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	健康危機管理関連指針
アメリカ	DHHSとCDCは、2004年10月に国家対応計画（National Response Plan：NRP）および全米被害管理システム(Naional Incident Management System：NIMS)の原則・概念・方針に基づいて、州・地方・部族の公衆衛生専門家に対して緊急事態或いは災害発生急性期の利用を意図したガイドを作成した。
イギリス	DoHとHPAは、原因不明事例（unusual illness）への対応マニュアル、原因別のマニュアル（DoHとHPAが作成。炭疽病、ボツリヌス、化学物質、ペスト、天然痘、野兎病が作成されている）を作成し、関係機関に配布している。 DoHとHPAは、健康危機管理計画（emergency planning）の策定指針を作成し、関係機関はそれにしたがって健康危機管理計画を策定しなければならない。 DoHとHPAは、健康危機管理ガイドライン（CBRNテロへの対応、インフルエンザ・西ナイル熱・SARSなどの感染症の集団発生、放射性物質など）を作成している。
フランス	保健省DHOSでは、健康危機管理のための指針を定めている。この指針では、DDASSのディレクターや各施設長向けに、健康危機に関して、危機管理、各レベル（地方、国）における対応、安全計画、安全確保のためのネットワーク、NRBC（核、原子力、生物、化学）リスクへの対応策などに関する方法が記載されている。
スウェーデン	
オーストラリア	Population Health Division（連邦政府Department of Health and Aged Care内）が感染症アウトブレイク時の国レベルの活動の中心であり、実践ガイドラインの策定を行っている。 連邦政府 Department of Family and Community Services risk management policy and guidelines を1999年8月にまとめた。 州ではThe State Health Emergency Committeeを立ち上げ、災害時の対応を検討し、レポートをまとめている。
韓国	

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	健康危機管理計画
アメリカ	
イギリス	全てのNHS組織（PCT、StHA、病院、救急）は、major incidentに対応するために、組織内または管轄地域における健康危機管理計画（emergency planning）を策定し、実地訓練による計画の実効性の評価と計画の改正を定期的に実施しなければならない。 健康危機管理計画の責任者として危機管理責任者（Emergency Planning Liaison Officer）を設置しなければならない。 関係機関（警察、消防・レスキュー、救急、County、LA、公共事業者（電気、ガス、水道）、赤十字、軍、ボランティアなど）と連携して実効性の高い計画を策定すること、他の計画（隣接地域の計画、上位組織の計画、地方自治体の防災計画など）との整合性を図ること、が必要となる。
フランス	大量の被害者が出た場合の対応策、必要に応じた医療チームの派遣、医薬品の処方、患者の搬送などを定めた緊急時計画（plans rouges）、その発生と場所が予め予測できるような種類のリスク（原子力施設の建設、毒性ガスの地下埋め立てなど）への対応計画を定めた介入特別計画（plans particuliers d'intervention: PPI）、技術的リスク（鉄道事故、危険物運搬時の事故、洪水など）への特殊安全計画（plans de secours spécialisés: PSS）などがある。
スウェーデン	
オーストラリア	Population Health Division（連邦政府Department of Health and Aged Care内）が感染症アウトブレイク時の国レベルの活動の中心であり、政策立案を行っている。 市町村レベルでも感染症コントロールのための法をつくる権限が認められている。 Australia New Zealand Food Regulation Ministerial Council（ANZFRMC）の実働部隊の一つである a rapid-response Technical Advisory Group 及びFood Standards Australia New Zealandがすべての国内の食品基準を政府の法に基づいて作成している。 地方政府はAustralia Model Food Actにもとづき、食品衛生にかかわる各市町村の法をつくる権限を持つ。
韓国	

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	テロ・原因不明事例への対応（責任）	衛生検査の実施機関
アメリカ		LHD
イギリス	健康危機管理の法的な責任機関はPCTであるが、原因不明事例、特にテロの疑いのあるものについてはHPAが実際の対応を行う。 警察や救急、GPや病院などの医療機関によって発見された原因不明事例はLHPUに報告される。LHPUはHPAのCentreなどに連絡し、助言を得る。医療機関は検体を採取し、衛生試験所が検査を実施する。LHPUは、検査結果の報告を受けて、原因が特定された場合は、原因別のマニュアルにしたがって対応する。	一般的な衛生検査は病院の検査部門に委託され、特殊な衛生検査はHPAの衛生試験所やCentreが実施する。
フランス		
スウェーデン		
オーストラリア	Emergency Management Australia は、連邦政府の外郭団体であり、自然災害や人為的な災害を軽減する責務を持つ。また、それらへの緊急の対応の責務を担っている。	届け出義務のある感染症のうち、腸に関係があると考えられるものやサルモネラ、赤痢、ジアルディア、グラム陰性菌、エルシニア、リステリア症、アメーバ症、クロストリジウム症等の食中毒に関連があると思われるものの場合は、その領域に関する専門的能力を持つFood Safety Branchが検査実施機関となる。
韓国		一般的な衛生検査や飲料水質検査は保健所が実施する。

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	健康危機管理の評価	シミュレーション	軍の関与
アメリカ			
イギリス	HPAは実地訓練（exercise）を実施し、健康危機管理ガイドラインが有効に作動するかどうかを、継続的に評価している。	HPAは、DoHやHPAが作成している健康危機管理ガイドラインが効果的に作動するかどうかを検討し、改善点を修正することを目的として、実地訓練（exercise）を実施している。 方法として図上訓練（table-top）と臨地訓練（field）がある。いずれの場合も、シナリオを想定し、それに実際に対応する、という手順で実施される。訓練は特定の地域で実施され、PCT、LA、病院、警察、消防・レスキューなどの関係機関との共同で行われる。	○役割：major incidentへの対応の支援（Countyからの支援要請を受けた場合のみ） ○業務：被害者の捜索・救助、情報収集、医療支援、土木工事（堤防など）など
フランス	DHOSが定めた健康危機管理のための指針には自己評価のためのチェックリストが記載されている。		
スウェーデン			
オーストラリア			
韓国			○役割：健康危機に直接は関与しないが、大規模な自然災害への対応を実施する。 ○業務…被害者の捜索・救助、情報収集、医療支援、土木工事（堤防など）など

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	健康危機管理に関連する専門家1
アメリカ	
イギリス	○公衆衛生専門家…PCTなどで公衆衛生業務（健康危機管理を含む）に従事する専門家で、以下の５年間の教育課程を経た後に認定される。 ・1年目に、公衆衛生大学院のDiplomaまたは修士課程を修了する。 ・2年目に、イギリス医学会の公衆衛生学部会のDiploma & Part Ⅰ examを受験し、合格する。 ・2～4年目に、研修生として、NHS組織などに出向し、公衆衛生関連の業務（プロジェクト）に従事する。出向先の教育指導者は、Public Health Training Portfolioで示されたcompetencyの評価項目の達成度を評価する。 ・4年目に、FPHのPart Ⅱ examを受験し、合格してFPHの会員となる。 ・5年目に、公衆衛生専門医（Consultant in Public Health）、医師でない場合は公衆衛生専門家（Specialist in Public Health）の資格を取得する。
フランス	とくにNRBCリスクを専門とする医師、看護師の養成、NRBCリスク、国内外との交渉、危機発生時の情報システム、危機管理などに関する専門家の養成が求められている。
スウェーデン	
オーストラリア	保健医療分野では一般的に現任者教育が盛んである。 公衆衛生学修士が大学院から輩出されている。2000年から、国家プロジェクトとして公衆衛生修士号を持つ学生が獲得すべき能力(competency)を明確にするプロジェクトが開始された。
韓国	

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	健康危機管理に関連する専門家2	健康危機管理に関連する専門家3
アメリカ		
イギリス	○感染症管理医（Consultant in Communicable Disease Control：CCDC）…HPAなどで感染症・健康危機管理に従事する専門医で、公衆衛生専門家の教育課程に以下のプログラムを追加受講する。 ・導入プログラム（1週間）…衛生試験所、LAの環境衛生部門、HPAの州事務所、病院の感染症管理チームなどの見学 ・第1回出向プログラム（3ヶ月）…HPA（主にLHPU）に出向し、時間内・時間外のon callへの対応、予防接種・健康教育の実施、健康危機発生報告の作成・提出などを行う。 ・第2回出向プログラム（3ヶ月間）…最終年度に再びHPAに出向し、同様のプロジェクトに従事する。	○健康危機管理専門家（Consultant/Specialist in Health Protection）…HPAなどで健康危機管理に従事する専門家（医師資格の有無に関わらない）として設立予定である。教育課程は上述の公衆衛生専門家やCCDCのものが基本となる予定である。
フランス		
スウェーデン		
オーストラリア		
韓国		

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	健康危機管理に関連する研修1
アメリカ	・実施機関…Center for Public Health Preparedness（全国39ヶ所） ・目的…テロやその他の公衆衛生的脅威への対応について公衆衛生従事者の能力改善を図る。 ・対象…公衆衛生従事者 ・期間…1日間程度の短期研修が中心 ・内容…バイオテロやSARSなどの新興感染症など。Competencyの体系にもとづいてカリキュラムを構成している。
イギリス	○Emergency Planning Liaison Officerコース ・実施機関…Emergency Planning CollegeとHPA共催 ・目的…危機管理計画の策定・推進の能力・技術を習得する。 ・対象…NHS組織の危機管理責任者（Emergency Planning Liaison Officer）など ・期間…7日間 ・内容…危機管理計画の基本原理、ハザードマップの作成・リスクの同定と軽減、危機管理計画の策定とレビュー、危機管理計画の有効性の検証、質の保証と管理、指揮命令系統と関係機関との連携・協同、危機管理の実務
フランス	・実施機関…救急医療救助サービス、緊急蘇生移動サービス ・対象…所属する医師など ・期間…4日間程度 ・内容…救急サービスに必要な技術（患者への対応など）、マネージメントの能力・技術（健康危機管理計画の策定、リスクコミュニケーション、メディア対応など）など
スウェーデン	・実施機関…王立カロリンスカ研究所 ・対象…研究者や公衆衛生従事者 ・期間…1～4週間の短期研修
オーストラリア	国レベルの災害医療対策コース、及び州／準州の災害医療対策コースが、Population Health Division（連邦政府Department of Health and Aged Care内）の中のDisaster Medicine Unitによって管理されている。
韓国	

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	健康危機管理に関連する研修2
アメリカ	
イギリス	○Joint Health Advisory Cell Chairコース ・実施機関…HPA ・目的…JHACの議長（Chair）として、チームを効果的に運営するために必要なリーダーシップ、会議の進行、コミュニケーションの技術を習得する。 ・対象…PCTの公衆衛生部門の責任者など ・期間…2日間 ・内容…リーダーシップと会議の進行、リーダーシップとコミュニケーション
フランス	
スウェーデン	
オーストラリア	・実施機関…Emergency Management Australia（EMA） ・対象…公衆衛生従事者 ・内容…「危機管理」全般に関する広範囲の研修の一環として健康危機管理研修が実施されている。研修内容は危機管理のcompetencyの体系に基づいて、危機管理全般に共通する内容と保健分野に特有の内容（PTSDなど）で構成されている。
韓国	

II．研究成果の刊行に関する一覧表

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Tachibana T, Takemura S, Sone T, Segami K, Kato N	Competences necessary for Japanese public health center directors in responding to public health emergencies	Japanese Journal of Public Health	52巻11号	943-956	2005
武村真治	イギリスの健康危機管理体制の実態とわが国への適用可能性	公衆衛生	70巻3号	185-188	2006

III．研究成果の刊行物・別刷

次ページより添付する。

COMPETENCES NECESSARY FOR JAPANESE PUBLIC HEALTH CENTER DIRECTORS IN RESPONDING TO PUBLIC HEALTH EMERGENCIES

Tomoko TACHIBANA[1*], Shinji TAKEMURA[2], Tomofumi SONE[2], Kiyotaka SEGAMI[3], and Noriko KATO[4]

Objective To clarify the "competencies" required of public health center directors in "public health emergency responses."

Methods We selected as our subjects six major public health emergencies in Japan that accorded with a definition of a "health crisis." Their types were: (1) natural disaster; (2) exposure to toxic substances caused by individuals; (3) food poisoning; and (4) accidental hospital infection. Item analysis was conducted using the Incident Analysis Method, based on the "Medical SAFER Technique."

Results The competencies of public health center directors required the following actions: ① to estimate the impact on local health from the "first notification" of the occurrence and the "initial investigation"; ② to manage a thorough investigation of causes; ③ to manage organizations undertaking countermeasures; ④ to promptly provide precise information on countermeasures, etc.; and ⑤ to create systems enabling effective application of countermeasures against recurrence of incidents, and to achieve social consensus.

Conclusion For public health preparedness, public health center directors should have the following competencies: ① the ability to estimate the "impact" of public health emergencies that have occurred or may occur; ② be able to establish and carry out proactive policies; ③ be persuasive; and ④ have organizational management skills.

Key words : public health center directors, local health administrations, competence, public health emergency responses, emergency preparedness

I. Introduction

Recently in Japan, events that can be termed as health crises have often been encountered[1,2,3]. Disseminating details of precautions against the occurrence or prevention of various kinds of health injury/damage caused by such health crises has become extremely urgent; therefore, the Ministry of Health and Welfare set up a discussion group in November 1998. The Ministry, working under the recommendations of the group, amended the Guidelines to Promote Local Health Countermeasures (to be called the Guidelines hereafter) (See Figure 1). The Guidelines state that local government health facilities such as public health centers should fulfill active and important core roles in local health crisis management. Emergency preparedness and responses have become an expectation of public health organizations and of individual public health practitioners.

In this study, we attempt to clarify the competencies required of directors of public health centers managing local health administrations, (to be called simply "public health center director(s)" hereafter) in public health emergency responses.

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In 2001, the Ministry of Health, Labour and Welfare decided to communicate health-damage caused by infectious diseases, food-poisoning, drinking water, pharmaceuticals, etc. among related departments and bureaus, in order to enable prompt and appropriate measures to be taken for health risk management.

Figure 1. "Guideline to Health Crisis Management of the Ministry of Health, Labour and Welfare[19]"

Jul. 13 (Sat.), 1996 at 10 : 00: Reporting by the Sakai Municipal Hospital to the Environmental Hygiene Section, the Hygiene Department, the Environmental Health Bureau that 10 people developed diarrhea. Requested the Sakai Medical Association to notify medical institutions of the fact by fax and to collect information.

At 15 : 00: Over 200 people in 30 schools developed diarrhea. Headquarters for countermeasures established, headed by the director-general of the Environmental Health Bureau.

At 16 : 00: First press release. Instruction to prohibit entry into kitchens. Obtained foods preserved at the scenes.

Jul. 13 to 14 Over two thousand patients visited emergency sections of hospitals, which reached their full capacity. (No beds available)

Jul. 14 (Sun.) at 9 : 00: The kitchens of elementary schools were sanitized and water quality inspected by the food sanitation inspectors of the public health centers.

At 15 : 00: *E. coli* O157 was detected in 13 out of 26 fecal samples obtained from patients.

At 16 : 00: The headquarters systems for countermeasures were intensified, now headed by the deputy-mayor.

Jul. 15 (Mon.): 2836 patients with 146 inpatients.

Jul. 16 (Tue.): 4088 patients with 218 inpatients, The functions of the headquarters system for countermeasures were again intensified, now headed by the mayor.

Jul. 17 (Wed.): HUS occurrence was reported. Ongoing changes at hospitals occurred because of the need for advanced medical care.

Jul. 23 (Tue.): The first death. Increased visits to hospitals by citizens due to heightened anxiety.

Jul. 25 (Thur.): The first inspection for O157 in public water areas. Teasing/bullying of children infected by O157 at schools.

Jul. 27 (Sat.): Refusal to offer lodging to Sakai citizens occurred.

Jul. 29 (Mon.): Started to provide information on the Internet.

Aug. 3 (Sat.): Established a project team for countermeasures against human rights problems.

Aug. 6 (Tue.): Designated as a communicable disease.

Aug. 16 (Fri.): Second death.

Sept. 2 (Mon.): Normal schedule at schools resumed.

Nov. 14 (Turs.): Established an office for providing compensation for the mass outbreak of diarrhea in school children.

Nov. 19 (Tue.): School lunches resumed.

Feb. 1 (Fri.), 1997: Third death.

Aug. 1 (Thur.), 1997: Report on the incident published.

Figure 2–A. "Mass outbreak of diarrhea in school children in Sakai City"

II. Methods

1) We examined major public health emergencies that have occurred in Japan and for which the details of the situation and the progress in implementing countermeasures and control policies were recorded and available as reports. These constituted items from which details of judgments made by directors of public health centers could be objectively identified at times before and after the occurrence, and until the ultimate crisis resolution. The period of item selection was subsequent to the publication of the Guidelines to Health Crisis Management of the Ministry of Health, Labor and Welfare (to be called "MHLW") for Public Health Centers. The MHLW gave the definition of a health crisis il-

Sept. 11 (Mon.), 2000 19 : 00: A second class emergency system of caution set up.
Sept. 12 (Tue.): Sterilization of water requested by Nishibiwajima-cho to the Governor.
Sept. 13 (Wed.) at 7 : 00: Local headquarters for countermeasures against the disaster set up at Kojo, Nishibiwajima-cho and activities for the below carried out: prevention of epidemics, and visiting health counseling. Setting up of a health and hygiene counseling station as instructed by the prefectural government.
Sept. 14 (Thur.): The Disaster Relief Law applied to six cities, other than Kasuga City, Nishikasugai-gun.
Sept. 15 (Fri.) : A local headquarters for countermeasures for waste disposal was set up; Mental health care for visiting health counseling instituted.
Sept. 16 (Sat.) : 90% of water sterilization completed; distribution to homes completed.
Sept. 17 (Sun.): Sterilization work completed 15 : 00; Sterilization at nursery schools, etc. in Shinkawa-cho requested.
Sept. 18 (Mon.): Sterilization against worms in waste and after waste disposal requested by Kitabiwajima-cho; Health nurse requested for visiting health counseling by Shinkawa-cho.
Sept. 22 (Fri.): Meeting of medical rescue groups, etc. held in Nishibiwajima-cho.
Sept. 26 (Tue.): Press report saying "stress seen among preschool children due to floods.".

Figure 2–B. "Activities of public health centers at the time of torrential rains in the Tokai region"

lustrated in Figure 1. Those selected as our subjects were six:

① Item 1: Countermeasures against accidental hospital infection caused by *Serratia marcescens*[4]
② Item 2: Measures against Toxic Gas Poisoning in Matsumoto City[5]
③ Item 3: Measures against an outbreak of diarrhea in school children in Sakai City (Escherichia coli O157)[6]; (and see "Mass outbreak of diarrhea in school children of Sakai City" [Figure 2–A])
④ Item 4: Activities of public health centers at the time of torrential rains in the Tokai region; see [Figure 2–B]
⑤ Item 5: Emergency medical care activities in the JCO Co., Ltd. Tokai Plant's Critical Accident at Tokai-mura[7]
⑥ Item 6: Measures against the Wakayama poisoning cases[8]

2) Item analysis was conducted using an Incident Analysis Method designed by the authors and based on modifying the analysis method from the Medical SAFER Technique[9], a model medical quality management system based on H[2]–SAFER[10]. The Medical SAFER Technique was developed by the operators of atomic power plants in order to analyze so-called *Hiyari-hatto* items that they experienced. The authors method applied to this study is as follows[11]:

3) First, the progression of the incident was organized from the viewpoint of the moments when some new factor became evident and when a person in charge of a public health center made, or should have made, a decision. Various factors are then considered such as the public reaction (citizens or the media), decisions of public health center officials like section chiefs, decisions of public health center directors, and the practical ability of the public health center director required to make the critical decision at each moment of time, selected from the results of the organization. After discussion by the authors and 20 research assistants, all doctors studying a specialist course (in 2004) at the National Institute of Public Health, the role of and abilities needed by people in charge (public health center directors) in health crisis management were identified case by case, and then organized in a matrix table. In the table, a circle indicates an item in which the public health center director made a proper decision, while a cross indicates that in which such a decision was not made; there are also some comments. A blank column in the table indicates that an objective determination of whether or not such a decision was made was not possible from the reports.

4) From the summary of the 6 items, we analyzed and organized by time intervals health crisis management abilities needed by directors of public health centers as common factors for health crises in general, regardless of the type of health crisis involved.

III. Results

1) Item analyses:

① Item 1: [See Table 1–①]

This type was accidental hospital infection.

Table 1-①. Countermeasures against accidental hospital infections caused by *Serratia marcescens*;

Incident progression	Public reaction	Decision of relevant public health center official(s)	Decision of the public health center director	Background and practical decision-making ability required of the public health center director	Legal grounds	What to note *ex post facto*
At the time of the occurrence and immediately after						
Jan. 15 (Tue.), 2002 at 17: 30: The first notification was made to the public health center by the hospital in question of continuous DIC-like symptoms after high fever, including several deaths. Investigation was requested.		Unidentified collective infectious disease (S/O*); Section chief judged an initial investigation required, taking into consideration the possible spread of the outbreak to outside the hospital. * S/O = suspect of			Art. 15 Positive epidemiologic investigation of communicable Diseases and Medical Care Law	
Initial investigation at the site		Possible collective hospital infections due to some pathogenic organism, including resident *microbiota*→Notified the director by phone after midnight.	Promptly decided on an internal emergency meeting for discussion to be held the next morning.	Ability to understand "hospital infections including that arising from resident *microbiota*" and promptly estimate the scale of impact on medical care and local public health		
Jan. 16 (Wed.), 2002 at 8: 30: Internal emergency meeting of all sections for countermeasures		Judged request for technical support for a technical investigation (FETP*) to be required. * FETP = Field Epidemiology Training Program	Made arrangements with the Tokyo Metropolitan Government's Bureau of Public Health and the National Institute of Infectious Diseases (NIID).	Ability to understand the need for cooperation request for technical investigations and outside organization; and concreteness of arrangement of the organization		
The first meeting of the committee for countermeasures and technical investigation group (chief of the committee: the public health center director, and chief of the group: director of the Information Center of NIID)			Immediately decided to establish a committee for countermeasures and a technical investigation group on the day after the initial notification.	Ability to preside over and control specialist groups (infectious disease epidemiology, medical care, bacteriology, etc.)		
		Site investigation (patient samples/environmental investigations) by the public health center and monitoring of medical care by the Metropolitan Government. The site investigation lasted for a total of 20 days thereafter.	Understanding and interpretation of the results of the technical investigation (field epidemiology, bacteriology, etc.)	Ability to understand the meaning of the results of a technical investigation that can change rapidly, and the ability for immediate decision-making as regards changes needed in countermeasures		

Table 1-①. Countermeasures against accidental hospital infections caused by *Serratia marcescens*; (continued)

Incident progression	Public reaction	Decision of relevant public health center official(s)	Decision of the public health center director	Background and practical decision-making ability required of the public health center director	Legal grounds	What to note *ex post facto*
Estimations made by the head of the organization (1) Establishing the system responding to residents' problems; (2) Internal connections of the organization; (3) External Affairs (the municipal assembly, organizations within the jurisdiction, neighboring local governments, and the Tokyo and national governments); (4) Response to the media; and others		"*Serratia*" was focused on in the investigation.→The Communicable Disease and Medical Care Law was no longer the basis of the investigation.	● Establishing a system to respond systematically ● Responding to the media: conducted by personnel at a management level only; facts which become known are to be announced to the public, as necessary, as soon as possible after discussions of the Technical Investigation Group and the committee for countermeasures		The Medical Service Law	
One to two months after the occurrence						
	Possibility of a large number of deaths due to medical accidents; iatrogenic hospital infection reported by TV and newspapers→"The hospital has a contaminated and sloppy system".	From the viewpoint of the current situation of Japanese medical care, it was estimated (i) that there is are serious hospital infections of resident *microbiota*, and (ii) that unfavorable perceptions that there is "no need to notify the authorities" would spread, if the hospital in question alone was the subject of media reflection, and the inclination to conceal medical accidents, etc. would spread within the Japanese medical world,→thus, it was not a goal "to punish the hospital in question and have it receive bad publicity", but "to encourage all medical institutions within the jurisdiction to construct a precaution any system against hospital infections", and "establish a support system for independent precautionary activities by medical professionals", not "monitoring", as very important.		(a) Ability to understand the meaning of hospital infections due to resident *microbiota* and to evaluate the impact of such infections on the entire medical care system (b) Ability to understand the necessary introduction of health promotion policies for medical care improvement		
Long-term perspective						
Aimed at promoting a local health systems that can support independent activities of local medical associations for prevention of hospital infections.		Future precautions against recurrence of hospital infections should be, instead of traditional "monitoring" by the public health center, independent precautions of taken by medical institutions.	Establishment of accident precautions in cooperation with local medical associations	Ability to explain countermeasures aimed at local health to medical associations and other organizations and arrangement of several professional organizations		

Table 1-①. Countermeasures against accidental hospital infections caused by *Serratia marcescens*; (continued)

Incident progression	Public reaction	Decision of relevant public health center official(s)	Decision of the public health center director	Background and practical decision-making ability required of the public health center director	Legal grounds	What to note *ex post facto*
Precautions initiated by local medical associations: (a) Dispatch of member(s) to the committee for countermeasures and playing a role in developing precaution activities from the results of investigation of causes; (b) Lectures on prevention against hospital infections (twice in the first year and as such to be continued); (c) Setting up a committee for countermeasures against infections, made up of medical associations; (d) Preparing and distributing a manual of precautions against infectious diseases and crisis management; and (e) Intensive self-check of precautions against hospital infections by the medical associates;		Public health centers should coordinate various independent activities of medical organizations such as developing infection control nurse courses by the Japanese Nursing Association.	Recommendations of the committee for countermeasures to national and private organizations (medical equipment makers, etc.) as well as local medical associations for the purpose of developing precautions against hospital infections	Ability to understand and realize that the public health administration should aim at making and continuously maintaining local health systems under which public health and medical care are closely related to each other		

Practical decision-making competencies required of the public health center director (to be called the "Decision-making competencies" hereafter) are: A) to understand hospital infections, including that arising from resident *microbiota* and promptly estimate the scale of the impact on medical care and local public health; B) to understand the need for cooperation requests for technical investigations and with outside organizations; C) to preside over specialist groups (infectious disease epidemiology, medical care, etc.); D) to make a decision immediately as regards changes in countermeasures; E) to understand the meaning of hospital infection due to resident *microbiota* and to evaluate the impact on the entire medical care system; F) to understand the necessary introduction of health promotion policies for medical care improvement; G) to explain the countermeasures aimed at local health to medical associations and other organizations; and H) to understand and realize that the public health administration should aim at making and continuously maintaining local health systems.

② Item 2

This type was exposure to toxic substances caused by individuals. Decision-making competencies are: A) to give accurate instructions about organizing information; B) to set up a crisis management system; C) to request cooperation from outside organizations; D) to understand the meaning of threatened spread of an air polluting substance and to estimate the impact scale promptly; E) to move forward and control the responses of the center; F) to give due consideration to resident anxiety regarding unidentified causes of incidents and to give a relevant press release; G) to understand the results of technical investigations and to implement concrete countermeasures; H) to estimate the environmental impact of agents like sarin and to decide the necessity of follow-ups; I) to estimate the impact of agents like sarin on health from the viewpoint of medical care and public health and to decide on necessity and coordination of surveys; J) to investigate in liaison with universities; K) to promote local health measures; and L) to release precise information to residents.

③ Item 3: [See Figure 2–A]

This type was food poisoning. Decision-making competencies are: A) to build a network; B) to judge large scale food poisoning to have occurred and to decide on the establishment of a countermeasure headquarters and to select necessary personnel; C) to decide on who takes first preference for investigation; D) to gauge resident anxiety and promptly respond to it; E) to cooperate with local medical care systems; F) to decide on who takes the first priority for home visits; G) to provide exploration so that citizens can understand the situation and have their anxieties relieved, taking human rights into consideration; H) to decide on declarations of safety given the various data on the situation; and I) to decide on the range of compensation.

④ Item 4

This type was a natural disaster. Decision-making competencies are: A) collecting and providing precise information; B) to estimate promptly what countermeasures are required and for what area; C) to arrange and coordinate the personnel placement and unify intentions in the center; D) to promptly carry out countermeasures aimed at helping the most vulnerable; E) to devise diversified approaches to cope with mental stress; F) to be able to make arrangements and coordinate with technical organizations promptly when necessary; G) to understand countermeasures that can be rapidly changed without notice and efficiently respond; H) to make arrangements among various organizations to secure human resources; I) to be able to switch in peacetime to an emergency mode when responding to a situation; J) to promptly confirm the situation and to consider appropriate responses; and K) to recognize the necessity for long-term follow-ups such as PTSD.

⑤ Item 5

This type was exposure to radiation caused by an accident. Decision-making competencies are: A) to understand the meaning of a nuclear accident and to estimate how large the impact might be; B) to confirm in advance how the public health center should cope with the situation; C) to take the impact on residents into consideration and to consider organizing systems inside the center; D) to recognize the necessity for collecting information and decide on countermeasures urgently; E) to shift from a peacetime system to a crisis management one in accord with the changing situation; F) to give appropriate instructions according to the site situation; G) to take specialists' opinions into consideration when making decisions; H) to understand the situation and estimate which is better, commanding the center or inspecting the site; I) to organize the center system to provide for long-term actions; J) to understand necessary requests for cooperation with outside organizations; K) to understand residents' anxieties and appropriately attend to them; and L) to acquire knowledge of nuclear items relevant to daily life.

⑥ Item 6

This type was also exposure to toxic substances caused by individuals. Decision-making competencies are: A) to maintain and control the system under which emergency communication is possible; B) to understand and foresee the big picture of the scale

Table 2–Summary. The Summary of the "Special Ability Characteristics" of Directors during Health Crises

		Hospital infection in Setagaya	Toxic Gas Poisoning Case in Matsumoto	Inaccurate inspection of O157 at K Public Health Center	Mass outbreak of diarrhea in school children of Sakai City	Activities at the time of torrential rains in Tokai region	The JCO Critical Accident in Tokaimura	Poisoning Case in Wakayama
1. The initial stage	Preparation in peacetime	No concept of counter- measures against health problems between law and order and agreements and arrangements		? Is the approval step to order collection the same as that of other public health centers ?			○ • There was the Nuclear Disaster Prevention Manual. • Promptly confirm the role of each official	
	Connection system	○	A slight delay of notification from the staff to the director (?)	× ? There was a system whereby approval from the vice-director was possible.	○			
	Decision to shift to emergency system: Estimation ability of impact	○ Immediate decisions after discussions at meetings inside the center	○	× The prediction that a major quantity of goods would be recalled in the summer gift season	△ ? • Ability to think of gravest O157 cases; to remember preceding cases; and to foresee HUS occurrence was desired. • The decision to set up a headquarters for counter-measures across the whole city was prompt.	○ Early actions to protect the most vulnerable in the disaster	○	× • Decision on the dispatch of officials based on the estimation of the incident where food poisoning is questionable; • To suspect the ordinary and use common sense
2. Prevention strategies against health injury/damage spread; survey management for investigation of causes	Carrying out of preventive activities against health injury/damage spread	○	○ ?		× The prevention of secondary infection should have been started at the time of the decision on school closing.		○ Placement of X-ray technologist and health nurses, etc.	
	Decision on the necessity and promptness of the initial investigation	○	○	×	○	○		△ ? Phones should not be relied on for transfer of complicated information

Table 2–Summary. The Summary of the "Special Ability Characteristics" of Directors during Health Crises (continued)

		Hospital infection in Setagaya	Toxic Gas Poisoning Case in Matsumoto	Inaccurate inspection of O157 at K Public Health Center	Mass outbreak of diarrhea in school children of Sakai City	Activities at the time of torrential rains in Tokai region	The JCO Critical Accident in Tokaimura	Poisoning Case in Wakayama
	Understanding of technical investigation/survey; arrangement, coordination and control with outside organizations	○	○ Entry inspection the next day; weather, specific substances in air, toxic substances, etc.		△? Contacts and notifications were prompt. Technical investigations were carried out one-way, from CDC, and the central government		○ Site inspection based on the estimation of the site situation and according to the advice of the central government	
3. Organization management	Organization arrangement in the public health center and administration organization	○	○	×		○	○ Instructions according to the situation	△ Although a headquarters for counter- measures was set up, the stand-by personnel group was dissolved before verifying settlement. of the situation
	Arrangement and coordination with outside organizations (medical associations, neighboring municipalities, the central government, etc.)	○	○	×	Supported by volunteer activities through the holiday medical examination network of medical institutions	○ Acceptance of volunteers, etc.	○	
	Showing presence as a commanding officer	○						
	Ability to set counter-measure targets and to explain grounds for decision making	○		×				

Table 2–Summary. The Summary of the "Special Ability Characteristics" of Directors during Health Crises (continued)

		Hospital infection in Setagaya	Toxic Gas Poisoning Case in Matsumoto	Inaccurate inspection of O157 at K Public Health Center	Mass outbreak of diarrhea in school children of Sakai City	Activities at the time of torrential rains in Tokai region	The JCO Critical Accident in Tokai-mura	Poisoning Case in Wakayama
4. Role as external spokesperson	Establishment of clear system of responsibility and simple process of decision-making	○	○					
	Promptly providing precise information based on the facts found	○		×	△? Making use of the Internet information, though the media apparently took the lead on this issue			△ The media response immediately after the incident; Confused after the incident occurred.
	Positive release of counter-measures policy	○		△ The messages were released by the local government, not the public health center				
5. Follow-up after the counter-measures; Establishment of continuous preventive measures against recurrence	Follow-up of residents and the most vulnerable in society	○	?		○ Follow-up health examination	× Required considerations of health problems of volunteers and personnel of the center	○	○ Establishment of a system supported by psychiatrists, etc.
	Administrations ability to realize system improvements to prevent recurrence	○		× The power of the director of the pubic health center was actually transferred to the department manager of the local government.				
	Role of overall evaluation on a series of countermeasures in the form of written records and articles	○	○	×	○	○	○	○

* a circle (○) indicates an item in which the public health center director made a proper decision a cross (×) indicates that in which such a decision was not made
* A blank column in the table indicates that an objective determination of whether or not such a decision was made was not possible from the reports.

of the incident and its outlines; C) to decide on setting up headquarters for countermeasures; D) to explain the situation to the media; E) to recognize that the case might be a crime; F) to recognize the gravity of the situation and to act cautiously before the course of the incident becomes clear; G) to ask technical organizations outside the center for cooperation and to arrange that cooperation; H) to foresee long-term health injury/damage to residents; I) to arrange and coordinate the cooperation of psychiatrists, schools, civil volunteers, universities, medical associations, and others; J) to consider expenditure; and K) to acquire technical knowledge to prepare a relevant manual.

Summary of the *Role and Special Ability Characteristics* of Directors of Public Health Centers managing Local Health Administrations during Health Crises as seen in five of the subjects [see Table 2–Summary]

2) Summary of the *Competencies* of Public Health Center Directors in Responses to Public Health Emergencies by time intervals:

In analyzing the competencies required of public health center directors and needed for Public Health Emergency Responses, it was found that they could be generalized into 15 elements [See Figure 3]. These were here summarized under the phases *prevention of a health crisis*, *preparation for a health crisis*, *correspondence of health crises*, and *recovery from a disorder.* [See Table 3].

IV. Discussion

Emergency preparedness is an expectation of public health organizations and individual public health practitioners[12,13]. Both the process of governing and public administration systems have been undergoing radical changes in the course of the last quarter of a century all over the world[14,15]. Decision-making competencies for health crisis management can be generalized into fifteen groups and concrete descriptions of the competencies and roles can be gained from approapiate analysis. Whatever accidents caused by agents or the computerized Y2K where a health hazard did not, any likelihood of problems is a matter of concern for health crises included in the guideline definition. Although such situations are considered to be important and might require intervention by health centers concrete examples were not found and so these subjects were not included in the present study.

In a health crisis situation, it is necessary to

(i) Estimation of switches from peacetime to emergency systems
(ii) Technical knowledge about medical and public health sciences, administration techniques, and situations within the jurisdiction and (i.e. a fund of knowledge and experience to estimate impact)
(iii) Power to perform prevention countermeasures against health injury/damage spread (often at the same time as the initial investigation)
(iv) Ability to collect information necessary for impact estimation
(v) Power to perform the initial stage of an epidemiological investigation
(vi) Arrangement of, coordination with, and management ability of organizations engaged in technical investigations and surveys (local institutes of public health, the central government, CDC, etc.)
(vii) Power to control the internal organization (decisions, instructions)
(viii) Arrangement and coordination ability among outside organizations (medical associations, neighboring municipalities, and central government.)
(ix) Ability to set targets for countermeasures and explain grounds for decisions inside and outside of one's own organization
(x) Establishment of a system with clear responsibility and a simple decision-making process
(xi) Ability to promptly explain about necessary matters to victims, neighboring residents, media or politicians, based on precise medical knowledge and a sound scientific viewpoint
(xii) Let others know about the lessons learnt from countermeasures from a positive perspective, not with a passive attitude
(xiii) Knowledge of actions for PTSD and how to protect the most vulnerable in society
(xiv) Power to achieve the realization of systematic improvements for residents after taking countermeasures
(xv) Ability to summarize a series of countermeasures in the form of reports and articles

Figure 3. Competencies required of public health center directors can be generalized into 15 elements (i)–(xv):