

# Health Professional's Role in Disaster Planning

## A STRATEGIC MANAGEMENT APPROACH

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**T**his article demonstrates use of the Strategic Management for Total Quality in Health Care model (Graeter, 1994) as a tool for enhancing the role of the health professional in disaster planning. The model uses strategic management methods to promote total quality health care programs. It was designed to expand the problem solving skills of health professionals and help them participate effectively in complex, interdisciplinary projects.

The role of the health professional in disaster planning may vary depending on factors such as the size and type of company. Disaster planning responsibilities of health professionals include: participation on the disaster planning committee; development of those sections of the disaster plan that are within the health professional's

scope of practice; and development of training programs within the scope of practice. In this article, the authors provide a strategic management model and concise disaster planning content summaries to assist health professionals with disaster planning.

### PURPOSE OF DISASTER PLANNING

The purpose of disaster planning is to prevent injury, limit property damage and capital losses, and return to full production after a disaster. Approximately 10% of United States' companies have complete disaster plans, and less than 50% of companies hit by a disaster fully recover (Shalowitz, 1990). This suggests that disaster planning should become a priority.

Disaster planning requires assessing the types of probable disasters, the capability of current resources to respond to anticipated disasters, the needs of ongoing training, and the need for facility improvements. An effective plan provides for the ability to respond automatically in the event of a disaster, avoiding delays caused by decision making. It empowers personnel with the skills, resources, and confidence needed to respond effectively. A disaster plan benefits business by saving lives, protecting physical property, maintaining productivity, promoting cost avoidance, ensuring compliance with the law, and enhancing employee relations. Disaster planning is one of the most important functions of the occupational health professional.

### FRAMEWORK FOR DEVELOPING A DISASTER PLAN

#### Legal Requirements

The legal requirements that impact a company's disaster plan can be confusing because they vary according to the company's geographical location and manufacturing process. Federal, state, and in some cases, municipal standards mandate a company's legal responsibilities in a disaster response program. Federal agencies promulgating mandatory standards include the Occupational

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TABLE 1

## Outline of a Disaster Plan—Purpose and Scope

### **Pre-emergency Plan**

Describe what is done to prepare for a disaster.  
Incorporate personnel roles, lines of authority, and communication systems.  
Coordinate with outside resources.

### **Readiness Plan**

Describe what is done to bring the site to readiness status.  
Describe emergency altering and response procedures.

### **Emergency Plan**

Describe delegation of responsibilities during the emergency.  
Describe standard operating procedures during the emergency.

### **Recovery Plan**

Describe what is necessary to return to normal operations.  
Identify follow-through with injured personnel.  
Identify types of written documentation that must be completed and submitted.

Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA). Additional legislation that may impact a company's disaster plan includes the Superfund Amendments and Reauthorization Act (SARA) for workers involved in hazardous waste operations and emergency response for chemical releases.

OSHA standards require that an emergency response plan be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The plan should be in writing and available for inspection and copying by employees, their representatives, and OSHA personnel. The Occupational Safety and Health Standards (Code of Federal Regulations, Title 29, Part 1910), the OSHA general standards, mandate specific requirements including: emergency action plans and fire prevention (1910.38); hazardous material release procedures (1910.120); and medical services and first aid (1910.151). Local OSHA offices provide specific information on interpreting the law and on meeting standards applicable to specific industries. Table 1 outlines a disaster plan based on OSHA requirements. A copy of the "Emergency Planning and Response, Directorate of Compliance Programs" used by OSHA for auditing programs is available from local OSHA offices.

### **The Disaster Planning Committee**

Disaster planning requires the expertise of an interdisciplinary team. Hazard control, emergency response, legal requirements, and administrative concerns must be addressed. The committee is responsible for developing a plan to improve a company's ability to protect human and property resources to increase the

potential for maintaining business operations in the event of a disaster.

Key issues that need to be addressed within the disaster plan are: hazard evaluation of anticipated disasters (probability, severity, and volume); disaster response assessment (including skill and equipment for treating anticipated injuries); training programs (hazard recognition, disaster control, and emergency treatment); disaster drills; and disaster investigations.

The disaster planning committee is responsible for developing a team specially trained in immediate response activities in the event of a disaster. The disaster response team is responsible for assessing, controlling, and stabilizing disaster events (Sarkus, 1992). The personnel generally included on the team are emergency response personnel (EMS), security personnel, communication experts, and hazardous materials experts.

### **STRATEGIC MANAGEMENT FOR TOTAL QUALITY MODEL**

The Strategic Management for Total Quality in Health Care model incorporates both strategic management and total quality concepts applied to occupational health practice. Strategic management is an ongoing process for effectively using resources to meet the needs of customers. In summary, it is a problem solving process.

The nursing process is a strategic management method that many nurses use to plan for the effective use of resources in providing care to clients. These same problem solving skills can be used to improve other strategic management efforts within the health professional's scope of responsibility. The nursing process focuses on working with individuals versus systems, and



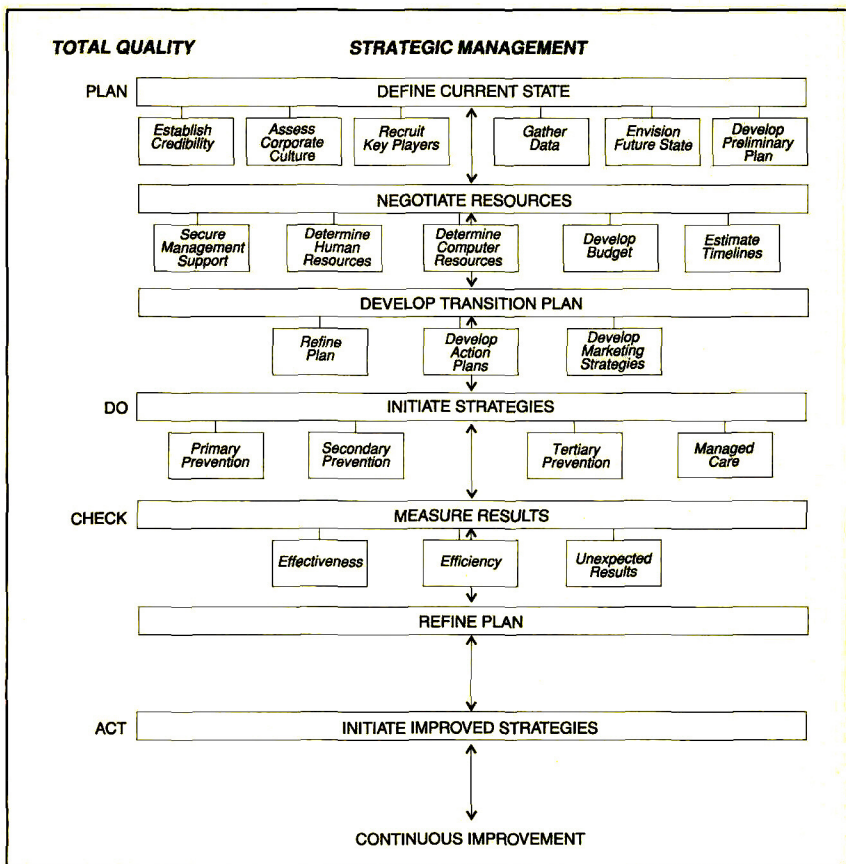


Figure: The Strategic Management for Total Quality in Health Care model.

uses clinical versus business terminology. In contrast, the Strategic Management for Total Quality in Health Care model utilizes business terms to plan for changes within an entire organizational system.

Total quality methods, initially developed by W. Edwards Deming, emphasize the principle of choosing the "right things" to do and then doing them "the right way." These methods produce "the unyielding and continually improving effort by everyone in an organization to understand, meet, and excel the expectations of customers" (Conway, 1989).

The goal of total quality is to identify customers,

determine the needs of customers, and develop systematic strategies that best meet the customers' needs. Total quality, often referred to as continuous quality improvement (CQI) methods, foster improved systems and teamwork within an organization. "CQI seeks to refine processes to produce outcomes that are predictable and meet customer expectations" (Ryder, 1993).

The Figure provides a graphic summary of the Strategic Management for Total Quality in Health Care model. The model is a seven stage process that applies the Shewhart/Deming PDCA (plan, do, check, act) Cycle (Walton, 1986) to occupational health practice.

## DEFINE THE CURRENT STATE

The goal of the first stage is to "define the current state." This stage involves six steps for gathering needed information, envisioning an ideal picture of the finished program, and developing a preliminary plan for getting started. It is critical to gain a thorough and accurate understanding of a company's current operations before it is possible to plan for strategies that will be effective in a company's unique culture, financial climate, and organizational structure.

Disaster planning is a complex project that requires the use of multiple and varied resources. The goal of total quality is continuous improvement by "doing the right things right." It is easy to make effective decisions when one takes time to identify, gather, and analyze all necessary information.

It is essential to obtain an accurate understanding of the company's "current state" to determine which "right things" are required and the "right method" for getting them accomplished. Steps to define the current state are to establish credibility, assess corporate culture, recruit key players, gather data, envision the future state, and develop a preliminary plan.

### **Establish Credibility**

To establish credibility as a member of the disaster planning committee, the health professional must understand basic elements of a disaster plan and why these elements are important for providing a safe and healthy workplace. The health professional's role in disaster planning can be enhanced by providing clinical expertise, assuming responsibilities for disaster planning within the health professional's scope of practice, and developing training programs.

The health professional brings to the planning process: knowledge of health effects of hazardous exposures, skill in developing emergency response protocols, ability to evaluate the emergency response system capabilities, skill in providing emergency treatment in the event of a disaster, and the skills needed to coordinate internal and external emergency response resources.

### **Assess Corporate Culture**

Corporate culture is defined by company values, behaviors, and philosophy toward employees and customers. Management provides the leadership that sets the vision, goals, and priorities that focus the company's efforts.

Corporate culture is formally defined by a company's written documents, such as its mission statement, strategic plan, and performance appraisal system. Corporate culture is informally defined by the behaviors that are valued and rewarded. Examples of informal culture include dress code, communication style, hiring criteria, promotion criteria, and types of projects that receive funding.

Knowledge of the corporate culture facilitates the ability to provide services that are recognized as value

added within the organization. The health professional must develop and manage projects in a style that is consistent with a company's culture in order to gain resources needed to develop an effective disaster plan.

### **Recruit Key Players**

Support of key players is fundamental to the success of complex, interdisciplinary projects. Key players can be divided into three groups—customers, consumers, and suppliers. Customers provide the resources (time and money) that support the project. Consumers benefit from the end product of the project. Customers and consumers provide valuable information critical to the success of the program.

*Customers and Consumers.* Disaster planning provides contingency planning for assuring the ongoing success of a business. Therefore, company executives and the board of directors are the primary customers for a disaster plan. Implementation of a disaster plan provides employees with a safer work environment, making them consumers of the disaster plan. Disaster planning also improves community safety, making the community an additional consumer for the disaster plan. In fact, OSHA allows for incorporating local or state emergency response plans into the company's disaster plan to avoid duplication of efforts.

*Suppliers.* The disaster planning committee is the primary supplier of a disaster plan. It is the committee's responsibility to develop a plan that meets the needs of its customers and consumers. To do so, it is important to incorporate administrative participation into the disaster planning process. Administrative participation demonstrates a proactive approach to employee safety, provides authority for making decisions, and supports management commitment to the plan's activities and associated resource needs.

*Process.* Disaster planning is a resource intensive process. Formation of a disaster planning committee provides for the involvement of management, occupational health, accounting, industrial hygiene, safety/risk management, security, union, and employee representatives. Each team member brings a different perspective and expertise to the team.

For example, management participation on the disaster planning committee establishes clear goals and objectives for the disaster plan. These goals and objectives provide direction for all other efforts. Key interdisciplinary members provide the needed expertise for specific planning responsibilities. Employee and union contributions may include the identification of hazardous situations and recommendations for change, planning for and providing disaster response training, and presenting employee concerns to the disaster planning committee.

This diversity may make it difficult for team members to work together toward common goals. Common obstacles to disaster planning efforts include: denial, an "it can't happen here" attitude; lack of teamwork;



TABLE 2

## Risk Analysis Data to be Collected by the Health Professional

### **Hazardous Processes**

Potential hazardous exposure? (chemical, physical, thermal, environmental, and biological)

How often is it used/does it occur?

What is the average number of people at risk per incident?

What specific types of injuries are likely to occur for each type of hazard?

What is the immediate emergency treatment for each potential hazard? (Are emergency protocols available?)

Is appropriate equipment available for treatment?

### **Health Emergencies (age, sex, chronic illness, physically and mentally challenged)**

Are First Responders trained?

Have individualized evacuation plans been developed?

insufficient administrative support in the way of time, equipment, and human resources; and failure to keep skills current through updates on hazards, drills, and training. Working through these obstacles may consume much of the committee chairperson's initial efforts. However, if these obstacles are not overcome the committee may become ineffective.

### **Gather Data**

The disaster planning committee is responsible for gathering data needed to plan for all disaster response activities. This interdisciplinary team generally divides data gathering responsibilities according to areas of expertise. Some of the specific assessments can be completed independently by a single committee member. Other assessments may require interdisciplinary efforts.

The health professional may be assigned to participate in any of the data gathering responsibilities, depending on the skills and interests of other team members. Health professionals most often participate in risk analyses, evaluation of internal and external resources for emergency response, and evaluation of the lines of authority during a disaster response.

**Risk Analysis.** Industrial hygiene or safety staff are generally responsible for coordinating risk analysis activities. The purpose of a risk analysis is to determine potential problems inherent in a hazardous process. The process includes a determination of risk by comparing the probability of an emergency situation (over time), to the projected impact (in dollars, lives, or operating units) should a disaster occur. The role of the health professional is to provide emergency care protocols for the health effects resulting from hazardous exposures.

Each hazardous process must be examined critically to determine whether safeguards are adequate and provide an acceptable level of risk. Standards issued by organizations such as the American National Standards

Institute (ANSI) or the National Fire Protection Association (NFPA) provide guidelines for hazards that might exist and include possible actions and safeguards. These standards are voluntary or consensus standards and represent the minimum requirements acceptable to an industry (Hammer, 1989).

There are many different techniques for performing a risk analysis, including checklists, "what if" analyses, safety reviews, preliminary hazard analysis, failure modes and effect analysis, and fault tree analysis (Gresel, 1991). However, the health professional need not be skilled in the use of any of these techniques. The health professional's role is to gather data from risk analyses to increase knowledge of plant operations and identify hazards within the facility.

The health professional can use additional tools to identify potential health hazards within a facility. Walkthrough surveys offer visual information about hazardous processes, types of safeguards, and compliance with safe work practice procedures. Walkthroughs also provide an opportunity to gather information about employee concerns. Material Safety Data Sheets (MSDS) provide written documentation of the exposure risks, health effects, and emergency treatment procedures. A review of safety, workers' compensation, and health unit records may identify patterns of risk within the facility. Table 2 shows examples of the types of questions to include in a health professional's assessment.

Risk analyses can be used to assess the need for emergency protocols, and associated equipment and training needs. Emergency protocols must be established for each anticipated health hazard. All emergency protocols must be written and accompanied by relevant MSDS. This information should be on file in the health services unit, the community disaster response system, and local hospitals. First Responders and community resources must be trained to use the emergency protocols. Emergency protocols also

TABLE 3

## Survey of Internal Disaster Response Resources

### **What is the Company Disaster Response Capability?**

Training of First Responders (emergency protocols for anticipated hazards, CPR, disabilities, evacuation procedures)

Availability of First Responders (number of First Responders per number of employees, shift coverage, vacation coverage)

Proximity of First Responders to all site locations (response time of  $\leq 3$  minutes)

**What Emergency Equipment is Available?** (type, location, inspection/maintenance procedures)

**How is training of first responders updated?**

TABLE 4

## Survey of External Disaster Response Resources

### **What is the Disaster Response Capability of the Community?**

Response time

Emergency care (EMS, fire)

Specialized training and equipment (Hazmat, Air Care)

### **Are There Backup Responders?**

Is anticipated specialized treatment available in the community? (If not, where is the nearest treatment facility?)

can be used to evaluate currently available equipment. The health professional must assess whether the types, quantity, location, and inspection status of needed equipment are consistent with treatment approaches described in the emergency protocols.

**Disaster response resources.** A survey of disaster response resources available within the company and the surrounding community provides valuable information on current response capabilities and potential gaps in resources. OSHA requires that a sufficient number of employees be trained to the degree required to provide anticipated emergency treatment. All other employees must be trained to recognize that a disaster situation exists, to call in First Responders, and to avoid attempts to control emergency situations for which they are not trained (OSHA 1910.120). Table 3 summarizes information needed by the health professional to determine the capabilities of internal disaster response resources.

Community resources must be evaluated to determine their ability to provide both immediate care and

transportation, and ongoing treatment when necessary. All limitations of external disaster response resources demand the development of alternative plans. Table 4 summarizes the information needed by a health professional to determine the capabilities of external disaster response resources.

**Defining lines of authority, personnel roles, and communication flow.** It is critical that the lines of authority, personnel roles, and communication flows be clearly defined in the event of a disaster. Disaster response requires quick action focused on minimizing damage by intervening before the disaster escalates. Inefficient planning could result in miscommunications, failure to assign someone to critical activities, or failure to assign personnel with adequate skills.

An important part of the data gathering stage is to determine if the lines of authority, personnel roles, and communication flow have already been defined for disaster response activities. These roles are usually consistent with roles of authority used during normal operations at the facility. Table 5 describes data necessary for describing the lines of authority, personnel responsibilities, and communication systems.

If a system has already been developed, it is important to assess whether the system is projected to be effective. For example, do all employees understand their roles, have necessary skills, and required equipment? Have the plans been coordinated with outside agencies?

### **Envision Future State**

After each member of the disaster planning committee gathers assigned data, it is important that they report relevant information to the entire committee. The committee must work together to design a comprehensive plan that supports efforts of the individual members. The purpose of these efforts is to "envision the future state."

It is critical that the team develop an ideal vision of what they would like the company's disaster plan to look like at some future date. This ideal plan is used to focus change efforts later in the model. Table 6 illustrates OSHA required components of the disaster plan that



TABLE 5

## Lines of Authority, Personnel Responsibilities, and Communications

**Who Activates the Disaster Response Program?** (Is it the same person for all types of emergencies?)

How is the system activated?

**What is the Organizational Chart for the Company During an Emergency?** (Is there a contingency plan?)

Have personnel been assigned to each role? (Include job title, phone number at work and off worksite)

How is each role activated?

Who is the disaster response coordinator?

**What is the Primary Communication System?** (What is the secondary communication system?)

Is it the same for all emergencies?

Who is responsible for internal communications?

Who is responsible for contacting external resources?

**Who are the First Responders?** (Define specific roles, responsibilities, and capabilities.)

How are they notified?

**Are There Outside Responders?**

must be addressed while "envisioning the future state," and identifies a role for the health professional/health services unit (HSU). Definition of the health professional's role in disaster planning within a specific company is influenced by the health professional's level of expertise, acceptance within the corporate culture, and availability of other internal and external resources.

### **Develop Preliminary Plan**

The purpose of a preliminary plan is to facilitate comprehensive planning, develop alignment between the multiple resources working on similar goals, and establish priorities. The preliminary plan is the first "brainstorming" to facilitate a process for achieving the future state, and produces the first draft of a written plan. This preliminary planning incorporates strategies to move the company to the envisioned future state.

Developing the preliminary plan is a team effort, coordinated by one person. The preliminary plan is written using the company's standard business planning tool. Sample content in a business planning tool include objectives, goals, strategies, and measurements. Establishing the preliminary plan enables the disaster planning committee to move to the next stage of the model.

### **NEGOTIATE RESOURCES**

The goal of the second stage is to negotiate resources required to operationalize the envisioned future state. This stage of the process defines the boundaries or limitations placed on the alternative strategies considered while developing the preliminary plan. Five primary resources are required for most

major projects: management support, human resources, computer resources, budget resources, and time. The results of negotiations for these resources will help define realistic strategies while refining a working plan in the third stage.

### **Secure Management Support**

Two key concepts for securing management support for disaster planning are: cost avoidance is provided by maintaining production, limiting property damage, and protecting personnel; and the plan must incorporate cost effective uses for resources. Resources are scarce in all companies, and ways must be found to use available resources as wisely as possible (Colgan, 1989).

Preplanning is a cost effective use of resources by targeting and prioritizing activities that limit the possibility of a disaster (providing safe plant design, planning safe procedures in hazardous processes, and developing a system for managing a disaster); and providing a system for minimizing losses in the event of a disaster. Cost benefit analyses techniques can be used to financially quantify the anticipated resources required to develop a disaster plan versus the projected cost avoidance provided by the disaster plan.

### **Determine Human Resources**

Disaster planning efforts require human resources to implement strategies developed in the preliminary plan. Three factors influence committee members' participation in disaster planning. The first factor is motivation. Motivation is affected by the level of priority established for disaster planning based on other priorities of each

TABLE 6

## Components of a "Future State" Disaster Plan

<i>Components of a Comprehensive Plan (as stated in the OSHA Standards)</i>	<i>Sample Role of the Health Professional</i>
1. Lines of Authority and Communication	A. Participate in defining a system of communication between disaster response team members. B. Define responsibility for reporting into the health services unit (HSU). C. Develop disaster plan lines of authority within the HSU.
2. Addressing All Potential Hazardous Situations	A. Develop emergency protocols and associated training and equipment for anticipated hazards with known health effects.
3. Training	A. Develop site specific role of the HSU in disaster response training for employees. B. Train emergency response personnel in use of emergency protocols and use of emergency equipment (both internal and external resources). C. Identify role of the health professional in the training of new hires.
4. Written Evacuation Plans and Maps	A. Participate in developing routes of escape (consistent with ADA) B. Identify location of primary triage area (and alternate site as necessary).
5. Procedures for Accounting for All Employees	A. Participate in developing procedures for accounting for all employees. B. Participate in developing site specific rescue procedures and the role of the health professional.
6. Personal Alarm System	A. Participate in development of alarm system (develop HSU response signals).
7. Shutdown Procedures	A. No identified role (site specific role may be identified).
8. Medical Response	A. See Table 8 (Emergency Response Planning for Health Professionals).
9. Personal Protective Equipment (PPE)	A. Establish medical surveillance for program for personnel required to wear PPE.
10. Preplanning with Outside Agencies	A. Participate in planning with external emergency responders. B. Define the role of internal and external emergency responders, including specific contact people.

participant. The second factor is availability of current staff for the time required to complete, implement, and maintain the disaster plan. The third factor is the skill level required to complete disaster planning activities.

The committee must determine the availability of internal resources to meet the needs of the preliminary plan. If internal resources are not available, alternative strategies for allocating human resources are available, including training employees and using outside contractors or consultants.

### **Determine Computer Resources**

Computer resources can enhance management of the disaster plan. Computerized information can be used by the health professional to identify risks, project cost savings, train staff and employees, and support project management. Categories of computerized information systems include illness/injury trends, emergency response protocols, workers' compensation claims analysis, budget and financial management, and educational modules.



Many commercially available software products designed for occupational health application support disaster planning efforts. Computerized databases offer literature reviews for identifying health effects of hazards. Some programs are designed to support management of MSDS. Other software programs store customized emergency protocols that can be easily revised and rapidly accessed.

#### **Develop Budget**

Developing the budget for disaster planning depends on the resource needs determined in the first three steps of this stage. In addition, there may be other budget requirements, such as equipment.

#### **Estimate Timelines**

Estimated timelines facilitate the disaster planning process. Planned activities are assigned to available staff within acceptable target dates. If internal resources are not available within the time frame, the budget needs for hiring external support must be evaluated or time frames must be revised.

### **DEVELOP TRANSITION PLAN**

The goal of the third stage is to develop a transition plan for moving the organization from its current state to the envisioned future state. Part of this stage includes reviewing the resources negotiated in stage two to determine if they will support the strategies required to move the company to its future state. In contrast to the preliminary plan developed in stage one of the model, the transition plan is intended to be a realistic working plan, based on all data gathered to this point in the process.

If adequate resources are available, the transition plan focuses on ensuring the effectiveness of strategies developed in the preliminary plan. If the required resources are not available, then the initial future state must be revisited. Perhaps a compromised future state needs to be developed, supported by a revised preliminary plan.

Another alternative is to envision a temporary future state, supported by a revised preliminary plan. The revised preliminary plan would include the goal of later negotiating resources to move toward the original future state. The three steps for developing a transition plan are to refine the plan, develop action plans, and develop marketing strategies.

#### **Refine Plan**

Most disaster planning committees must refine the plan before they can implement a realistic transition plan. Many factors affect a company's ability to develop a comprehensive disaster plan. Some common obstacles are lack of management support for the project, lack of personnel to complete the project in a timely manner, and lack of budget or other resources.

Ideally, interdisciplinary disaster response activities will be coordinated by use of a comprehensive disaster plan written in a standardized format. This assures that all

procedures are clearly defined and that disaster plan activities support each other. However, if there is little support for a comprehensive disaster plan, health professionals can develop a plan limited to the role of the HSU. Table 7 describes OSHA required disaster planning activities within the health professional's scope of responsibility.

#### **Develop Action Plans**

Action plans are a tool for completing the activities of a project. They contain four main components: definition of specific activities; assignment of responsibility for the activities; a target date for completion; and a method for review of the strategy as it progresses. Action plans operationalize strategies designed into the transition plan. In addition, action plans include measurements of success.

#### **Develop Marketing Strategies**

Marketing strategies must be developed to educate and motivate key players to support ongoing efforts. Marketing tools include employee newsletters, posters, paycheck stuffers, brochures, and presentations to significant groups. Updated management reports are critical for maintaining management support.

### **INITIATE STRATEGIES**

The goal of the fourth stage is to initiate strategies needed to operationalize the transition plan refined in stage three. The process of writing the comprehensive plan assures consensus among the committee members. A written disaster plan indicates the intent for implementation in the event of an OSHA inspection (Roy, 1994).

Implementation of health care strategies focuses on preventing injury and illness in the event of a disaster. Three levels of prevention are incorporated—primary, secondary, and tertiary. Managed care strategies are initiated to ensure that the employees receive high quality and cost effective treatment when illness or injuries occur.

#### **Primary Prevention**

Primary prevention strategies focus on optimizing health in the stage of susceptibility. In disaster planning, the primary prevention goal is to avoid adverse health effects and eliminate the need for secondary and tertiary prevention strategies. Primary prevention strategies in disaster planning include: identification of health hazards; development and implementation of medical (health) surveillance programs; development of emergency protocols for anticipated health effects; development and provision of disaster response training; and participation in disaster drills.

*Identification of health hazards.* Identification of health hazards is a primary responsibility of the health professional. Historically, health hazards have been subjected to interventions and regulations only after the hazards have been demonstrated by accidents or other unexpected effects. Increased size, complexity, and hazard potential of modern technologies require that health professionals anticipate adverse health effects prior to a

TABLE 7

## Emergency Response Planning for Health Professionals

1. Lines of Authority and Communication	<ul style="list-style-type: none"> <li>A. Define roles of site health professionals (with backup)</li> <li>B. Define responsibility of communicating with internal and external emergency resources.</li> <li>C. Define methods of communication within the HSU (e.g., First Responders)</li> <li>D. Define role of external emergency responders while on site.</li> </ul>
2. Address All Potential Hazardous Situations	<ul style="list-style-type: none"> <li>A. Develop written emergency protocols and associated training.</li> <li>B. Maintain up to date emergency protocols and relevant MSDS within the HSU, local hospitals, and external emergency resources.</li> </ul>
3. Training	<ul style="list-style-type: none"> <li>A. Develop training for HSU personnel.</li> <li>B. Develop First Responder training.</li> <li>C. Develop site specific training program for external emergency responders.</li> </ul>
4. Medical Response	<ul style="list-style-type: none"> <li>A. Develop emergency protocols for identified hazards and associated health effects.</li> <li>B. Develop protocols for maintenance of emergency equipment.</li> <li>C. Develop and implement First Responders program (e.g., CPR certification, scheduling).</li> <li>D. Develop medical surveillance program for First Responders (e.g., identify potential hazards and associated health effects, eligibility criteria, bloodborne pathogen program).</li> <li>E. Develop triage design and location.</li> </ul>
5. Personal Protective Equipment (PPE)	<ul style="list-style-type: none"> <li>A. Establish medical surveillance program for personnel required to wear PPE.</li> </ul>
6. Preplanning With Outside Agencies	<ul style="list-style-type: none"> <li>A. Develop communication with external emergency responders (services, contact people, and frequency of contact).</li> <li>B. Develop alternative programs for needs that cannot be met by current external resources.</li> </ul>

disaster, e.g., combustion of chemicals or products in the event of fire or effects of chemicals combined with water. Anticipation of health effects during a disaster will provide valuable information for planning emergency response strategies.

**Medical (health) surveillance.** A health surveillance program needs to be targeted to the anticipated risks of the disaster response team members. These risks would include the anticipated exposures and hazards related to the work performed, e.g., heat stress, use of personal protective equipment. A health surveillance program includes criteria for eligibility as a disaster response team member, frequency of examinations, and diagnostic tests to be completed.

**Emergency protocols.** Emergency protocols must be

developed for each identified hazard and associated health effects. MSDS sheets and computerized databases such as "Toxline" of the National Institutes of Health National Library of Medicine, provide baseline information on potential hazardous exposures. *Clinical resources* are also available to help develop emergency protocols (Bronstein, 1988; Procter, 1988; Sullivan, 1991). All emergency protocols must be written and accompanied by relevant MSDS sheets.

**Disaster training.** Disaster response training needs to include types of potential disasters reporting procedures for employees, alarm systems, shutdown procedures, and evacuation plans (OSHA Regulation 3088). The health professional's role in this training may be limited to educational programs for recognition of adverse health



effects and the method for obtaining emergency treatment. The health professional also may work on developing individualized evacuation plans for employees with special needs.

Disaster response training needs to be conducted when the plan is developed; for all new hires; when new equipment, materials, or processes are introduced; when procedures have been updated or revised; when practice runs show that employee performance needs to be improved; or, at least, annually.

*Disaster drills.* Disaster drills are conducted to teach employees to respond automatically in the event of a disaster and to empower personnel with the skills, resources, and confidence needed to respond effectively. Disaster drill exercises may include evacuation drills, table top activities, practice runs of various components of the plan, and Community Awareness Emergency Response (CAER) drills. These methods provide an opportunity to practice skills and identify problems that may need clarification within the current disaster plan.

### **Secondary Prevention**

The goal of secondary prevention is early identification of abnormalities to optimize health in the stage of asymptomatic disease. In the event of a disaster, secondary prevention strategies focus on minimizing adverse health effects resulting from exposures. A critical role of the health professional is to provide a detailed plan for triage care for victims in a disaster.

Triage is the process of prioritizing care for persons who are victims in a disaster, based on need and their potential for survival (Mezza, 1992). Priorities establish the order for treatment, evacuation, and transportation. The triage plan should contain specific information including: emergency treatment at the disaster site for persons with life threatening conditions; location and procedures to provide urgent treatment on site and to triage each person for further treatment off site; coding/tagging system to identify each person's triage priority based on need for treatment that is coordinated with external responding resources; treatment of hysterical persons; and treatment of visitors on site during the disaster.

The company's responsibilities within the first 8 hours following the onset of a disaster include disaster response, First Responder treatment of the injured, communications, mobilizing internal and external resources (including these for treatment of illness and injury), and stabilizing remaining hazards (Sarkus, 1992). The health professional may be included in a variety of these activities as defined in the disaster plan and practiced in disaster drills.

### **Tertiary Prevention**

Tertiary prevention strategies focus on optimizing health in the stage of clinical disease (Dees, 1990). In the event of a disaster, tertiary prevention activities focus on identifying and using the most effective and efficient care available for injured employees. In addition, the com-

pany must conduct a disaster investigation to determine the cause of the disaster and prevention strategies for the future, the extent of injuries and property damage, and the ability to conduct business.

### **Managed Care**

Managed care strategies focus on developing systems for high quality health care with the efficient use of resources. One managed care approach is case management that enhances the care provided for an individual. Disaster response case management would focus on enhancing the care of individuals who become ill or injured as the result of the disaster.

## **MEASURE RESULTS**

The goal of the model's fifth stage is to measure results in order to determine the system's ability to satisfy its customers. Three criteria are measured including ability of the system to effectively produce the desired outcomes, ability of the system to make efficient use of resources, and unexpected results. Disaster planning must incorporate methods for measuring the effectiveness, the efficiency, and unexpected results of the disaster plan.

### **Effectiveness**

Effectiveness is the capability of a system to consistently produce desired outcomes. In other words, it answers two questions: *Did we satisfy the customer, and did we do it on a regular basis?* One method for measuring whether a specific disaster plan is capable of meeting this goal is to measure the effectiveness of CAER drill.

A CAER drill coordinates the efforts of internal and external disaster response resources, local hospitals, and supporting companies to carry out a mock disaster response. Methods for measuring the effectiveness of all critical disaster response components should be incorporated into the design of the CAER drill.

### **Efficiency**

Efficiency is the cost effective use of resources required to satisfy the needs of customers, answering the question of whether the process made the best use of resources. Improved efficiency efforts are aimed at monitoring alternative methods to determine which best uses resources. Efficiency methods also strive to control resource misuse. Disaster planning must provide a method for measuring whether the processes used to develop and implement a disaster plan are efficient. Disaster drills can be used to test alternative processes to determine the most efficient method.

### **Unexpected Results**

Evaluation techniques must include an analysis of variations (changes) in the program over time. Evaluations of variations are used to determine the positive or negative effect of a variation, whether the variation is controllable or random, and alternative solutions for variations that can be controlled. Incorporating strategies

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1. The Strategic Management for Total Quality in Health Care model incorporates strategic management methods and total quality principles to enhance management of complex, interdisciplinary projects.
2. The purpose of disaster planning is to provide an effective and efficient plan to prevent personal injury and limit property damage and capital losses, as well as return to full production after a disaster.
3. Participation in disaster response planning provides health professionals with an opportunity to demonstrate the benefits they can provide for meeting their company's business needs.
4. Disaster planning is a complex, interdisciplinary project that requires a strategic management framework to facilitate development of high quality, cost effective programs.

for positive variations provides an opportunity for improving the disaster plan.

### REFINE PLAN

The goal of the sixth stage is to refine the plan based on identified needs for improvements. Changes in technology, resource availability, and customer expectations may prompt the need for a refined plan. Effectiveness and efficiency data gathered while measuring results are also used to identify the need for revisions.

Refinement of the plan is an ongoing process. Formal evaluations may produce formal refinements in the plan. Informal evaluations made by individual employees should be reported to the disaster planning committee. These data can be analyzed during an annual review of the disaster plan.

### INITIATE IMPROVED STRATEGIES

The goal of the seventh stage is to initiate improved strategies to maintain the effectiveness and efficiency of the system. As needs for improvement are recognized, it

is important to develop and analyze alternative strategies. The best alternative is named the current best approach (CBA). The CBA can be substituted for an inferior one.

### SUMMARY

The primary purpose of disaster planning is to minimize losses in the event of a disaster—most critically, the loss of life. Therefore, participation in disaster planning is one of the most important functions of health professionals. Yet disaster planning is a complex and resource intensive process. Meeting this challenge provides health professionals with an opportunity to demonstrate the benefits they can provide for meeting their company's business needs.

The disaster planning role demands a framework that facilitates communication beyond the boundaries of traditional health care. The seven stages of the Strategic Management for Total Quality in Health Care model enhance health professionals' ability to develop a disaster planning process of continuous improvement. The model is a tool for enhancing the health professional's ability to work effectively and efficiently on complex interdisciplinary projects such as disaster planning and assures maximum system readiness in the event of a disaster.

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