/j.1399-0012.2009.00997.x</a> . Epub 2009 May 18	Not HCV
36	PM-U134	Rates of first infection following kidney transplant in the United States.	Snyder, Jon J and Israni, Ajay K and Peng, Yi and Zhang, Lin and Simon, Teresa A and Kasiske, Bertram L	Kidney Int. 2009 Feb;75(3):317-26. doi: 10.1038/ki.2008.580. Epub 2008 Nov 19.	Not about transmission route

37	PM-U135	Prevalence of hepatitis C virus infection among health-care workers: A 10-year survey.	Marconi, Andrea and Candido, Saverio and Talamini, Renato and Libra, Massimo and Nicoletti, Ferdinando and Spandidos, Demetrios A and Stivala, Franca and Proietti, Lidia	Mol Med Rep. 2010 Jul-Aug;3(4):561-4. doi: 10.3892/mmr_00000297.	Not in USA
38	PM-U136	Epidemic of Sexually Transmitted Hepatitis C Virus Infection Among HIV-Infected Men.	Fierer, Daniel Seth	Curr Infect Dis Rep. 2010 Mar;12(2):118-25. doi: 10.1007/s11908-010-0088-1.	Review article
39	PM-U137	Hepatitis C virus: molecular and epidemiological evidence of male-to-female transmission.	Cavalheiro, Norma de Paula and La Rosa, Abel de and Elagin, Slava and Tengan, Fatima Mitiko and Barone, Antonio Alci	Braz J Infect Dis. 2010 Sep-Oct;14(5):427-32.	Not in USA
40	PM-U138	Management of hepatitis C virus infection in childhood.	Galoppo, Marcela and Galoppo, Cristina	Ann Hepatol. 2010;9 Suppl:98-102.	Not about transmission route
41	PM-U139	Is sexual contact a major mode of hepatitis C virus transmission?	Tohme, Rania A and Holmberg, Scott D	Hepatology. 2010 Oct;52(4):1497-505. doi: 10.1002/hep.23808.	Review article
42	PM-U140	Current risks of occupational blood-borne viral infection.	Mohebati, Arash and Davis, John Mihran and Fry, Donald E	Surg Infect (Larchmt). 2010 Jun;11(3):325-31. doi: 10.1089/sur.2010.025.	Review article
43	PM-U141	Hepatitis C virus risk behaviors within the partnerships of young injecting drug users.	Hahn, Judith A and Evans, Jennifer L and Davidson, Peter J and Lum, Paula J and Page, Kimberly	Addiction. 2010 Jul;105(7):1254-64. doi: 10.1111/j.1360-0443.2010.02949.x. Epub 2010	Not about transmission route

				May 14.	
44	PM-U143	Retrospective review of serological testing of potential human milk donors.	Cohen, Ronald S and Xiong, Sean C and Sakamoto, Pauline	Arch Dis Child Fetal Neonatal Ed. 2010 Mar;95(2):F118-20. doi: 10.1136/adc.2008.156471	Not about transmission route
45	PM-U144	Health care workers as source of hepatitis B and C virus transmission.	Carlson, Abigail L and Perl, Trish M	Clin Liver Dis. 2010 Feb;14(1):153-68; x. doi: 10.1016/j.cld.2009.11.003.	Review article
46	PM-U145	Infection control guidelines for prevention of health care-associated transmission of hepatitis B and C viruses.	Michelin, Angela and Henderson, David K	Clin Liver Dis. 2010 Feb;14(1):119-36; ix-x. doi: 10.1016/j.cld.2009.11.005.	Review article
47	PM-U146	Health care-associated transmission of hepatitis B & C viruses in dental care (dentistry).	Younai, Fariba S	Clin Liver Dis. 2010 Feb;14(1):93-104; ix. doi: 10.1016/j.cld.2009.11.010.	Review article
48	PM-U148	Surveillance snapshot: service members with hepatitis B, hepatitis C, and HIV-1, active component, U.S. Armed Forces.	Armed Forces Health Surveillance Center (AFHSC), [Collective Name]	MSMR. 2011 Aug;18(8):23.	Not about transmission route
49	PM-U150	Maternal hepatitis B and hepatitis C carrier status and perinatal outcomes.	Connell, Laura E and Salihu, Hamisu M and Salemi, Jason L and August, Euna M and Weldelesasse, Hanna and Mbah, Alfred K	Liver Int. 2011 Sep;31(8):1163-70. doi: 10.1111/j.1478-3231.2011.02556.x. Epub 2011 Jun 7.	Not about transmission route

50	PM-U151	Do rates of unprotected anal intercourse among HIV-positive MSM present a risk for hepatitis C transmission?	Stall, Ron and Wei, Chongyi and Raymond, H Fisher and McFarland, Willi	Sex Transm Infect. 2011 Aug;87(5):439-41. doi: 10.1136/sti.2010.048223. Epub 2011 Jun 8	Not about transmission route
51	PM-U153	Estimated risk of human immunodeficiency virus and hepatitis C virus infection among potential organ donors from 17 organ procurement organizations in the United States.	Ellingson, K and Seem, D and Nowicki, M and Strong, D M and Kuehnert, M J and Organ Procurement Organization Nucleic Acid Testing Yield Project Team, [Collective Name]	Am J Transplant. 2011 Jun;11(6):1201-8. doi: 10.1111/j.1600-6143.2011.03518.x	Not about transmission route
52	PM-U154	Hepatitis C virus infection among adolescents and young adults:Massachusetts, 2002-2009.	Centers for Disease Control and Prevention (CDC), [Collective Name]	MMWR Morb Mortal Wkly Rep. 2011 May 6;60(17):537-41.	Not about transmission route
53	PM-U159	Screening for Hepatitis C Virus Infection in Adults	Chou, Roger and Cottrell, Erika Barth and Wasson, Ngoc and Rahman, Basmah and Guise, Jeanne-Marie	Rockville (MD): Agency for Healthcare Research and Quality (US); 2012 Nov. Report No.: 12(13)-EHC090-EF.	Review article
54	PM-U160	Transfusion transmission of HCV, a long but successful road map to safety.	Selvarajah, Suganya and Busch, Michael P	Antivir Ther. 2012;17(7 Pt B):1423-9. doi: 10.3851/IMP2459. Epub 2012 Dec 7.	Not about transmission route
55	PM-U162	Evolving epidemiology of hepatitis C virus in the United States.	Klevens, R Monina and Hu, Dale J and Jiles, Ruth and Holmberg, Scott D	Clin Infect Dis. 2012 Jul;55 Suppl 1:S3-9. doi: 10.1093/cid/cis393.	Not about transmission route
56	PM-U164	Transmission of hepatitis C virus infection through tattooing and piercing: a critical review.	Tohme, Rania A and Holmberg, Scott D	Clin Infect Dis. 2012 Apr;54(8):1167-78. doi: 10.1093/cid/cir991. Epub 2012	Review article

				Jan 30	
57	PM-U165	Burden of pediatric hepatitis C.	El-Shabrawi, Mortada Hassan and Kamal, Naglaa Mohamed	World J Gastroenterol. 2013 Nov 28;19(44):7880-8. doi: 10.3748/wjg.v19.i44.7880.	Not about transmission route
58	PM-U166	Sexual transmission of viral hepatitis.	Gorgos, Linda	Infect Dis Clin North Am. 2013 Dec;27(4):811-36. doi: 10.1016/j.idc.2013.08.002. Epub 2013 Oct 31.	Review article
59	PM-U167	Injection drug use and hepatitis C virus infection in young adult injectors: using evidence to inform comprehensive prevention.	Page, Kimberly and Morris, Meghan D and Hahn, Judith A and Maher, Lisa and Prins, Maria	Clin Infect Dis. 2013 Aug;57 Suppl 2:S32-8. doi: 10.1093/cid/cit300.	Not about transmission route
60	PM-U168	Hepatitis C virus screening and management of seroconversions in hemodialysis facilities.	Mbaeyi, Chukwuma and Thompson, Nicola D	Semin Dial. 2013 Jul-Aug;26(4):439-46. doi: 10.1111/sdi.12097. Epub 2013 May 31	Not about transmission route
61	PM-U170	Incident hepatitis C virus infection in men who have sex with men: a prospective cohort analysis, 1984-2011.	Witt, Mallory D and Seaberg, Eric C and Darilay, Annie and Young, Stephen and Badri, Sheila and Rinaldo, Charles R and Jacobson, Lisa P and Detels, Roger and Thio, Chloe L	<a href="https://doi.org/10.1093/cid/cit197">Clin Infect Dis. 2013 Jul;57(1):77-84. doi: 10.1093/cid/cit197. Epub 2013 Mar 26.</a>	Not about transmission route
62	PM-U171	Reducing risk for mother-to-infant transmission of hepatitis C virus: a systematic review for the U.S.	Cottrell, Erika Barth and Chou, Roger and Wasson, Ngoc and Rahman,	<a href="https://doi.org/10.1093/annmed/med2012158">Ann Intern Med. 2013 Jan 15;158(2):109-13.</a>	Review article

		Preventive Services Task Force.	Basmah and Guise, Jeanne-Marie		
63.	PM-U174	Transfusion-transmissible infections among U.S. military recipients of emergently transfused blood products, June 2006-December 2012.	Ballard, Timothy and Rohrbeck, Patricia and Kania, Mindy and Johnson, Lucas A	MSMR Vol. 21 No. 11 November 2014	Not about transmission route
64.	PM-U173	Hepatitis C: prevalence, transmission, screening, and prevention.	Metts, Julius and Carmichael, Lesley and Kokor, Winfred and Scharffenberg, Robert	<a href="https://www.ncbi.nlm.nih.gov/pubmed/25478645">https://www.ncbi.nlm.nih.gov/pubmed/25478645</a>	Full text not available
65.	PM-U175	Intimate injection partnerships are at elevated risk of high-risk injecting: a multi-level longitudinal study of HCV-serodiscordant injection partnerships in San Francisco, CA.	Morris, Meghan D and Evans, Jennifer and Montgomery, Martha and Yu, Michelle and Briceno, Alya and Page, Kimberly and Hahn, Judith A	<a href="https://doi.org/10.1371/journal.pone.0109282">PLOS One. 2014 Oct 6;9(10):e109282. doi: 10.1371/journal.pone.0109282. eCollection 2014.</a>	Not about transmission route
66.	PM-U176	Risk for hepatitis B and C virus transmission in nail salons and barbershops and state regulatory requirements to prevent such transmission in the United States.	Yang, Jun and Hall, Keri and Nuriddin, Azizeh and Woolard, Diane	<a href="https://doi.org/10.1097/PHH.0000000000000042">J Public Health Manag Pract. 2014 Nov-Dec;20(6):E20-30. doi: 10.1097/PHH.0000000000000042</a>	Review article
67.	PM-U177	Concordance of risk behavior reporting within HCV serodiscordant injecting partnerships of young injection drug users in San Francisco, CA.	Evans, Jennifer L and Morris, Meghan D and Yu, Michelle and Page, Kimberly and Hahn, Judith A	<a href="https://doi.org/10.1016/j.drugalcdep.2014.06.028">Drug Alcohol Depend. 2014 Sep 1;142:239-44. doi: 10.1016/j.drugalcdep.2014.06.028. Epub 2014 Jul 4.</a>	Not about transmission route

68.	PM-U179	Hepatitis C virus infection among HIV-positive men who have sex with men: protocol for a systematic review and meta-analysis.	Hagan, Holly and Neurer, Joshua and Jordan, Ashly E and Des Jarlais, Don C and Wu, Jennifer and Dombrowski, Kirk and Khan, Bilal and Braithwaite, Ronald Scott and Kessler, Jason	<a href="#"><u>Syst Rev. 2014 Mar 26;3:31. doi: 10.1186/2046-4053-3-31.</u></a>	Not in USA
69.	PM-U182	Incidence of sexually transmitted hepatitis C virus infection in HIV-positive men who have sex with men.	Hagan, Holly and Jordan, Ashly E and Neurer, Joshua and Cleland, Charles M	<a href="#"><u>AIDS. 2015 Nov;29(17):2335-45. doi: 10.1097/QAD.0000000000000834.</u></a>	Review article
70.	PM-U183	Factors Associated With Hepatitis C Infection Among HIV-Infected Men Who Have Sex With Men With No Reported Injection Drug Use in New York City, 2000-2010.	Breskin, Alexander and Drobnik, Ann and Pathela, Preeti and Chan, Christine and Braunstein, Sarah and Bornschlegel, Katherine and Fuld, Jennifer	<a href="#"><u>Sex Transm Dis. 2015 Jul;42(7):382-6. doi: 10.1097/OLQ.0000000000000293</u></a>	Not about transmission route
71.	PM-U184	Assessment of cross-species transmission of hepatitis C virus-related non-primate hepacivirus in a population of humans at high risk of exposure.	Pfaender, Stephanie and Walter, Stephanie and Todt, Daniel and Behrendt, Patrick and Doerrbecker, Juliane and WÄ¶lk, Benno and Engelmann, Michael and Gravemann, Ute and Seltsam, Axel and Steinmann, Joerg and Burbelo, Peter D and Klawonn, Frank and Feige, Karsten and Pietschmann, Thomas and	<a href="#"><u>J Gen Virol. 2015 Sep;96(9):2636-42. doi: 10.1099/vir.0.000208. Epub 2015 Jun 3.</u></a>	Not HCV

			Cavalleri, Jessika-M V and Steinmann, Eike		
72	PM-U185	Drug use, hepatitis C, and service availability: perspectives of incarcerated rural women.	Staton-Tindall, Michele and Webster, J Matthew and Oser, Carrie B and Havens, Jennifer R and Leukefeld, Carl G	<a href="#">Soc</a> <a href="#">Work</a> <a href="#">Public</a> <a href="#">Health. 2015;30(4):385-96. doi: 10.1080/19371918.2015.1021024</a>	Not about transmission route
73	PM-U186	Increases in hepatitis C virus infection related to injection drug use among persons aged 30 years - Kentucky, Tennessee, Virginia, and West Virginia, 2006-2012.	Zibbell, Jon E and Iqbal, Kashif and Patel, Rajiv C and Suryaprasad, Anil and Sanders, Kathy J and Moore-Moravian, Loretta and Serrecchia, Jamie and Blankenship, Steven and Ward, John W and Holtzman, Deborah and Centers for Disease Control and Prevention (CDC), [Collective Name]	<a href="#">MMWR</a> <a href="#">Morb</a> <a href="#">Mortal</a> <a href="#">Wkly</a> <a href="#">Rep. 2015 May 8;64(17):453-8.</a>	Not about transmission route

74	PM-U188	County-Level Vulnerability Assessment for Rapid Dissemination of HIV or HCV Infections Among Persons Who Inject Drugs, United States.	Van Handel, Michelle M and Rose, Charles E and Hallisey, Elaine J and Kolling, Jessica L and Zibbell, Jon E and Lewis, Brian and Bohm, Michele K and Jones, Christopher M and Flanagan, Barry E and Siddiqi, Azfar-E-Alam and Iqbal, Kashif and Dent, Andrew L and Mermin, Jonathan H and McCray, Eugene and Ward, John W and Brooks, John T	J Acquir Immune Defic Syndr. 2016 Nov 1;73(3):323-331.	Review article
75	PM-U189	Increased Hepatitis C Virus (HCV) Detection in Women of Childbearing Age and Potential Risk for Vertical Transmission - United States and Kentucky, 2011-2014.	Koneru, Alaya and Nelson, Noele and Hariri, Susan and Canary, Lauren and Sanders, Kathy J and Maxwell, Justine F and Huang, Xiaohua and Leake, John A D and Ward, John W and Vellozzi, Claudia	Prevention Morbidity and Mortality Weekly Report Weekly / Vol. 65 / No. 28 July 22, 2016	Review article
76	PM-U195	Hepatitis C Seroprevalence Among HIV-Infected Childbearing Women in New York State in 2006.	Ghazaryan, L and Smith, L and Parker, M and Flanigan, C and Pulver, W and Sullivan, T and Carrascal, A	<a href="#">Matern Child Health J. 2016 Mar;20(3):550-5.</a> doi: <a href="https://doi.org/10.1007/s10995-015-1853-4">10.1007/s10995-015-1853-4</a> .	Not about transmission route
77	PM-U196	Increased Risk for Mother-to-Infant Transmission of Hepatitis C Virus Among Medicaid Recipients - Wisconsin, 2011-2015.	Watts, Theresa and Stockman, Lauren and Martin, Justin and Guilfoyle, Sheila and Vergeront, James M	MMWR / October 27, 2017 / Vol. 66 / No. 42	Review article

78	PM-U199	Mechanisms and Prevention of Vertical Transmission in Chronic Viral Hepatitis.	Mavilia, Marianna G and Wu, George Y	<a href="#">J Clin Transl Hepatol. 2017 Jun 28;5(2):119-129.</a> doi: <a href="#">10.14218/JCTH.2016.00067. Epub 2017 Jun 7.</a>	Review article
79	PM-U200	Trends in HIV and HCV Risk Behaviors and Prevalent Infection Among People Who Inject Drugs in New York City, 2005-2012.	Neaigus, Alan and Reilly, Kathleen H and Jenness, Samuel M and Hagan, Holly and Wendel, Travis and Gelpi-Acosta, Camila and Marshall, David M	<a href="#">J Acquir Immune Defic Syndr. 2017 Jul 1;75 Suppl 3:S325-S332.</a> doi: <a href="#">10.1097/QAI.0000000000001407</a>	Not about transmission route
80	PM-U202	State HCV Incidence and Policies Related to HCV Preventive and Treatment Services for Persons Who Inject Drugs - United States, 2015-2016.	Campbell, Cecily A and Canary, Lauren and Smith, Nicole and Teshale, Eyasu and Ryerson, A Blythe and Ward, John W	<a href="#">MMWR Morb Mortal Wkly Rep. 2017 May 12;66(18):465-469.</a> doi: <a href="#">10.15585/mmwr.mm6618a2</a>	Review article
81	PM-U203	Hepatitis C Virus Infections Associated with Unsafe Injection Practices at a Pain Management Clinic, Michigan, 2014-2015.	Coyle, Joseph R and Goerge, Emily and Kacynski, Kathryn and Rodgers, Ruby and Raines, Patricia and Vail, Linda S and Lowhim, Sugandha	<a href="#">Pain Med. 2017 Feb 1;18(2):322-329.</a> doi: <a href="#">10.1093/pm/pnw157.</a>	Not about transmission route
82	PM-U204	A model to estimate the probability of human immunodeficiency virus and hepatitis C infection despite negative nucleic acid testing among increased-risk organ donors.	Annambhotla, Pallavi D and Gurbaxani, Brian M and Kuehnert, Matthew J and Basavaraju, Sridhar V	<a href="#">Transpl Infect Dis. 2017 Apr;19(2).</a> doi: <a href="#">10.1111/tid.12676. Epub 2017 Mar 27</a>	Not about transmission route
83	PM-U205	Shedding of Hepatitis C Virus Into the Rectum of HIV-infected Men Who Have Sex With Men.	Foster, Andrew L and Gaisa, Michael M and Hjdra, Rosanne M and Turner, Samuel S and Morey, Tristan J and	<a href="#">Clin Infect Dis. 2017 Feb 1;64(3):284-288.</a> doi: <a href="#">10.1093/cid/ciw740. Epub 2016</a>	Not about transmission route

			Jacobson, Karen B and Fierer, Daniel S	<a href="#">Nov 9.</a>	
84	PM-U206	Hepatitis C virus transmission in a skilled nursing facility, North Dakota, 2013.	Calles, Dinorah L and Collier, Melissa G and Khudyakov, Yury and Mixson-Hayden, Tonya and VanderBusch, Lindsey and Weninger, Sarah and Miller, Tracy K and North Dakota Hepatitis C Virus Investigation Team, [Collective Name]	<a href="#">Am J Infect Control. 2017 Feb 1;45(2):126-132.</a> doi: <a href="https://doi.org/10.1016/j.ajic.2016.08.013">10.1016/j.ajic.2016.08.013</a> . Epub 2016 Nov 2.	Not about transmission route
85	PM-U207	Prediction of HCV vertical transmission: what factors should be optimized using data mining computational analysis.	Elrazek, Abd and Amer, Mohamed and El-Hawary, Bahaa and Salah, Altaher and Bhagavathula, Akshaya S and Alboraei, M and Saab, Samy	<a href="#">Liver Int. 2017 Apr;37(4):529-533.</a> doi: <a href="https://doi.org/10.1111/liv.13146">10.1111/liv.13146</a> . Epub 2016 Jun 16.	Not in USA
86	PM-U211	Missed opportunities for prevention and treatment of hepatitis C among persons with HIV/HCV coinfection.	Millman, Alexander J and Luo, Qingwei and Nelson, Noele P and Vellozzi, Claudia and Weiser, John	<a href="#">AIDS Care. 2019 Sep 23:1-9.</a> doi: <a href="https://doi.org/10.1080/09540121.2019.1668533">10.1080/09540121.2019.1668533</a>	Not about transmission route

87	PM-U212	Screening HIV-positive men who have sex with men for hepatitis C re-infection risk: is a single question on condom-use enough? A sensitivity analysis.	Käünzler-Heule, Patrizia and Engberg, Sandra and Battegay, Manuel and Schmidt, Axel J and Fierz, Katharina and Nguyen, Huyen and Kocher, Agnes and Nüstlinger, Christiana and Hampel, Benjamin and Stäckle, Marcel and Bäguelin, Charles and Delaloye, Julie and Schmid, Patrick and Flepp, Markus and Rougement, Mathieu and Braun, Dominique Laurent and Fehr, Jan and Nicca, Dunja and Swiss HIV Cohort Study (SHCS), [Collective Name]	<a href="https://doi.org/10.1186/s12879-019-4456-7">BMC Infect Dis. 2019 Sep 18;19(1):821. doi: 10.1186/s12879-019-4456-7.</a>	Not in USA
88	PM-U214	Evidence-based and guideline-concurrent responses to narratives deferring HCV treatment among people who inject drugs.	Childs, Ellen and Assoumou, Sabrina A and Biello, Katie B and Biancarelli, Dea L and Drainoni, Mari-Lynn and Edeza, Alberto and Salhaney, Peter and Mimiaga, Matthew J and Bazzi, Angela R	<a href="https://doi.org/10.1186/s12954-019-0286-6">Harm Reduct J. 2019 Feb 11;16(1):14. doi: 10.1186/s12954-019-0286-6.</a>	Not about transmission route

## Systematic review and meta-analysis of association between HCV infection and fibrinogen concentrate

### List of excluded articles

No.	Serial number	Title	Authors	Details	Reason for exclusion
1.	PM-F001	Correlation of Serum Soluble Fibrinogen-Like Protein 2 with Soluble FAS Ligand and Interferon Gamma in Egyptian Hepatitis C Virus-Infected Patients and Hepatocellular Carcinoma Patients.	El-Mesery, Mohamed and El-Mowafy, Mohammed and Elgaml, Abdelaziz and Youssef, Laila F and Abed, Sally Y	J Interferon Cytokine Res. 2017 Aug;37(8):342-347. doi: 10.1089/jir.2016.0128. Epub 2017 Jun 13.	Not about transmission
2.	PM-F003	Treatment of haemophilia patients in East Germany prior to and after reunification in 1990.	Lenk, Harald	Thromb Res. 2014 Nov;134 Suppl 1:S57-60. doi: 10.1016/j.thromres.2013.10.018. Epub 2014 Apr 16.	Review article
3.	PM-F005	Estimating the pathogen safety of manufactured human plasma products: application to fibrin sealants and to thrombin.	Horowitz, Bernard and Busch, Michael	Transfusion. 2008 Aug;48(8):1739-53. doi: 10.1111/j.1537-2995.2008.01717.x. Epub 2008 May 7.	Not about transmission
4.	PM-F006	Risk of authoritarianism: fibrinogen-transmitted hepatitis C in Japan.	Yasunaga, Hideo	<a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC20637/">Lancet. 2007 Dec 15;370(9604):2063-7.</a>	Review article
5.	PM-F010	A simple autologous fibrinogen glue for otologic surgery.	Moretz, W H and Shea, J J and Emmett, J R and Shea, J J	<a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1224/">Otolaryngol Head Neck Surg. 1986 Jul;95(1):122-4.</a>	About preparation technique
6.	PM-F011	[Clinical experience with fibrin gluing in general and thoracic surgery].	Waclawiczek, H W and Boeckl, O	Zentralbl Chir. 1986;111(1):16-24.	Foreign language

7.	PM-F015	Hepatitis B surface antigen (HBsAg)-fibrinogen interaction.	Vanstapel, M J and de Wolf-Peeters, C and de Vos, R and Desmet, V J	Liver. 1984 Apr;4(2):148-55.	About HBV
8.	PM-F018	Factor VIII cryoprecipitate and hepatitis risk.	Gabra, G S and Crawford, R J and Mitchell, R	<a href="#">Lancet. 1982 Nov 27;2(8309):1220.</a>	Letter to editor
9.	PM-F019	[Risk of hepatitis in fibrin adhesion (author's transl)].	Panis, R and Scheele, J	Laryngol Rhinol Otol (Stuttg). 1981 Jul;60(7):367-8.	Foreign language
10.	PM-F021	Reducing hepatitis transmission from 125I-fibrinogen.	Jackson, G L	Pa Med. 1979 Apr;82(4):24-7.	Review article
11.	PM-F022	[Hepatitis risk of human plasma-fraction concentrates of pooled plasma (author's transl)].	Ohlmeier, H and Dahmen, E and Hoppe, I	<a href="#">Dtsch Med Wochenschr. 1978 Oct 27;103(43):1700-3.</a>	Foreign language
12.	PM-F023	Fibrinogen--is the benefit worth the risk?	Bove, J R	Transfusion. 1978 Mar-Apr;18(2):129-36.	Review article
13.	PM-F024	Hepatitis following the use of fibrinogen.	Shaw, A E and Schiff, P and Castaldi, P A	<a href="#">Med J Aust. 1971 Dec 18;2(25):1308.</a>	Full text not available
14.	PM-F026	Fibrinogen and hepatitis.	Croft, D	<a href="#">N Engl J Med. 1971 May 20;284(20):1159.</a>	Letter to editor
15.	PM-F027	Tagged fibrinogen and hepatitis.	Pendergrass, H P and Castronovo, F P	N Engl J Med. 1971 Apr 1;284(13):731.	Letter to editor
16.	PM-F028	Tagged fibrinogen and hepatitis.	Silberstein, E B	<a href="#">N Engl J Med. 1971 Feb 11;284(6):336.</a>	Letter to editor
17.	PM-F029	[Occurrence of serum hepatitis following the administration of Cohn's fraction I or fibrinogen	Fábryová, L and Hrubisko, M	Vnitr Lek. 1970 Feb;16(2):123-6.	Foreign language

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18.	PM-F031	[Relations among blood sedimentation rate, alpha-2 and gamma globulins and fibrinogen in acute viral hepatitis, cirrhosis and chronic hepatitis].	Nuhoglu, A and Bol <sup>1/4</sup> koglu, M A and Ak <sup>1/4</sup> z <sup>1/4</sup> mc <sup>1/4</sup> , O and Goksel, V	Rev Med Moyen Orient. 1967 May-Jun;24(3):220-5.	Foreign language
19.	PM-F033	TRANSMISSION OF HEPATITIS BY BLOOD AND BLOOD PRODUCTS.	MAYCOCK, W D	Proc R Soc Med. 1964 Nov;57:1077-80.	Review article
20.	PM-F038	[Age-dependant and sexually dualistic behavior of fibrinogen in pneumonia and in epidemic hepatitis].	SCHULZ, F H and KIRSCH, K	<a href="#">Z Alternsforsch. 1957 Jul;10(4):318-24.</a>	Foreign language
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22.	GR-F002	FEIBA safety profile in multiple modes of clinical and home-therapy application	Luu H, Ewenstein B.	<a href="#">Haemophilia. 2004 Sep;10 Suppl 2:10-6.</a>	Review article
23.	GR-F003	Reducing the risk of infection from plasma products: specific preventative strategies	Burnouf T, Radosevich M.	Blood Reviews (2000) 14, 94–110	Review article
24.	GR-F004	The Safety of Plasma-Derived Versus Recombinant Concentrates	Mannucci P	Haemophilia. 2003	Review article
25.	GR-F005	Viral safety evaluation of plasma-derived therapeutic products	Farshid, M	Dev Biol (Basel) 118: 11-5.	Not about transmission

26.	GR-F006	The epidemiology of virus transmission by plasma derivatives: clinical studies verifying the lack of transmission of hepatitis B and C viruses and HIV type 1.	Tabor E	<a href="#">Transfusion. 1999 Nov-Dec;39(11-12):1160-8.</a>	About preparation technique
27.	GR-F007	Specific inactivation of viruses which can potentially contaminate blood products	Horowitz B.	Dev Biol Stand. 1991;75:43-52.	Not about transmission
28.	GR-F008	Determination of adequate moisture content for efficient dry-heat viral inactivation in lyophilized factor VIII by loss on drying and by near infrared spectroscopy.	Savage M, Torres J, Franks L, Masecar B, Hotta J.	<a href="#">Biologicals. 1998 Jun;26(2):119-24.</a>	About preparation technique
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30.	GR-F010	Viral safety of solvent-detergent treated blood products.	Horowitz B, Prince AM, Horowitz MS, Watklevicz C.	<a href="#">Dev Biol Stand. 1993;81:147-61.</a>	Review article
31.	GR-F011	Virus safety of solvent/detergent-treated antihaemophilic factor concentrate.	Horowitz MS1, Rooks C, Horowitz B, Hilgartner MW.	Lancet. 1988 Jul 23;2(8604):186-9.	Not about transmission
32.	GR-F013	Hepatitis C viral RNA in clotting factor concentrates and the development of hepatitis in recipients	Makris M, Garson JA, Ring CJ, Tuke PW, Tedder RS, Preston FE.	Blood. 1993 Apr 1;81(7):1898-902.	Not about transmission
33.	GR-F014	Blood protein derivative viral safety:	B. Horowitz	<a href="#">Yale J Biol Med. 1990 Sep-Oct; 63(5):</a>	About preparation

		observations and analysis.		<a href="#">361-369</a>	technique
34.	GR-F015	Immunoglobulin transmits hepatitis C. True or false?	Piazza M.	<a href="#">Hepatology. 1999 Jan;29(1):299-300.</a>	Not about transmission
35.	GR-F016	The use of purified clotting factor concentrates in hemophilia. Influence of viral safety, cost, and supply on therapy.	Pierce GF, Lusher JM, Brownstein AP, Goldsmith JC, Kessler CM.	<a href="#">JAMA. 1989 Jun 16;261(23):3434-8.</a>	Review article
36.	GR-F017	Sterilisation of hepatitis and HTLV-III viruses by exposure to tri(n-butyl)phosphate and sodium cholate	Prince AM, Horowitz B, Brotman B.	<a href="#">Lancet. 1986 Mar 29;1(8483):706-10.</a>	Not about transmission
37.	GR-F018	The development of virus-free labile blood derivatives--a review.	Prince AM, Horowitz B, Horowitz MS, Zang E.	<a href="#">Eur J Epidemiol. 1987 Jun;3(2):103-18.</a>	About preparation technique
38.	GR-F019	Guidelines on viral inactivation and removal procedures intended to assure the viral safety of human blood plasma products	Horowitz B, Minor P, Morgenthaler JJ, Burnouf T, McIntosh R, Padilla A, Thorpe R, van Aken WG; WHO Expert Committee on Biological Standardization.	<a href="#">WHO Technical Report, Series No. 924, 2004</a>	About preparation technique
39.	GR-F021	Prevalence of hepatitis C virus in plasma pools and the effectiveness of cold ethanol fractionation	Scheiblauer H1, Nübling M, Willkommen H, Löwer J.	<a href="#">Clin Ther. 1996;18 Suppl B:59-70.</a>	Not about transmission
40.	GR-F022	Inactivation of viruses in labile blood derivatives. II. Physical methods.	Horowitz B, Wiebe ME, Lippin A, Vandersande J, Stryker	<a href="#">Transfusion. 1985 Nov-Dec;25(6):523-7.</a>	About preparation technique

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42.	GR-F024	Serum and serum substitutes: virus safety by inactivation or removal.	Willkommen H, Scheiblauer H, Löwer J.	<a href="#">Dev Biol Stand. 1999;99:131-8.</a>	About preparation technique
43.	GR-F025	Detection and characterization of hepatitis C virus RNA in immune globulins	Yu, M. Y., B. L. Mason, et al.	Transfusion 34(7): 596-602.	Not about transmission
44.	IC-F001	原因追求型特性要因図を用いた本邦における C 型肝炎感染の拡大の歴史的考察	芳賀 晴子 and 福島 紀子	薬史学雑誌	<b>Review article</b>
45.	IC-F002	秋田県における平成 19 年度ウイルス性肝炎検査実施状況	柴田 ちひろ and 佐藤 寛子 and 斎藤 博之 and 安部 真理子 and 山脇 徳美	秋田県健康環境センター年報, 2009 p77	<b>Not about trasmission route of HCV</b>
46.	IC-F003	神戸市における C 型肝炎対策 フィブリノゲン 製剤納入先医療機関名の公表に際して	渋谷 雄平 and 井上 明 and 河上 靖登	日本公衆衛生雑誌, 2006	<b>Not about trasmission route of HCV</b>
47.	IC-F005	加熱フィブリノーゲンの性状とウイルス不活化	岡田 政久 and 平川 百合香 and 嘉悦 洋	血液と脈管, 1988	<b>Not about trasmission route of HCV</b>
48.	IC-F006	肝硬変における凝血学的異常に關する研究 フィブリノーゲン寿命を中心として	福岡 賢一 and 松下 文昭 and 鵜浦 雅志	肝臓, 1986	<b>Not about trasmission route of HCV</b>