

# Hospital Preparedness for Weapons of Mass Destruction Incidents: An Initial Assessment

Tzong-Luen Wang, MD, PhD; Huei-Tsair Chen, MD; Hang Chang, MD, PhD

## Abstract

To elucidate hospital preparedness for weapons of mass destruction (WMD), we performed an initial assessment in the emergency response hospitals in Taipei. Interviews of hospital personnel were performed in 10 hospitals. Data collected included level of preparedness, mass decontamination capabilities, training of hospital staff, and facility security capabilities. No respondents believed their sites were fully prepared to handle a biologic incident, 70% (7/10) believed they were not prepared to manage a chemical weapons incident, and 80% believed they were unprepared for a radio-nuclear incident. Were a WMD incident to occur, 50% of respondents stated a single-room decontamination process would be set up. WMD preparedness had been incorporated into hospital response plans by 40% (4/10) of the institutions. Fifty percent (5/10) believed their emergency department could manage 20 to 50 casualties at once. No facility had stockpiled any medications for WMD treatment. All facilities had established networks of communication. No hospital has prepared media statements specific to WMD. Thirty percent (3/10) stated that their hospital staff had some training in WMD event management. All reported need for WMD-specific training but identified obstacles to achieving this. Sixty percent (6/10) of hospitals had a facility security plan, and 20% were able to perform a so-called isolation plan. None had awareness regarding the threat of a secondary device. Hospitals in this sample do not appear to be prepared to handle WMD events, especially in areas such as mass decontamination, mass medical response, and awareness among health care professionals, health communications, and facility security. (*Ann Disaster Med.* 2004;2:74-79)

**Key words:** WMD; Disaster; Response; Preparedness

## Introduction

Because of increasing worldwide threats of weapons of mass destruction (WMD) terrorism, hospital emergency personnel confront the challenge of implementing a mass medical response to such events that may re-

quire immediate decontamination and treatment of large numbers of casualties, as well as an increased focus on the protection and safety of health care workers.<sup>1-3</sup> Because patients exposed to a biologic agent may not have symptoms for a period of time after the attack, they

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From Department of Emergency Medicine, Shin-Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan  
Address for reprints: Dr. Hang Chang, From Department of Emergency Medicine, Shin-Kong Wu Ho-Su Memorial Hospital, 95 Wen-Chang Road, Taipei, Taiwan  
Received: Nov 6 2003. Revised: Nov 22 2003. Accepted: Dec 22 2003.  
TEL: 886-2-28332211 ext 2087 FAX: 886-2-28353547 E-mail: M002183@ms.skh.org.tw

may distribute over the dispersed areas. In many events involving biological agents, the first involvement are likely to be hospital or other medical systems.<sup>4</sup> Although there is still no definite terrorist attack in Taiwan, we still have to admit that terrorism has become widely recognized as a significant threat to the public health and safety.

When an actual WMD occurs, hospital commanders and key persons such as the superintendent, emergency department director, nursing director, and chief hospital engineer or local equivalents would be called on to focus community medical responses.<sup>5</sup> It is so-called the hospital emergency community of practice (HEMCOP) in the United States.<sup>6</sup> However, even in Euro-American countries, national WMD readiness and preparedness training has usually focused on the traditional first-responder communities, such as emergency medical services (EMS), fire, and law enforcement personnel and the military. In Taiwan, the situation is similar, even worse. It has rarely been reported concerning current level of civilian hospital preparedness. Our study is to assess the training needs of emergency personnel for WMD preparedness in selected hospitals in Taiwan to elucidate the real condition.

## Methods

A convenience sample of 15 hospitals was generated to assess hospital preparedness in Taipei. This region was chosen because the area was familiar to the authors and because the hospitals in this area are compatible with our national interagency disaster planning and coordination. This methodology was not intended to be statistically representative of the whole Taiwan region but rather to help develop an initial under-

standing of the extent of information and training needs in our region. Of the 15 hospitals, interviews were completed with 10 hospitals during a 60-day period.

Three independent research members who had been involved in WMD training performed the interviews. Either the ED medical director or ED nursing director was interviewed at each site on the basis of availability. The structured interview used an instrument that was developed in collaboration with Taiwan Society of Disaster Medicine. The institutional review board approved this assessment project at our hospital. Data collected from each respondent included perceived level of hospital preparedness, mass decontamination and medical response capabilities, training of hospital staff, and facilities.

## Results

Ten ED medical directors and 10 ED nursing directors were interviewed. Participating hospitals were widely dispersed in Taipei area. None of the respondents believed their institutes were fully prepared to handle a biologic incident. Seven of the 10 hospitals believed that their sites were not prepared at all, and 2/10 (20%) believed their sites were prepared at varying degrees.

In respect of chemical weapons, 70% (7/10) believed they were not prepared at all, and 30% believed they were somewhat prepared. The reported level of preparedness for nuclear weapons was similar to the biologic and chemical weapons response; with the exception that 1 respondent believed that his or her facility was fully prepared. This hospital was set up to act as the tertiary refer center of radio-nuclear events and it had complete local plans and drills

for a power plant incident and related nuclear weapons scenario; however, the same respondent believed the facility was not well prepared to handle a biologic or chemical weapons attack.

One-half respondents (5/10) stated that a single-room decontamination process would be set up to handle 1 victim at a time. Ten percent (1/10) reported having a mobile decontamination station that could process 5 to 10 patients at a time. Four (40%) hospitals reported having no decontamination plans in place.

WMD preparedness had been incorporated into hospital disaster plans at 40% (4/10) of the facilities. Fifty percent (5/10) of the respondents believed their ED could manage 20 to 50 disaster casualties at a time. Only 10% (1/10) perceived the ability to manage 50 to 100 casualties.

With the exception of 1 facility, all respondents reported having no disaster plans for patient overcrowding to other medical facilities to accommodate seasonal fluctuations in patient census. None of the facilities reported to make specific agreements documented for managing mass casualties when disaster occurred. In addition, no vaccines were reported as being stockpiled by any facility with the exception of tetanus.

All facilities reported having established networks of communications, with private telephone lines, GSM / PHS and radios for use during disaster management. All sites reported having call-out systems using both a telephone call list and a paging system. No sites reported concern for lack of secure or encrypted communication systems. All respondents reported having public relations staff to handle media inquiries and to serve as community liaisons with

families during disaster events. However, none of the hospitals surveyed have prepared media statements or communications plans specifically for use during a WMD incident.

Thirty percent (3/10) of respondents stated that hospital staff at their facility had received some lecture-based or continuing medical education courses on WMD. All respondents reported a need for WMD training but identified obstacles to achieving adequate training: (1) lack of time available for training; (2) lack of available courses; and (3) lack of funding required to train large numbers of personnel. As to what training format they would prefer and would be most accessible, 80% (8/10) of respondents stated they preferred on-site teaching such as scenarios and practice drills, whereas the remaining 20% stated a preference for virtual reality simulation. The combination of pre-event training and scene learning were preferred in 50% (5/10) of the hospital respondents.

Twenty percent (2/10) of the hospital respondents stated that they had disaster drills specified for WMD events. The drills might be conducted with other hospitals and EMS, but did not enroll fire, police personnel and the public health service.

Sixty percent (6/10) of hospitals reported having a security plan in place, and 20% stated that they were able to perform a isolation plan without outside assistance. When asked about the possibility of a secondary device set by a terrorist to injure or kill health care workers who are trying to care for sick or injured patients, none reported being aware of or prepared to deal with a secondary device.

## Discussion

This study demonstrated that most of emergency response hospitals were not well prepared for WMD events although they all recognize the importance of the preparedness.

To effectively cope with WMD releases, communities must address both emergency medical and emergency public health issues during preparedness and response activities.<sup>6</sup> Among hospital emergency personnel, there appear to be significant gaps in knowledge and skill-content areas, including mass decontamination, mass medical response, WMD awareness among health care professionals, health communications, and facility security. One recent study of English hospitals also found both decontamination facilities and personal protective equipment for health care providers to be lacking.<sup>7</sup> At greater risk may be the rural facilities that rely on local EMS personnel to perform decontamination. This is of concern because up to 80% of disaster victims may seek hospital care without accessing EMS.<sup>8</sup> Greater coordination with federal agencies will be required for timely access to vaccine and medicine stockpiles.<sup>9</sup> No facility reported having lines of communication free of potential security issues and system failures.<sup>10</sup>

US and European desired to heal divisions and prompted the EU to produce both a Security Strategy and a WMD Action Plan for the Thessaloniki European Council. The plan provides a yardstick to measure member state resolve on non-proliferation and a framework to guide EU action in this area of security policy. This article examines the latest EU policy statements on WMD and provides a concrete insight into what European Security Strategy concepts such as 'effective multilateralism' mean for non-proliferation efforts in practice.

Accordingly, implementation and globalization of the basic principles include a clear statement from member states that the proliferation of all weapons and their means of delivery constitutes a threat to international peace and security; member state backing for an 'threat assessment'; a broad approach that places a premium upon the multilateral system and its non-proliferation regimes; and an understanding of regional security/insecurity dynamics and a supporting framework that produces stable security communities where disarmament leads to a 'virtuous circle'. According to the Basic Principles document the major elements in pursuit of the above include universalisation of disarmament and non-proliferation agreements while stressing the need for effective national implementation thereof; ensuring compliance with non-proliferation commitments by strengthening international inspection/verification mechanisms; strengthening export control policies; having a focused dialogue both with countries suspected of proliferation activities and with those whose co-operation is vital to effective policies against proliferation; and expanding co-operative threat reduction initiatives and assistance programs; ensuring that appropriate resources and support are allocated to international organisations active in non-proliferation; promoting close co-ordination with the US; pursuing an international agreement on the prohibition of the production of fissile material for nuclear weapons; considering, in the event that political and diplomatic measures fail, coercive measures, including the use of force as a last resort in accordance with the United Nations Charter.

Because of the sampling methodology used, our results cannot be generalized to all

hospitals in FEMA Region III or nationwide. Furthermore, the lack of awareness and preparedness exhibited by our data may, in part, be a result of the fact that only clinical personnel from the HEMCOP were interviewed. Further research is warranted, including a detailed assessment of WMD preparedness using a statistically valid sample representative of the HEMCOP at the national level.

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