L.4 「急性呼吸器疾患のリスクが高い患者の保護を目的とした医療従事者へのワクチン接種の有効性：システマティックレビュー」の要約

システマティックレビューの目的

この「急性呼吸器疾患のリスクが高い患者の保護を目的とした医療従事者へのワクチン接種の有効性：システマティックレビュー」(130)のレビューでは、重度のARIまたはARIによる合併症を発症するリスクが高い患者の保護を目的として、医療従事者にインフルエンザワクチンおよび肺炎球菌ワクチンを接種したときの有効性のエビデンスを調査した。

方法

著者らは、事前に定めた戦略を使用して、電子医療情報データベース(EMBASE、CINAHL、MEDLINE、PubMed、The Cochrane Library、J-Stage、BDSP、EASTVIEW、Index-F、eLIBRARY、WHO regional indexes、WHO portal of clinical trials)を検索した。また、関連のあるエビデンスに基づくレビュー、ガイドラインおよび灰色文献にもアクセスした。出版物は選択基準に照らして3段階のプロセスでレビューし、試験のタイプ(実験的研究、観察研究またはシステマティックレビュー)、被験者集団(重度のARIまたはARIによる合併症を発症するリスクが高いあらゆる年齢の患者)、介入(接種量、製剤の種類または接種スケジュールを問わず、リスクの高い患者をケアするあらゆる医療従事者へのインフルエンザまたは肺炎球菌ワクチンの接種)、比較(ワクチンの接種なし、プラセボ、または抗ウイルス薬の長期予防内服)、およびアウトカム[ARIの症例またはARIによる受診、ILIの症例、ILIによる受診または検査によるILIのエビデンス(該当する場合)、呼吸器感染症、ILIまたは急性呼吸器疾患あるいは関連合併症による死亡率、呼吸器感染症またはILIあるいは急性呼吸器疾患による医療資源利用の測定]が適切であることを確保した。全文レビュー時に、選択基準を満たしたすべての引用文献に対して、参考文献および引用文献の追跡を実施した。

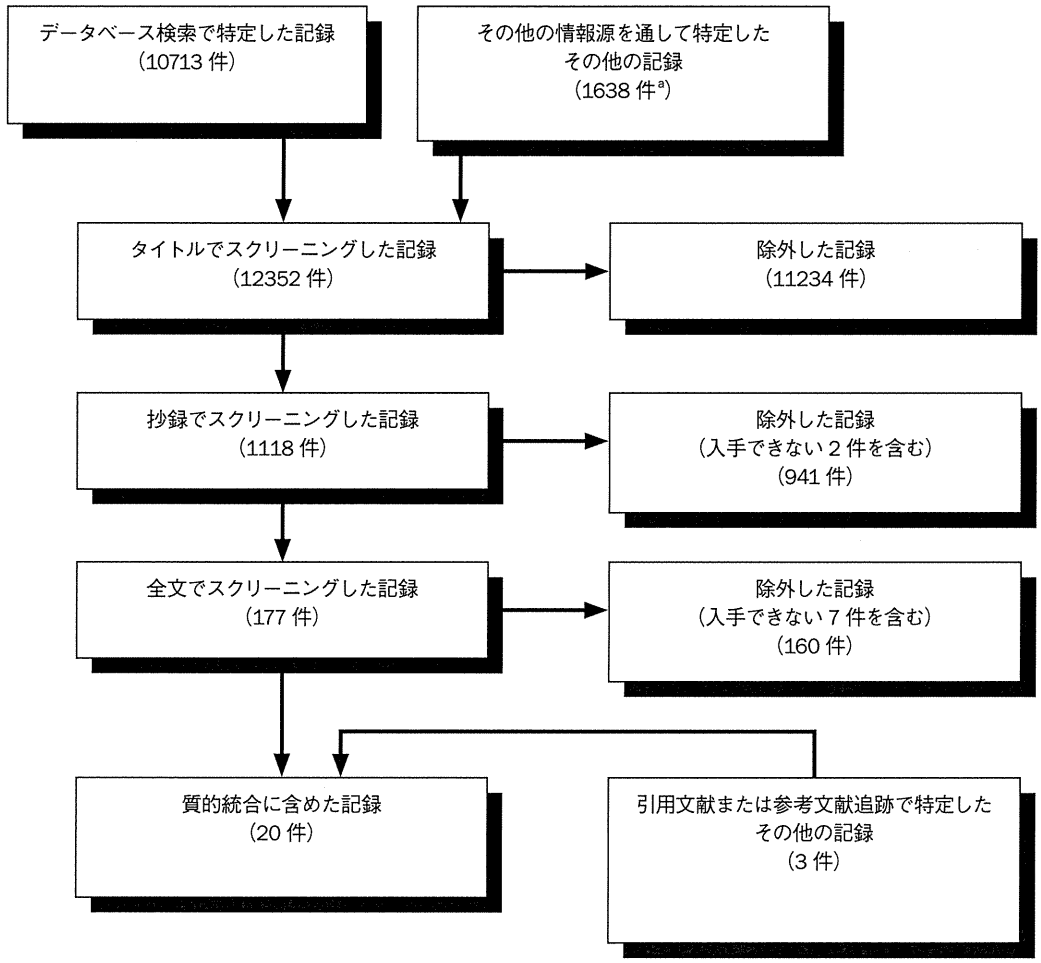
特定した計12352件の引用文献のうち、タイトルのレビュー後に11234件を除外し、抄録のレビュー後に941件を除外し、全文のレビュー後に160件を除外した(図L.4)。計20件の論文(最初の検索で特定した17件と、引用文献または参考文献の追跡で特定した3件の記録)を本レビューの対象とした。このうち14件は一次研究論文であり、6件は2件のシステマティックレビューの報告であった。

結果および結論

検討した集団、介入または曝露およびアウトカムに著しい異質性があったため、対象とした論文の比較可能性は限定的であった。14件の一次研究論文のうち、11件は長期居住型介護施設が対象であり、いずれもバイアスのリスクが高いと判断した。4件はRCTであり、これらの試験のデータは前回のシステマティックレビューで併合していた。この併合データから、高齢入居者のILIおよび全原因死亡率の指標に基づき、統計学的に有意な防御効果が明らかになった。本レビューで特定したこの他の観察データから、ILIの複数の指標の間で方向性の一致した効果が示唆され、検査によるインフルエンザ確定例でも同様のパターンが見られた。著者らは、長期居住型介護施設の医療従事者にワクチンを接種した場合、重度のARIまたはARIによる合併症を発症するリスクが高い患者に対し、限定的ではあるが、真の潜在的な防御効果があるようだと結論付けた(表L.3)。

著者らは、この主題分野には研究間に著しいギャップがあることを特定し、既存のエビデンスでは、長期居住型介護施設の入居者以外の集団に関する情報はほとんどないと述べた。他の高リスク患者集団の保護を目的として、医療従事者へのワクチン接種の有効性を検討する研究がさらに必要である。

図 L.4 「急性呼吸器疾患のリスクが高い患者の保護を目的とした医療従事者へのワクチン接種の有効性：システマティックレビュー」のための出版物の選択



a 最初の検索戦略では特定されなかったが、同じ部門が実施した並行レビューから移した 1 件の論文を含む。

表 L.3 「急性呼吸器疾患のリスクが高い患者の保護を目的とする医療従事者へのワクチン接種の有効性：システマティックレビュー」の調査結果の要約

アウトカム	利用可能なエビデンス	ナラティブ統合
急性呼吸器疾患	2つの異なる効果の指標(ウイルス性疾患 / 下気道感染の発症)を提示した1件の RCT(325)から算出した統計的推定値。	効果に一貫性はないが、効果の方向性は一致していることから、防御効果がある可能性が示唆される。採用した指標の非特異的な性質から、これがインフルエンザの感染に起因するものかどうかを確かめるのは困難である。
臨床的に定義された ILI またはインフルエンザの症例	異なる定義を使用した3件の RCT(325-327)および2件の前向きコホート研究(328、329)から算出した、臨床的に定義された ILI の統計的推定値。裏付けとなる統計解析が行われていない1件の横断研究の観察データ。1件の横断研究(331)から算出したインフルエンザ症例の追加の統計的推定値(330)。	3件の RCT の併合データ(332)から、クラスターを調整した場合、統計学的に有意な防御効果があることが示唆される。これは、付加的な観察データでも裏付けられている。統計解析を実施した3試験のうち2試験(328、329)では、バイアスのリスクは高いものの、方向性の一致した効果があることが示された。
ILI よる GP の受診	1件の RCT(327)から算出した統計的推定値。	受診率については、ワンシーズンのみで統計学的に有意な小規模の減少が見られたが、調整オッズ比に変換した場合は、全体で統計学的に有意な防御効果が示された(331)。
ILI のアウトブレイク / 集団感染	異なる定義を使用した3件の観察研究(329、333、334)から算出した統計的推定値。	3試験とも、推定値が不正確でバイアスのリスクも高いが、統計学的に有意な防御効果が示された。
検査による インフルエンザ確定例	1件の RCT(335)および2件の観察研究(336、337)から算出した統計的推定値。さらに1件の RCT(325)の観察データ。	2件の RCT の併合データ(331)から、有意性のない防御効果が示唆される。効果の方向性は、統計学的に有意な防御効果を示した他の2件の観察研究(336、337)のデータで裏付けられた。サンプルサイズが非常に小さいため、著しいバイアスリスクと不正確性が存在する。
検査により確認された インフルエンザの アウトブレイク	1件の観察研究(338)から算出した統計的推定値。	ワクチン接種率はアウトブレイクを経験した家庭の方が高いようであったが、統計学的有意差は認められなかった。しかし、解析結果は未補正であり、サンプル数が少ないため不正確である。
呼吸器疾患による死亡率	それぞれ異なる指標(呼吸器疾患による死亡、肺炎に関連する死亡、ILI による死亡、死亡時の検査により確定されたインフルエンザ)を使用した4件の RCT(325-327、335)から算出した統計的推定値。	呼吸器疾患による死亡(326)および肺炎に関連する死亡(325)のデータを用いて算出した併合推定値(331)から、有意性のないわずかな防御効果が示唆される。ILI による死亡(327)および検査により確定されたインフルエンザによる死亡(335)についても、個々の試験で、有意性のないわずかな防御効果が示された。異なる指標を採用したため、一般化可能性は限定的である。
全原因死亡率	4件の RCT(325-327、335)から算出した統計的推定値。	効果に一貫性はないが、効果の方向性は一致している。併合データ(331)では、クラスターを調整した場合、統計学的に有意な防御効果が示唆される。

アウトカム	利用可能なエビデンス	ナラティブ統合
入院	3つの異なる効果の指標(入院、呼吸器に起因する入院、ILIによる入院)を提示した2件のRCT(326、327)から算出した統計的推定値。	明確な効果は認められなかった。

GP＝一般開業医、ILI＝インフルエンザ様疾患、RCT＝ランダム化比較試験

付録 M　利害の対立の管理

本ガイドライン作成のための GRADE 評価プロセスに参加したガイドライン作成委員会の委員、外部の査読者、および世界感染症予防・コントロールネットワークの代表委員は全員、利害関係申告書と履歴書を提出した。ガイドライン作成委員会および外部の査読委員会の委員とリソースパーソンが申告した利害の対立の可能性を以下にまとめる。

Barry Cookson 教授は、過去 3 年間に討論会のパネリストを 1 回務めた経験があり、また製品の有効性や戦略に関して 1 対 1 の専門的助言を 3 回にわたって提供したと申告した。企業は Wyeth、Rubbermaid、3M および Vernacare/Baxter であった。製品はブドウ球菌ワクチン、マイクロファイバー拭き取り布および消毒薬であった。Cookson 教授が本ガイドラインのレビューに携わった時点では、いずれのコンサルタント業務も終了していた。Cookson 教授が当時受け取った対価は少額であり、業務もすでに終了していたため、これらは本ガイドラインの査読において利害の対立には該当しないと考えられた。

Babacar Ndoye 教授は、会議、ワークショップまたは学会への参加や企画のため、bioMerieux Clinical Diagnostics、パスツール研究所および地域企業から支援を受けたが、このうち 1,000 米ドルを超えるものはないことを申告した。Wing Hong Seto 教授は、Pfizer が開催した科学会議で発表した際に、交通費の助成を受けたと申告した。これらはいずれも少額であるため、利害の対立には該当しないと考えられた。

References

1 World Health Organization (WHO). *Natural ventilation for infection control in health care settings.* Geneva, WHO, 2009 (http://whqlibdoc.who.int/publications/2009/9789241547857_eng.pdf).

2 American Society of Heating Refrigerating and Air-Conditioning Engineers, American National Standards Institute, American Society for Healthcare Engineering. *Ventilation of health care facilities: ASHRAE/ASHE Standard.* Atlanta, GA, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, 2008.

3 A. I. A. Academy of Architecture for Health. Facilities Guidelines Institute (United States). Department of Health and Human Services. *Guidelines for design and construction of hospital and health care facilities.* Washington, D.C., American Institute of Architects, 2001.

4 Mayhall CG. *Hospital epidemiology and infection control.* Philadelphia, Lippincott Williams & Wilkins, 2004.

5 Wenzel RP. *Prevention and control of nosocomial infections.* Philadelphia, Lippincott Williams & Wilkins, 2003.

6 World Health Organization (WHO). *International health regulations (2005).* Geneva, WHO, 2006 (http://www.who.int/csr/ihr/en).

7 Centers for Disease Control and Prevention (CDC). Guidelines for preventing the transmission of *Mycobacterium tuberculosis* in health-care settings, 2005. *Morbidity and Mortality Weekly Report,* 2005, 54(RR17).

8 Centers for Disease Control and Prevention (CDC). Guidelines for environmental infection control in health-care facilities. *Morbidity and Mortality Weekly Report,* 2003, 52(RR–10).

9 Roy CJ, Milton DK. Airborne transmission of communicable infection – the elusive pathway. *New England Journal of Medicine,* 2004, 350(17):1710–1712.

10 WHO Centre for Health Development (Kobe Japan). *A glossary of terms for community health care and services for older persons.* Kobe, Japan, World Health Organization Centre for Health Development, 2004 (http://whqlibdoc.who.int/wkc/2004/WHO_WKC_Tech.Ser._04.2.pdf).

11 Stedman TL. *Stedman's medical dictionary.* Philadelphia, Lippincott Williams & Wilkins, 2006.

12 Brankston G, Gitterman L, Hirji Z et al. Transmission of influenza A in human beings. *Lancet Infectious Diseases,* 2007, 7(4):257–265 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=17376383).

13 Last J. *A dictionary of epidemiology.* New York, Oxford University Press, 2001.

14 World Health Organization (WHO). *Guidelines for the use of seasonal influenza vaccine in humans at risk of H5N1 infection.* Geneva, WHO, 2004 (http://www.who.int/influenza/human_animal_interface/virology_laboratories_and_vaccines/vaccine_use_h5N1_riskgroups/en).

15 World Health Organization (WHO). *WHO guidelines for pharmacological management of pandemic (H1N1) 2009 influenza and other influenza viruses.* Geneva, WHO, 2010 (http://www.who.int/csr/resources/publications/swineflu/h1n1_use_antivirals_20090820/en/index.html)

16 World Health Organization (WHO). *Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care.* Geneva, WHO, 2007 (http://www.who.int/csr/resources/publications/swineflu/WHO_CD_EPR_2007_6/en/index.html).

17 World Health Organization (WHO). *Infection prevention and control during health care for confirmed, probable, or suspected cases of pandemic H1N1 2009 virus infection and influenza-like illness.* Geneva, WHO, 2009 (http://www.who.int/csr/resources/publications/swineflu/swineinfinfcont/en/index.html).

18 World Health Organization (WHO). *WHO handbook for guideline development.* Geneva, WHO, 2012 (http://apps.who.int/iris/bitstream/10665/75146/1/9789241548441_eng.pdf).

19 World Health Organization (WHO). *The World Health Report 2004: changing history [electronic resource].* Geneva, WHO, 2004.

20 Nair H, Brooks WA, Katz M et al. Global burden of respiratory infections due to seasonal influenza in young children: a systematic review and meta-analysis. *The Lancet,* 2011, 378(9807):1917–1930 (http://www.sciencedirect.com/science/article/pii/S0140673611610519).

21 Berman S. Epidemiology of acute respiratory infections in children of developing countries. *Reviews of Infectious Diseases,* 1991, 13 Suppl 6:S454–462 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=1862276).

22 Lederberg J, Shope RE, Oaks SC et al. *Emerging infections: microbial threats to health in the United States.* Washington, D.C., The Institute of Medicine, 1992.

23 Graham M. Frequency and duration of handwashing in an intensive care unit. *American Journal of Infection Control,* 1990, 18(2):77–81.

24 Fraser C, Riley S, Anderson RM et al. Factors that make an infectious disease outbreak controllable. *Proceedings of the National Academy of Sciences of the United States of America,* 2004, 101(16):6146–6151.

25 Bauch CT, Lloyd-Smith JO, Coffee MP et al. Dynamically modeling SARS and other newly emerging respiratory illnesses: past, present, and future. *Epidemiology,* 2005, 16(6):791–801.

26 World Health Organization, Regional Office for South-East Asia. *Operational guidelines on plague surveillance, diagnosis, prevention and control.* New Delhi, WHO, 2009 (http://apps.searo.who.int/pds_docs/B4534.pdf).

27 World Health Organization (WHO). *WHO policy on TB infection control in health-care facilities, congregate settings and households.* Geneva, WHO, 2009 (http://whqlibdoc.who.int/publications/2009/9789241598323_eng.pdf).

28 Peiris JS, Lai ST, Poon LL et al. Coronavirus as a possible cause of severe acute respiratory syndrome. *Lancet,* 2003, 361(9366):1319–1325 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12711465).

29 CDC. Outbreaks of severe acute respiratory virus – worldwide 2003. *Morbidity and Mortality Weekly Report,* 2003, 52:226–228.

30 Guan Y, Zheng BJ, He YQ et al. Isolation and characterization of viruses related to the SARS coronavirus from animals in southern China. *Science,* 2003, 302(5643):276–278 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12958366).

31 Booth TF, Kournikakis B, Bastien N et al. Detection of airborne severe acute respiratory syndrome (SARS) coronavirus and environmental contamination in SARS outbreak units. *Journal of Infectious Diseases,* 2005, 191(9):1472–1477.

32 Heymann DL, Nunn M. *Control of communicable diseases manual.* American Public Health Association, 2008.

33 Yuen KY, Wong SS. Human infection by avian influenza A H5N1. *Hong Kong Medical Journal,* 2005, 11(3):189–199.

34 Peiris M, Yuen KY, Leung CW et al. Human infection with influenza H9N2. *Lancet,* 1999, 354(9182):916–917 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=10489954).

35 Akey BL. Low-pathogenicity H7N2 avian influenza outbreak in Virginia during 2002. *Avian Diseases,* 2003, 47(3 Suppl):1099–1103 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14575120).

36 Koopmans M, Wilbrink B, Conyn M et al. Transmission of H7N7 avian influenza A virus to human beings during a large outbreak in commercial poultry farms in the Netherlands. *Lancet,* 2004, 363(9409):587–593 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14987882).

37 Van Kerkhove MD, Mumford E, Mounts AW et al. Highly pathogenic avian influenza (H5N1): pathways of exposure at the animal–human interface, a systematic review. *PLoS ONE,* 2011, 6(1):8.

38 Dinh PN, Long HT, Tien NTK et al. Risk factors for human infection with avian influenza A H5N1, Vietnam 2004. *Emerging Infectious Diseases,* 2006, 12(12):1841–1847 (http://www.cdc.gov/ncidod/EID/vol12no12/06-0829.htm).

39 Areechokchai D, Jiraphongsa C, Laosiritaworn Y et al. Investigation of avian influenza (H5N1) outbreak in humans – Thailand, 2004. *Morbidity and Mortality Weekly Report,* 2006, 55 Suppl 1:3–6 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16645574).

40 Mounts AW, Kwong H, Izurieta HS et al. Case-control study of risk factors for avian influenza A (H5N1) disease, Hong Kong, 1997. *Journal of Infectious Diseases,* 1999, 180(2):505–508.

41 Ungchusak K, Auewarakul P, Dowell SF et al. Probable person-to-person transmission of avian influenza A (H5N1). *New England Journal of Medicine,* 2005, 352(4):333–340.

42 Trifonov V, Khiabanian H, Rabadan R. Geographic dependence, surveillance, and origins of the 2009 influenza A (H1N1) virus. *New England Journal of Medicine,* 2009, 361(2):115–119.

43 Chan M. *H1N1 in post-pandemic period.* Geneva, World Health Organization, (http://www.who.int/mediacentre/news/statements/2010/h1n1_vpc_20100810/en/index.html).

44 Chan M. *World now at the start of 2009 influenza pandemic.* Geneva, World Health Organization, (http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html).

45 Ostroff D, McDade J, LeDuc J et al. Emerging and reemerging infectious disease threats. In: Dolin, R, ed. *Principles and practice of infectious disease*. Philadelphia, Elsevier Churchill Livingstone, 2005:173–192.

46 Guyatt GH, Oxman AD, Schunemann HJ et al. GRADE guidelines: A new series of articles in the Journal of Clinical Epidemiology. *Journal of Clinical Epidemiology,* 2011, 64(4):380–382.

47 Guyatt G, Oxman AD, Akl EA et al. GRADE guidelines: 1. Introduction-GRADE evidence profiles and summary of findings tables. *Journal of Clinical Epidemiology,* 2011, 64(4):383–394.

48 Guyatt GH, Oxman AD, Kunz R et al. GRADE guidelines: 2. Framing the question and deciding on important outcomes. *Journal of Clinical Epidemiology,* 2011, 64(4):395–400.

49 Balshem H, Helfand M, Schunemann HJ et al. GRADE guidelines: 3. Rating the quality of evidence. *Journal of Clinical Epidemiology,* 2011, 64(4):401–406.

50 Guyatt GH, Oxman AD, Vist G et al. GRADE guidelines: 4. Rating the quality of evidence-study limitations (risk of bias). *Journal of Clinical Epidemiology,* 2011, 64(4):407–415.

51 Jefferson T, Del Mar CB, Dooley L et al. Physical interventions to interrupt or reduce the spread of respiratory viruses. *Cochrane Database of Systematic Reviews,* 2011, 7:CD006207 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=21735402).

52 Chen SY, Chiang WC, Ma MH et al. Sequential symptomatic analysis in probable severe acute respiratory syndrome cases. *Annals of Emergency Medicine,* 2004, 43(1):27–33.

53 Chen SY, Su CP, Ma MH et al. Predictive model of diagnosing probable cases of severe acute respiratory syndrome in febrile patients with exposure risk. *Annals of Emergency Medicine,* 2004, 43(1):1–5.

54 Ho PL, Tang XP, Seto WH. SARS: hospital infection control and admission strategies. *Respirology,* 2003, 8 Suppl:S41–45.

55 Pang X, Zhu Z, Xu F et al. Evaluation of control measures implemented in the severe acute respiratory syndrome outbreak in Beijing, 2003. *Journal of the American Medical Association,* 2003, 290(24):3215–3221.

56 Leung TF, Ng PC, Cheng FW et al. Infection control for SARS in a tertiary paediatric centre in Hong Kong. *Journal of Hospital Infection,* 2004, 56(3):215–222.

57 Jacobsen D, Ackerman P, Payne NR. Rapid identification of respiratory syncytial virus infections by direct fluorescent antibody testing: reliability as a guide to patient cohorting. *American Journal of Infection Control,* 1991, 19(2):73–78 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=2053715).

58 Madge P, Paton JY, McColl JH et al. Prospective controlled study of four infection-control procedures to prevent nosocomial infection with respiratory syncytial virus. *Lancet,* 1992, 340(8827):1079–1083 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=1357462).

59 France AM, Jackson M, Schrag S et al. Household transmission of 2009 influenza A (H1N1) virus after a school-based outbreak in New York City, April–May 2009. *Journal of Infectious Diseases,* 2010, 201(7):984–992 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=20187740).

60 Couch RB, Cate TR, Douglas RG, Jr. et al. Effect of route of inoculation on experimental respiratory viral disease in volunteers and evidence for airborne transmission. *Bacteriological Reviews,* 1966, 30(3):517–529.

61 Lau LL, Cowling BJ, Fang VJ et al. Viral shedding and clinical illness in naturally acquired influenza virus infections. *Journal of Infectious Diseases,* 2010, 201(10):1509–1516 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=20377412).

62 Johnson DF, Druce JD, Birch C et al. A quantitative assessment of the efficacy of surgical and N95 masks to filter influenza virus in patients with acute influenza infection. *Clinical Infectious Diseases,* 2009, 49(2):275–277 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19522650).

63 Dharmadhikari A, Mphahlele M, Stoltz A et al. Surgical face masks reduce multidrug-resistant tuberculosis transmission from patients on a hospital ward. *American Journal of Respiratory and Critical Care Medicine,* 2011, 183(1_MeetingAbstracts):A5308 (http://ajrccm.atsjournals.org).

64 Lipsitch M, Cohen T, Cooper B et al. Transmission dynamics and control of severe acute respiratory syndrome. *Science,* 2003, 300(5627):1966–1970.

65 Olsen SJ, Chang HL, Cheung TY et al. Transmission of the severe acute respiratory syndrome on aircraft. *New England Journal of Medicine,* 2003, 349(25):2416–2422.

66 Wang TL, Jang TN, Huang CH et al. Establishing a clinical decision rule of severe acute respiratory syndrome at the emergency department. *Annals of Emergency Medicine,* 2004, 43(1):17–22 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14707935).

67 Moser MR, Bender TR, Margolis HS et al. An outbreak of influenza aboard a commercial airliner. *American Journal of Epidemiology,* 1979, 110(1):1–6.

68 Donnelly CA, Ghani AC, Leung GM et al. Epidemiological determinants of spread of causal agent of severe acute respiratory syndrome in Hong Kong. *Lancet,* 2003, 361(9371):1761–1766.

69 Tran TH, Nguyen TL, Nguyen TD et al. Avian influenza A (H5N1) in 10 patients in Vietnam. *New England Journal of Medicine,* 2004, 350(12):1179–1188 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14985470).

70 Rainer TH, Cameron PA, Smit D et al. Evaluation of WHO criteria for identifying patients with severe acute respiratory syndrome out of hospital: prospective observational study. *BMJ (Clinical Research Ed.),* 2003, 326(7403):1354–1358.

71 de Jong MD, Bach VC, Phan TQ et al. Fatal avian influenza A (H5N1) in a child presenting with diarrhea followed by coma. *New England Journal of Medicine,* 2005, 352(7):686–691.

72 Apisarnthanarak A, Erb S, Stephenson I et al. Seroprevalence of anti-H5 antibody among Thai health care workers after exposure to avian influenza (H5N1) in a tertiary care center. *Clinical Infectious Diseases,* 2005, 40(2):16–18.

73 Steininger C, Popow-Kraupp T, Laferl H et al. Acute encephalopathy associated with influenza A virus infection. *Clinical Infectious Diseases,* 2003, 36(5):567–574 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12594636).

74 Lau JT, Lau M, Kim JH et al. Probable secondary infections in households of SARS patients in Hong Kong. *Emerging Infectious Diseases,* 2004, 10(2):235–243.

75 Goh DL, Lee BW, Chia KS et al. Secondary household transmission of SARS, Singapore. *Emerging Infectious Diseases,* 2004, 10(2):232–234.

76 Jarvis WR. Selected aspects of the socioeconomic impact of nosocomial infections: morbidity, mortality, cost, and prevention. *Infection Control and Hospital Epidemiology,* 1996, 17(8):552–557 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=8875302).

77 Haley RW, Culver DH, White JW et al. The efficacy of infection surveillance and control programs in preventing nosocomial infections in US hospitals. *American Journal of Epidemiology,* 1985, 121(2):182–205 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=4014115).

78 Haley RW, Morgan WM, Culver DH et al. Update from the SENIC project. Hospital infection control: recent progress and opportunities under prospective payment. *American Journal of Infection Control,* 1985, 13(3):97–108 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=3849273).

79 World Health Organization (WHO). Epidemic and Pandemic Alert and Response. *Core components for infection prevention and control programmes: report of the second meeting, Informal Network on Infection Prevention and Control in Health Care, Geneva, Switzerland, 26–27 June 2008.* Geneva, WHO, 2009 (http://whqlibdoc.who.int/hq/2009/WHO_HSE_EPR_2009.1_eng.pdf).

80 Scheckler WE, Brimhall D, Buck AS et al. Requirements for infrastructure and essential activities of infection control and epidemiology in hospitals: a consensus panel report. Society for Healthcare Epidemiology of America. *Infection Control and Hospital Epidemiology,* 1998, 19(2):114–124 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=9510112).

81 Haley RW, Hooton TM, Schoenfelder JR et al. Effect of an infection surveillance and control program on the accuracy of retrospective chart review. *American Journal of Epidemiology,* 1980, 111(5):543–555 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=7377198).

82 Hughes JM. Study on the efficacy of nosocomial infection control (SENIC Project): results and implications for the future. *Chemotherapy,* 1988, 34(6):553–561 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=3243099).

83 Larson EL, Bryan JL, Adler LM et al. A multifaceted approach to changing handwashing behavior. *American Journal of Infection Control,* 1997, 25(1):3–10 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=9057937).

84 Pittet D, Hugonnet S, Harbarth S et al. Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. Infection control programme. *Lancet,* 2000, 356(9238):1307–1312.

85 Rosenthal VD, McCormick RD, Guzman S et al. Effect of education and performance feedback on handwashing: the benefit of administrative support in Argentinean hospitals. *American Journal of Infection Control,* 2003, 31(2):85–92 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12665741).

86 Chen MI, Leo YS, Ang BS et al. The outbreak of SARS at Tan Tock Seng Hospital – relating epidemiology to control. *Annals of the Academy of Medicine, Singapore,* 2006, 35(5):317–325 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16829998).

87 Lau JT, Fung KS, Wong TW et al. SARS transmission among hospital workers in Hong Kong. *Emerging Infectious Diseases,* 2004, 10(2):280–286 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15030698).

88 Yassi A, Bryce E, Moore D. *Protecting the faces of health care workers: knowledge gaps and research priorities for effective protection against occupationally-acquired respiratory infectious diseases.* The Change Foundation, 2004.

89 Imai T, Takahashi K, Hasegawa N et al. SARS risk perceptions in healthcare workers, Japan. *Emerging Infectious Diseases,* 2005, 11(3):404–410.

90 Centers for Disease Control and Prevention (CDC). *Respiratory hygiene/cough etiquette in healthcare settings.* Atlanta, CDC, (http://www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm).

91 Dooley SW, Jr., Castro KG, Hutton MD et al. Guidelines for preventing the transmission of tuberculosis in health-care settings, with special focus on HIV-related issues. *MMWR. Recommendations and Reports,* 1990, 39(RR–17):1–29 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=2175838).

92 Puro V, Girardi E, Daglio M et al. Clustered cases of pneumonia among healthcare workers over a 1-year period in three Italian hospitals: applying the WHO SARS alert. *Infection,* 2006, 34(4):219–221 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16896581).

93 Tan CC. SARS in Singapore – key lessons from an epidemic. *Annals of the Academy of Medicine, Singapore,* 2006, 35(5):345–349 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16830002).

94 Olsen SJ, Ungchusak K, Sovann L et al. Family clustering of avian influenza A (H5N1). *Emerging Infectious Diseases,* 2005, 11(11):1799–1801 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16422010).

95 Garner JS. Guideline for isolation precautions in hospitals. The Hospital Infection Control Practices Advisory Committee. *Infection Control and Hospital Epidemiology,* 1996, 17(1):53–80.

96 Gopalakrishna G, Choo P, Leo YS et al. SARS transmission and hospital containment. *Emerging Infectious Diseases,* 2004, 10(3):395–400 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15109403).

97 Hammond B, Ali Y, Fendler E et al. Effect of hand sanitizer use on elementary school absenteeism. *American Journal of Infection Control,* 2000, 28(5):340–346 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=11029132).

98 Luby SP, Agboatwalla M, Feikin DR et al. Effect of handwashing on child health: a randomised controlled trial. *Lancet,* 2005, 366(9481):225–233.

99 Lai MY, Cheng PK, Lim WW. Survival of severe acute respiratory syndrome coronavirus. *Clinical Infectious Diseases,* 2005, 41(7):67–71.

100 Reynolds MG, Anh BH, Thu VH et al. Factors associated with nosocomial SARS-CoV transmission among healthcare workers in Hanoi, Vietnam, 2003. *BMC Public Health,* 2006, 6:2071–2079.

101 Fowler RA, Guest CB, Lapinsky SE et al. Transmission of severe acute respiratory syndrome during intubation and mechanical ventilation. *American Journal of Respiratory and Critical Care Medicine,* 2004, 169(11):1198–1202.

102 Scales DC, Green K, Chan AK et al. Illness in intensive care staff after brief exposure to severe acute respiratory syndrome. *Emerging Infectious Diseases,* 2003, 9(10):1205–1210.

103 Patrozou E, Mermel LA. Does influenza transmission occur from asymptomatic infection or prior to symptom onset? *Public Health Reports,* 2009, 124(2):193–196 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19320359).

104 Donnelly CA, Finelli L, Cauchemez S et al. Serial intervals and the temporal distribution of secondary infections within households of 2009 pandemic influenza A (H1N1): implications for influenza control recommendations. *Clinical Infectious Diseases,* 2011, 52 Suppl 1:S123–130 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=21342883).

105 Hall CB, Douglas RG, Jr. Nosocomial influenza infection as a cause of intercurrent fevers in infants. *Pediatrics,* 1975, 55(5):673–677 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=1168894).

106 Sato M, Hosoya M, Kato K et al. Viral shedding in children with influenza virus infections treated with neuraminidase inhibitors. *Pediatric Infectious Disease Journal,* 2005, 24(10):931–932.

107 Chan KH, Poon LL, Cheng VC et al. Detection of SARS coronavirus in patients with suspected SARS. *Emerging Infectious Diseases,* 2004, 10(2):294–299.

108 Bloomfield SF. Home hygiene: a risk approach. *International Journal of Hygiene and Environmental Health,* 2003, 206(1):1–8 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12621897).

109 Rheinbaben F, Schunemann S, Gross T et al. Transmission of viruses via contact in a household setting: experiments using bacteriophage straight phiX174 as a model virus. *Journal of Hospital Infection,* 2000, 46(1):61–66 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=11023725).

110 Tang CS, Wong CY. An outbreak of the severe acute respiratory syndrome: predictors of health behaviors and effect of community prevention measures in Hong Kong, China. *American Journal of Public Health,* 2003, 93(11):1887–1888.

111 Chemaly RF, Ghosh S, Bodey GP et al. Respiratory viral infections in adults with hematologic malignancies and human stem cell transplantation recipients: a retrospective study at a major cancer center. *Medicine,* 2006, 85(5):278–287 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16974212).

112 Kallander K, Nsungwa-Sabiiti J, Balyeku A et al. Home and community management of acute respiratory infections in children in eight Ugandan districts. *Annals of Tropical Paediatrics,* 2005, 25(4):283–291 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16297303).

113 Richards DA, Toop LJ, Epton MJ et al. Home management of mild to moderately severe community-acquired pneumonia: a randomised controlled trial. *Medical Journal of Australia,* 2005, 183(5):235–238 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16138795).

114 Quinlan B, Loughrey S, Nicklin W et al. Restrictive visitor policies: feedback from healthcare workers, patients and families. *Hospital Quarterly,* 2003, 7(1):33–37 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14674175).

115 Lee NE, Siriarayapon P, Tappero J et al. Infection control practices for SARS in Lao People's Democratic Republic, Taiwan, and Thailand: experience from mobile SARS containment teams, 2003. *American Journal of Infection Control,* 2004, 32(7):377–383.

116 Mukhopadhyay A, Tambyah PA, Singh KS et al. SARS in a hospital visitor and her intensivist. *Journal of Hospital Infection,* 2004, 56(3):249–250.

117 Melnyk BM, Alpert-Gillis L, Feinstein NF et al. Creating opportunities for parent empowerment: Program effects on the mental health/coping outcomes of critically ill young children and their mothers. *Pediatrics,* 2004, 113(6):597–607 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15173543).

118 Saunders RP, Abraham MR, Crosby MJ et al. Evaluation and development of potentially better practices for improving family-centered care in neonatal intensive care units. *Pediatrics,* 2003, 111(4 Pt 2):e437–449 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12671164).

119 Griffin T. Family-centered care in the NICU. *Journal of Perinatal and Neonatal Nursing,* 2006, 20(1):98–102 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16508475).

120 Chaovavanich A, Wongsawat J, Dowell SF et al. Early containment of severe acute respiratory syndrome (SARS); experience from Bamrasnaradura Institute, Thailand. *Journal of the Medical Association of Thailand,* 2004, 87(10):1182–1187 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15560695).

121 Svoboda T, Henry B, Shulman L et al. Public health measures to control the spread of the severe acute respiratory syndrome during the outbreak in Toronto. *New England Journal of Medicine,* 2004, 350(23):2352–2361.

122 World Health Organization (WHO). *Guidance on regulations for the Transport of Infectious Substances 2007–2008.* Geneva, WHO, 2007 (http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_EPR_2007_2/en/index.html).

123 Jahrling P, Rodak C, Bray M et al. Triage and management of accidental laboratory exposures to biosafety level-3 and 4 agents. *Biosecurity and Bioterrorism-Biodefense Strategy Practice and Science,* 2009, 7(2):135–143.

124 Lim PL, Kurup A, Gopalakrishna G et al. Laboratory-acquired severe acute respiratory syndrome. *New England Journal of Medicine,* 2004, 350(17):1740–1745 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15103000).

125 Alpat SN, Ozgunes I, Aybey AD et al. Is pneumatic sample transport system also a carrier for microorganisms? *Mikrobiyoloji Bulteni,* 2009, 43(3):449–455.

126 World Health Organization (WHO). *WHO laboratory biosafety guidelines for handling specimens suspected of containing avian influenza A virus.* Geneva, WHO, 2005 (http://www.who.int/influenza/resources/documents/guidelines_handling_specimens/en/index.html).

127 World Health Organization (WHO). *WHO guidelines for the collection of human specimens for laboratory diagnosis of avian influenza infection.* Geneva, WHO, 2005 (http://www.who.int/influenza/human_animal_interface/virology_laboratories_and_vaccines/guidelines_collection_h5n1_humans/en/index.html).

128 World Health Organization (WHO). *Laboratory biosafety manual – third edition.* Geneva, WHO, 2004 (http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en).

129 Dey P, Halder S, Collins S et al. Promoting uptake of influenza vaccination among health care workers: a randomized controlled trial. *Journal of Public Health Medicine,* 2001, 23(4):346–348 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=11873900).

130 Dolan GP, Harris RC, Clarkson M et al. Vaccination of health care workers to protect patients at increased risk for acute respiratory disease. Emerg Infect Dis, 2012, 18(8):1225-1234 (http://www.ncbi.nlm.nih.gov/pubmed/22840895).

131 Lester RT, McGeer A, Tomlinson G et al. Use of, effectiveness of, and attitudes regarding influenza vaccine among house staff. *Infection Control and Hospital Epidemiology,* 2003, 24(11):839–844 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14649772).

132 Davis MM, Taubert K, Benin AL et al. Influenza vaccination as secondary prevention for cardiovascular disease: a science advisory from the American Heart Association/American College of Cardiology. *Journal of the American College of Cardiology,* 2006, 48(7):1498–1502 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=17010820).

133 Cox S, Posner SF, McPheeters M et al. Hospitalizations with respiratory illness among pregnant women during influenza season. *Obstetrics and Gynecology,* 2006, 107(6):1315–1322 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16738158).

134 Buchbinder N, Dumesnil C, Pinquier D et al. Pandemic A/H1N1/2009 influenza in a paediatric haematology and oncology unit: successful management of a sudden outbreak. *Journal of Hospital Infection,* 2011, 79(2):155–160.

135 Stein A, Keller M, Ross S et al. Pandemic A/H1N1(2009) Influenza infections in very-low-birth-weight infants – a case series from the German neonatal network. *Klinische Padiatrie,* 2011, 223(5):267–270.

136 Grund S, Roggendorf M, Schweiger B. Outbreak of influenza virus A/H1N1 in a hospital ward for immunocompromised patients. *Archives of Virology,* 2010, 155(11):1797–1802.

137 Cunha BA, Thekkel V, Krilov L. Nosocomial swine influenza (H1N1) pneumonia: lessons learned from an illustrative case. *Journal of Hospital Infection,* 2010, 74(3):278–281.

138 Krumkamp R, Duerr HP, Reintjes R et al. Impact of public health interventions in controlling the spread of SARS: modelling of intervention scenarios. *International Journal of Hygiene and Environmental Health,* 2009, 212(1):67–75.

139 Yen MY, Lin YE, Lee CH et al. Taiwan's traffic control bundle and the elimination of nosocomial severe acute respiratory syndrome among healthcare workers. *Journal of Hospital Infection,* 2011, 77(4):332–337 (http://www.sciencedirect.com/science/article/pii/S019567011000530X).

140 Yen MY, Lu YC, Huang PH et al. Quantitative evaluation of infection control models in the prevention of nosocomial transmission of SARS virus to healthcare workers: implication to nosocomial viral infection control for healthcare workers. *Scandinavian Journal of Infectious Diseases,* 2010, 42(6–7):510–515.

141 Meredith LS, Eisenman DP, Tanielian T et al. Prioritizing "psychological" consequences for disaster preparedness and response: a framework for addressing the emotional, behavioral, and cognitive effects of patient surge in large-scale disasters. *Disaster Medicine and Public Health Preparedness,* 2011, 5(1):73–80.

142 Aiello A, Khayeri MYE, Raja S et al. Resilience training for hospital workers in anticipation of an influenza pandemic. *Journal of Continuing Education in the Health Professions,* 2011, 31(1):15–20.

143 Yu IT, Xie ZH, Tsoi KK et al. Why did outbreaks of severe acute respiratory syndrome occur in some hospital wards but not in others? *Clinical Infectious Diseases,* 2007, 44(8):1017–1025 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=17366443).

144 Lloyd-Smith JO, Galvani AP, Getz WM. Curtailing transmission of severe acute respiratory syndrome within a community and its hospital. *Proceedings: Biological sciences, The Royal Society,* 2003, 270(1528):1979–1989 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14561285).

145 Kuster SP, Shah PS, Coleman BL et al. Incidence of influenza in healthy adults and healthcare workers: a systematic review and meta-analysis. *PLoS ONE,* 2011, 6(10).

146 Ng ANM, Lai CKY. Effectiveness of seasonal influenza vaccination in healthcare workers: a systematic review. *Journal of Hospital Infection,* 2011, 79(4):279–286.

147 Hall CB, Douglas RG. Modes of transmission of respiratory syncytial virus. *Journal of Pediatrics,* 1981, 99(1):100–103.

148 Tsai MC, Arnold JL, Chuang CC et al. Impact of an outbreak of severe acute respiratory syndrome on a hospital in Taiwan, ROC. *Emergency Medicine Journal,* 2004, 21(3):311–316 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15107369).

149 Tran K, Cimon K, Severn M et al. *Aerosol-generating procedures and risk of transmission of acute respiratory diseases: a systematic review.* Ottawa, Canadian Agency for Drugs and Technologies in Health, 2011 (http://www.cadth.ca/media/pdf/M0023__Aerosol_Generating_Procedures_e.pdf).

150 Jordan WS, Jr. The mechanism of spread of Asian influenza. *American Review of Respiratory Disease,* 1961, 83(2):29–40 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=13790691).

151 Green-McKenzie J, Gershon RR, Karkashian C. Infection control practices among correctional healthcare workers: effect of management attitudes and availability of protective equipment and engineering controls. *Infection Control and Hospital Epidemiology,* 2001, 22(9):555–559 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=11732784).

152 Moore D, Gamage B, Bryce E et al. Protecting health care workers from SARS and other respiratory pathogens: organizational and individual factors that affect adherence to infection control guidelines. *American Journal of Infection Control,* 2005, 33(2):88–96.

153 Ofner M, Lem M, Sarwal S et al. Cluster of severe acute respiratory syndrome cases among protected health care workers – Toronto, April 2003. *Canada Communicable Disease Report,* 2003, 29(11):93–97.

154 Seto WH, Tsang D, Yung RW et al. Effectiveness of precautions against droplets and contact in prevention of nosocomial transmission of severe acute respiratory syndrome (SARS). *Lancet,* 2003, 361(9368):1519–1520.

155 Chia SE, Koh D, Fones C et al. Appropriate use of personal protective equipment among healthcare workers in public sector hospitals and primary healthcare polyclinics during the SARS outbreak in Singapore. *Occupational and Environmental Medicine,* 2005, 62(7):473–477 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15961624).

156 Rengasamy A, Zhuang Z, Berryann R. Respiratory protection against bioaerosols: literature review and research needs. *American Journal of Infection Control,* 2004, 32(6):345–354.

157 Institute of Medicine. Committee on the Development of Reusable Facemasks for Use During an Influenza Pandemic. *Reusability of facemasks during an influenza pandemic: facing the flu.* Washington, D.C., National Academies Press, 2006 (http://www.nap.edu/catalog.php?record_id=11637#toc).

158 Hannum D, Cycan K, Jones L et al. The effect of respirator training on the ability of healthcare workers to pass a qualitative fit test. *Infection Control and Hospital Epidemiology,* 1996, 17(10):636–640 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=8899436).

159 Varia M, Wilson S, Sarwal S et al. Investigation of a nosocomial outbreak of severe acute respiratory syndrome (SARS) in Toronto, Canada. *Canadian Medical Association Journal,* 2003, 169(4):285–292.

160 Lee N, Hui D, Wu A et al. A major outbreak of severe acute respiratory syndrome in Hong Kong. *New England Journal of Medicine,* 2003, 348(20):1986–1994 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12682352).

161 Chen SK, Vesley D, Brosseau LM et al. Evaluation of single-use masks and respirators for protection of health care workers against mycobacterial aerosols. *American Journal of Infection Control,* 1994, 22(2):65–74.

162 McCullough NV, Brosseau LM, Vesley D. Collection of three bacterial aerosols by respirator and surgical mask filters under varying conditions of flow and relative humidity. *Annals of Occupational Hygiene,* 1997, 41(6):677–690.

163 Ho AS, Sung JJ, Chan-Yeung M. An outbreak of severe acute respiratory syndrome among hospital workers in a community hospital in Hong Kong. *Annals of Internal Medicine,* 2003, 139(7):564–567.

164 Lu YT, Chen PJ, Sheu CY et al. Viral load and outcome in SARS infection: the role of personal protective equipment in the emergency department. *The Journal of Emergency Medicine,* 2006, 30(1):7–15 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16434329).

165 Alfa MJ, DeGagne P, Olson N et al. Comparison of ion plasma, vaporized hydrogen peroxide, and 100% ethylene oxide sterilizers to the 12/88 ethylene oxide gas sterilizer. *Infection Control and Hospital Epidemiology,* 1996, 17(2):92–100.

166 Cronmiller JR, Nelson DK, Salman G et al. Antimicrobial efficacy of endoscopic disinfection procedures: a controlled, multifactorial investigation. *Gastrointestinal Endoscopy,* 1999, 50(2):152–158.

167 Nystrom B. Disinfection of surgical instruments. *Journal of Hospital Infection,* 1981, 2(4):363–368.

168 Parker HH, Johnson RB. Effectiveness of ethylene oxide for sterilization of dental handpieces. *Journal of Dentistry,* 1995, 23(2):113–115.

169 Kampf G, Bloss R, Martiny H. Surface fixation of dried blood by glutaraldehyde and peracetic acid. *Journal of Hospital Infection,* 2004, 57(2):139–143.

170 Rutala WA, Gergen MF, Jones JF et al. Levels of microbial contamination on surgical instruments. *American Journal of Infection Control,* 1998, 26(2):143–145 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=9584809).

171 Pittet D, Allegranzi B, Sax H et al. Evidence-based model for hand transmission during patient care and the role of improved practices. *Lancet Infectious Diseases,* 2006, 6(10):641–652.

172 World Health Organization (WHO). *WHO guidelines on hand hygiene in health care (advanced draft).* Geneva, WHO, 2006 (http://www.who.int/patientsafety/information_centre/ghhad_download/en/index.html).

173 Collins CH, Grange JM. Tuberculosis acquired in laboratories and necropsy rooms. *Communicable Disease and Public Health,* 1999, 2(3):161–167 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=10491868).

174 Marris E. Marburg workers battle to win trust of locals. *Nature,* 2005, 434(7036):946 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15846312).

175 Claydon SM. The high risk autopsy. Recognition and protection. *American Journal of Forensic Medicine and Pathology,* 1993, 14(3):253–256.

176 Li L, Gu J, Shi X et al. Biosafety level 3 laboratory for autopsies of patients with severe acute respiratory syndrome: principles, practices, and prospects. *Clinical Infectious Diseases,* 2005, 41(6):815–821.

177 Nolte KB, Taylor DG, Richmond JY. Biosafety considerations for autopsy. *American Journal of Forensic Medicine and Pathology,* 2002, 23(2):107–122.

178 Centers for Disease Control and Prevention (CDC). *SARS. Supplement I: Infection control in healthcare, home, and community settings. VIII. Infection control for laboratory and pathology procedures.* Atlanta, CDC, 2005 (http://www.cdc.gov/ncidod/sars/guidance/I/laboratory.htm).

179 The Royal College of Pathologists. *Guidelines on autopsy practice. Report of a working group of the Royal College of Pathologists.* London, Royal College of Pathologists, 2002 (http://www.rcpath.org/index.asp?PageID=240).

180 Burton J, Rutty, GN. Autopsy suite: design and construction. In: Burton, J, Rutty, GN, ed. *The hospital autopsy*. London, Arnold, 2001:37–41.

181 Healing TD, Hoffman PN, Young SE. The infection hazards of human cadavers. *Communicable Disease Report. CDR Review,* 1995, 5(5):R61–68.

182 Newsom SW, Rowlands C, Matthews J et al. Aerosols in the mortuary. *Journal of Clinical Pathology,* 1983, 36(2):127–132.

183 Kantor HS, Poblete R, Pusateri SL. Nosocomial transmission of tuberculosis from unsuspected disease. *American Journal of Medicine,* 1988, 84(5):833–838 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=3364442).

184 Al-Wali W, Kibbler CC, McLaughlin JE. Bacteriological evaluation of a down-draught necropsy table ventilation system. *Journal of Clinical Pathology,* 1993, 46(8):746–749 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=8408701).

185 Foldy SL, Barthell E, Silva J et al. SARS Surveillance Project – internet-enabled multiregion surveillance for rapidly emerging disease. *Morbidity and Mortality Weekly Report,* 2004, 53 Suppl:215–220 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15717395).

186 Coker R, Mounier-Jack S. Pandemic influenza preparedness in the Asia-Pacific region. *Lancet,* 2006, 368(9538):886–889 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16950366).

187 Clothier H, Turner J, Hampson A et al. Geographic representativeness for sentinel influenza surveillance: implications for routine surveillance and pandemic preparedness. *Australian and New Zealand Journal of Public Health,* 2006, 30(4):337–341 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16956163).

188 Juckett G. Avian influenza: preparing for a pandemic. *American Family Physician,* 2006, 74(5):783–790.

189 Davoli E, World Health Organization (WHO) Regional Office for Europe. *A practical tool for the preparation of a hospital crisis preparedness plan, with speical focus on pandemic influenza.* Copenhagen, WHO Regional Office for Europe, 2006 (http://www.euro.who.int/document/e89231.pdf).

190 World Health Organization (WHO). *WHO checklist for influenza pandemic preparedness planning.* Geneva, WHO, 2005 (http://whqlibdoc.who.int/hq/2005/WHO_CDS_CSR_GIP_2005.4.pdf).

191 Heymann DL, Rodier GR. Hot spots in a wired world: WHO surveillance of emerging and re-emerging infectious diseases. *Lancet Infectious Diseases,* 2001, 1(5):345–353 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=11871807).

192 Borgundvaag B, Ovens H, Goldman B et al. SARS outbreak in the greater Toronto area: the emergency department experience. *CMAJ,* 2004, 171(11):1342–1344.

193 Riley S, Fraser C, Donnelly CA et al. Transmission dynamics of the etiological agent of SARS in Hong Kong: impact of public health interventions. *Science,* 2003, 300(5627):1961–1966.

194 Asplin BR, Flottemesch TJ, Gordon BD. Developing models for patient flow and daily surge capacity research. *Academic Emergency Medicine,* 2006, (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=17015412).

195 Baumann AO, Blythe JM, Underwood JM. Surge capacity and casualization: Human resource issues in the post-SARS health system. *Canadian Journal of Public Health,* 2006, 97(3):230–232 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16827414).

196 Schull MJ, Stukel TA, Vermeulen MJ et al. Surge capacity associated with restrictions on nonurgent hospital utilization and expected admissions during an influenza pandemic: lessons from the Toronto severe acute respiratory syndrome outbreak. *Academic Emergency Medicine,* 2006, 13(11):1228–1231 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16807399).

197 Bartlett JG. Planning for avian influenza. *Annals of Internal Medicine,* 2006, 145(2):141–144.

198 Hick JL, O'Laughlin DT. Concept of operations for triage of mechanical ventilation in an epidemic. *Academic Emergency Medicine,* 2006, 13(2):223–229.

199 Smith RD. Responding to global infectious disease outbreaks: lessons from SARS on the role of risk perception, communication and management. *Social Science and Medicine,* 2006, 63(12):3113–3123 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16978751).