

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

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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 occur-

rence 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 Welfare¹⁹⁾”

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"

illustrated 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 City⁵⁾
- 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-mura⁷⁾
- ⑥ Item 6: Measures against the Wakayama poisoning cases⁸⁾

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 Technique⁹⁾, a model medical quality management system based on H²-SAFER¹⁰⁾. 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 follows¹¹⁾:

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 1-④. 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 <i>ex post facto</i>
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 DJC-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 organisms, including resident <i>microbiota</i> →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 <i>microbiota</i> " 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 1-④. 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 <i>ex post facto</i>
<p>Estimations made by the head of the organization</p> <p>(1) Establishing the system responding to residents' problems;</p> <p>(2) Internal connections of the organization;</p> <p>(3) External Affairs (the municipal assembly, organizations within the jurisdiction, neighboring local governments, and the Tokyo and national governments);</p> <p>(4) Response to the media; and others</p>	<p>"Serratia" was focused on in the investigation. → The Communicable Disease and Medical Care Law was no longer the basis of the investigation.</p>	<p>● Establishing a system to respond systematically</p> <p>● 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</p>	<p>● Establishing a system to respond systematically</p> <p>● 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</p>	<p>The Medical Service Law</p>		
<p>One to two months after the occurrence</p>	<p>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".</p>	<p>From the viewpoint of the current situation of Japanese medical care, it was estimated (i) that there is a serious hospital infections of resident <i>microbiota</i>, 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.</p>	<p>(a) Ability to understand the meaning of hospital infections due to resident <i>microbiota</i> and to evaluate the impact of such infections on the entire medical care system</p> <p>(b) Ability to understand the necessary introduction of health promotion policies for medical care improvement</p>			
<p>Long-term perspective</p>	<p>Aimed at promoting a local health systems that can support independent activities of local medical associations for prevention of hospital infections.</p>	<p>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.</p>	<p>Establishment of accident precautions in cooperation with local medical associations</p>	<p>Ability to explain countermeasures aimed at local health to medical associations and other organizations and arrangement of several professional organizations</p>		

Table 1-④. 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 <i>ex post facto</i>
<p>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;</p>	<p>Public health centers should coordinate various independent activities of medical organizations such as developing infection control nurse courses by the Japanese Nursing Association.</p>	<p>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</p>	<p>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</p>			
<p>(b) Lectures on prevention against hospital infections (twice in the first year and as such to be continued);</p>						
<p>(c) Setting up a committee for countermeasures against infections, made up of medical associations;</p>						
<p>(d) Preparing and distributing a manual of precautions against infectious diseases and crisis management; and</p>						
<p>(e) Intensive self-check of precautions against hospital infections by the medical associates;</p>						

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 (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	○	○	
Showing presence as a commanding officer	○						
Ability to set counter-measure targets and to explain grounds for decision making	○		×				

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 appropriate 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

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| (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):

Table 3. Summary of the “Competencies” of Public Health Center Directors for Public Health Emergency Responses by time point:

Phase	Roles characteristic of public health center directors	Competencies
“prevention of health crises”		(ii) (iii) (iv)
“preparation for health crises”	1. Competence to estimate the impact on local health from the “first notification” of the occurrence and the “initial investigation”	(ii) (iii) (iv) (v) (vi)
“correspondence for health crises”	2. Management competence for thorough investigation of causes 3. Management competence for countermeasures by the organization 4. Competence to promptly provide precise information on facts found and countermeasure policies, inside and outside of ones jurisdiction, and to explain them as a spokesperson	(i) (ii) (iv) (v) (vii) (viii) (ix) (x) (xi)
“recovery from disorders”	5. Follow-up after taking countermeasures; Competence to create systems enabling countermeasures against recurrence of incidents and achievement of social consensus	(ii) (x) (xi) (xii) (xiii) (xiv) (xv)

safeguard the public and resolve the problem with a top-down command system in an organization headed by a public health center director^{16,17}, who is expected to be an individual with the competencies discussed above.

Competence to estimate the “impact” of public health emergencies that have occurred or may occur

The impact of a health crisis can be formulated as a function of the following four parameters:

$$\text{Impact (u, t)} = F\{\text{Quantity (u), Magnitude (u), Velocity (u), Vagueness (u), t}\}$$

i) Quantity: Maximum injury/damage, including the numbers of victims, damaged houses and buildings

ii) Magnitude: Maximum injury/damage level, ranging from light serious and including death

iii) Velocity: Speed of the spread of injury/damage (a space element such as the spread of the injury/damage area and the time element, such as how much time it will take for the injury/damage to reach the maximum)

iv) Vagueness: Uncertainty about the occurrence point, cause, injury/damage to subjects, actions)

The four parameters, except for time, have “uncertainty (u)” as a common element, with the most serious situation of uncertainty being that in the initial stage of a crisis. To assess the degree of this uncertainty, the proper collection of information is essential. Instead of the passive response of waiting for information, it is necessary for staff to be instructed to proactively collect information; this includes

giving advice about how information should be collected. In practice, the ability to estimate the impact of a health crisis, and proof of knowledge/technology related to medical knowledge and epidemiological practice is indispensable, because field epidemiology is necessary when all the variables are to be estimated.

Competence in establishing and carrying out proactive policies

i) Actions in response to a health crisis must start to be taken in parallel with the occurrence of the crisis; that is, before the impact has been determined. As such, a policy of primary action needs to be decided and implemented.

ii) After carrying out primary actions, reactions to events inside and outside the center, and information collected to establish the impact up to that point need to be re-examined; the suitability of the primary actions should be evaluated, the action policy corrected and the strategy for secondary actions decided and implemented.

iii) The process in ii) is repeated and several more actions may be implemented. Ultimately, final actions and policy must be decided and implemented. Based on the assessed impact, which would be established as a peacetime action.

Competency in acquiring persuasiveness

Directors must show victims, neighboring residents and groups that they have a scientific understanding of the problems that have occurred, and must show adequate confidence backed by relevant knowledge. When the total picture of the situation is not clear and the most important aspects are still unknown, much more strict evaluation must be made. Wisdom to judge a situation and properly an-

swer questions about symptoms and the phenomena presented, along with responsibility and potential medical and other knowledge are all required.

This holds true for explanations to politicians and media of the situation and interim responses. For a public health center to take an active role in achieving people's trust, the director must satisfy the external requirement of being a doctor and the requirement of having the competence to explain appropriately all necessary matters based on precise medical knowledge and a sound scientific background.

Competence in organization management

In health crisis management, the competence required of the person in charge of managing an organization can be divided into two categories⁽¹⁸⁾: one involving control inside the organization (= internal control) and the other control of outside organizations (= external control).

The target of control inside the organization is mainly the internal structure of the municipal organization. To keep up with a situation that might be changing every moment of a health crisis, securing a correct and prompt communication route for information and establishing a clear decision-making process is indispensable. Also to be clarified is the system for sharing roles within the inside organization, particularly with regard to management of technical facilities within the public health center in respect to the scientific investigation of causes during a health crisis.

In contrast, the control of outside organizations covers prevention of health injury/damage spread, response to and arrangement of organizations within the jurisdiction (residents, local medical associations, etc.), arrangement and coordination among outside organizations (technical institutes, municipalities, etc.). For these functions to be efficiently carried out, extensive medical knowledge and management competence are required.

V. Conclusion

The characteristics and extent of health crisis management competencies required of public health center directors can be summarized as:

(1) Competence to estimate the impact from the viewpoint of local health, based on the first notification of the occurrence of a health crisis and the results of the initial investigation.

(2) Competence to manage the investigation of causes.

(3) Competence to manage the administrative organizations for carrying out countermeasures. This entails the ability to be an effective spokesman.

(4) Ability to oversee the establishment of a system that allows for continuous precautions to be taken against the recurrence of similar cases within the center's jurisdiction.

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