

Comparisons of Efficiencies in Recognition of Hospital Emergency Incident Command System by Tabletop drill and Real Exercise

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Abstract

The objective of this study was to assess the attitudes of hospital staffs toward the role of tabletop drills in simulation of Hospital Emergency Incident Command System (HEICS). One-hundred and sixteen hospital staffs (including medical staffs, logistics, administrative/financial, and planning) attended the HEICS training at our institute. All participants had experience in field disaster exercise training before they attended this course. The training course included 4-hour lecture and 2.5-hour tabletop drills. Ninety-eight of the participants completed a questionnaire after the tabletop drills. The results revealed that the field operation exercise could not validate real disasters and not provide definite benefits in improving disaster training, equipment, supplies, and plans whereas tabletop drills provided better performance (93.2% vs. 56.2%, $P<0.001$). The tabletop drills were superior to the field operation exercises in providing better performance of key executives (98.9% vs. 70.8%, $P<0.001$), clear leadership (98.9% vs. 70.8%, $P<0.001$), and adequate inter-agency cooperation (98.9% vs. 70.8%, $P<0.001$). Tabletop exercise had also the benefits in cost-effectiveness. Furthermore, neither tabletop drills nor field operation exercise could replace the training of skills such as rescue and emergency care techniques. In conclusion, tabletop drills are recommended before large-scale field exercises are undergone in disaster preparedness. (*Ann. Disaster Med* 2002;1:29-35)

Key Words : Disaster; HEICS; tabletop drills; field drills

Introduction

In Taiwan, it is believed that training exercises probably provide the best methods of establishing major incident plans. This type of exercise can simulate disasters so as to provide

emergency care staffs virtual experience in a real disaster. Field exercises of various categories are part of the routine training programs for fire departments in Taiwan. And most emergency personnel also have to

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undergo several field disaster drills every year. However, most of the field exercises are not concentrated upon incident command system (ICS). The same condition is also met in the hospitals. The Hospital Emergency Incident Command System, or HEICS, represents a concerted effort on behalf of any medical institutes and health system to be prepared in the event of a disaster.¹ Hurricanes, geo-hazards, mass casualty automobile or airplane crashes, and acts of domestic terrorism are all events that medical institutes must be prepared to provide medical care to a large influx of critically ill patients. HEICS outlines a simplified chain of command or management structure for communication and decision-making during disasters.¹ The success of the response is dependent on each individual member of the health system playing his or her role. Although adaptation of the HEICS for use in a university teaching hospital requires few technical changes, position descriptions may need to be created or rewritten for physicians, who are more likely to be available and interested in command positions. Appropriate utilization of allied health providers and in-training personnel present in these institutions may alleviate the problem of supervisors performing menial tasks.

On the other hand, tabletop exercises are a cost-effective and efficient method of testing plans and

procedures. They can engage players imaginatively and generate high levels of realism. However, the experience of table exercise is limited in Taiwan and its effect on disaster preparedness education has not been ascertained. We then conducted a survey after introducing a tabletop drill during HEICS training. This type of exercise experience was new to our participants. The aim of this study was to assess and compare the attitudes of the hospital staffs concerning tabletop drills and field drills to determine the effect of these exercises on the disaster preparedness and management.

Methods

On May 18th 2002, we conducted a training course for the HEICS at our institute. The course consisted of 4-hour special lecture and 2.5-hour tabletop drill. There were one-hundred and sixteen hospital staffs attending the course. Among them, 25 were personnel of financial and logistic departments, 12 of planning department, and 79 of operation department. All of them had previous experiences of field exercises.

The 4-hour course consists of the lectures such as the introduction of HEICS, types of hospital emergency response planning (evacuation, relocation, isolation, acceptance), the roles of HEICS staffs, and hospital response to individual disasters. The

2.5-hour tabletop drill was conducted by an invited disaster specialist.

The participants were asked to fill in a questionnaire including 8 items (modified from the disaster evaluation guide questions No. 2271-2282 published by the American College Emergency of Physicians) after the tabletop drill. Two independent analysts enrolled all the data from the questionnaire completely filled in for analysis.

Statistics

The categorical data were inputted in Microsoft Excel 2000 for descriptive statistics and further qualitative analysis. These results were analyzed using the chi-squared test. A $P < .05$ was considered to be statistically significant.

Results

Ninety-eight of the 116 participants (84%) responded to the questionnaire. After the tabletop drill, most of the participants considered that adequate training classes were essential for both field exercises and tabletop drills. Ninety-four of them considered that tabletop drills could address the valid management of a disaster rather than field exercises (98.9% vs. 70.8%, $P < 0.001$). Fewer than 60% of the staffs concluded that the field exercise could affect many issues concerning disaster preparedness and management, whereas they thought the tabletop drill

could improve it (93.2% vs. 56.2%, $P < 0.001$). In a similar way, the tabletop drills were superior to the field operation exercises in providing better performance of key executives (98.9% vs. 70.8%, $P < 0.001$), clear leadership (98.9% vs. 70.8%, $P < 0.001$), and adequate inter-agency cooperation (98.9% vs. 70.8%, $P < 0.001$). However, the tabletop drills provided less simulation under poor telecommunication in disasters than field exercises did (34.4% vs. 55.2%, $P < 0.01$).

Discussion

The purpose of disaster drills is to simulate real events to assess the appropriateness of the plan itself, of decision-making, operational processes, inter-agency cooperation and the performance of each department.²⁻⁶ The tabletop exercise has been utilized for EMT training and the other ICS courses. It is believed that the tabletop drills are a cost-effective and efficient method of testing plans and procedures.

On the other hand, HEICS is a standard by which the medical community has found success and common ground in the area of disaster management.^{1,7} A survey of California hospitals in the spring of 1997 indicated that this disaster management plan was the choice of many hospitals; the medical community had established HEICS as a facility standard in

emergency response. HEICS is an emergency management system made up of positions on an organizational chart. Each position has a specific mission to address an emergency situation. Each position represented above has an individual checklist designed to direct the assigned individual in disaster recovery tasks. The HEICS plan includes forms to enhance this overall system and promote accountability. The HEICS plan is flexible. Only those positions or functions, which are needed, should be activated. The HEICS plan allows for the addition of needed positions, as well as the deactivating of positions at any time.^{7,8} This equates to promoting efficiency and cost effectiveness. The above chart may be fully activated for a large, extended disaster such as an earthquake. However, full activation may take hours or even days. The majority of disasters or emergencies will require the activation of far fewer positions. More than one position may be assigned to an individual. Situations of a critical nature may require an individual to perform multiple tasks until additional support can be obtained.^{9,10}

In our study, the tabletop drills provide a better learning curve in recognizing and practicing HEICS than the field exercises. The observation may be partly explained by the fact that ICS itself is the most important component of HEICS, whereas the tabletop drills have been proved to be

the best tool for practicing ICS and inter-agency cooperation.^{11,12}

Furthermore, tabletop exercises use a carefully prepared scenario to test and practice various aspects of the plan and can be extended to include actual tests of critical processes in the disaster. Each staff involved in the emergency management should be familiar with this excellent format in a low-stress environment. In addition, tabletop exercises provide the chance to test the communication and triage processes. As a result, the use of tabletop exercises in disaster drills should be considered to solidify more adequate disaster preparedness plans.

In this study, the table drill has been performed under three independent confined rooms. The only tool of communications among different departments is wireless telecommunication. This is the reason why the participants thought that the tabletop drill could not simulate the conditions with no telecommunications. We may have to modify the protocols of table drills to meet the various demands in the disaster training.

Table 1. Comparisons of impacts between tabletop drills and field exercises

	Field Exercise		Tabletop Drill		
	No.	%	No.	%	
1. Is adequate lecture necessary before drills?					
Yes	94	97.9	94	97.9	NS
No	2	2.1	2	2.1	
2. Do exercises address valid disaster problems?					
Yes	68	70.8	95	98.9	<0.001
No	28	29.2	1	1.1	
3. Is post-drill briefing beneficial in learning?					
Yes	64	66.7	86	89.6	<0.001
No	32	33.3	10	10.4	
4. Do exercises lead to further modification in the future disaster response?					
Yes	54	56.2	90	93.8	<0.001
No	42	43.8	6	6.2	
5. Do the exercises simulated the condition of poor telecommunication?					
Yes	53	55.2	33	34.4	<0.01
No	43	44.8	63	65.6	
6. Do the highest levels of executive staff act adequately in the exercises?					
Yes	53	55.2	76	79.2	<0.001
No	43	44.8	20	20.8	
7. Can others fill in the vacancy during the absence of key executives?					
Yes	50	52.1	88	91.7	<0.001
No	46	47.9	8	8.3	
8. Do the exercises reflect the real condition of inter-agency cooperation?					
Yes	47	48.9	87	90.6	<0.001
No	49	51.1	9	9.4	

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沙盤推演與實際演習對於認識醫院緊急事件指揮系統 成效之比較

陳國智 陳建智 王宗倫

摘要

本研究的目標為評估醫事人員，對於沙盤推演在醫院緊急事件指揮系統（Hospital Emergency Incident Command System, HEICS）模擬所扮演的角色肯定與否。在我們舉辦的研習會中有 116 位醫事人員（包括醫療人員、後勤、行政/財務及計劃部門人員）參加 HEICS 的訓練。所有的參與者在參加這個課程前皆有參加災難現場演習的經驗。這個訓練課程包括了 4 個小時的演講及 2.5 個小時的沙盤推演。在沙盤推演之後，98 位參與者完成了一份問卷。結果顯示實地操作練習無法運用於真實災難情境，也無法提供災難訓練、設備、供應及計劃各方面改善的根據，反之沙盤推演提供更好的結果（93.2% vs. 56.2%， $P<0.001$ ）此外，沙盤推演在指導重要執行者良好角色扮演（98.9% vs. 70.8%， $P<0.001$ ），建立明確的領導地位（98.9% vs. 70.8%， $P<0.001$ ）及促進適當各部門間的合作（98.9% vs. 70.8%， $P<0.001$ ）等方面，皆優於實地操作練習。沙盤推演也有成本效益的好處。此外，沙盤推演及實地練習都無法取代如脫困及緊急救護技術的技術訓練。因此，我們的結論是在災難準備期實施大規模實地演習前，應該先做沙盤推演。（*Ann. Disaster Med* 2002;1:29-35）

關鍵詞：災難；醫院緊急事件指揮系統；沙盤推演；實地演練

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