

## INSTITUTIONAL PLANNING FOR RADIATION EMERGENCIES

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Persons providing health care pride themselves on their ability to handle emergencies. This pride is born of the daily experience of caring for the sick and injured. Emergencies include traumatic injuries, sudden changes in health status, and various minor disturbances in the physical environment inside the hospital. The effectiveness of this ability is unquestioned in limited-scale problems. However, survey experience of the Joint Commission on the Accreditation of Hospitals (JCAH) reveals weaknesses when health care organizations are faced with larger scale problems such as earthquakes and plane crashes. One may speculate that a massive emergency such as occurred at Chernobyl would overwhelm this ability.

Based on the same survey experience, JCAH believes that health care organizations can plan and train to prepare for large-scale emergencies in a careful and systematic manner. Through such study and practice, their existing confidence and ability to deal with limited emergencies can be expanded.

### PLANNING PROCESS

The JCAH addresses emergency planning and preparedness in two sections of its 1987 Accreditation Manual for Hospitals. In the emergency services standard, reference is made to disaster planning as a responsibility of the emergency services director. One of the specific subjects mentioned is preparing to receive and treat victims of radiation exposure or contamination. In the section on plant, technology and safety management, the emergency preparedness standard lists key elements of plans and procedures for dealing with any emergency situation that exceeds normal working capabilities of one or more components of the health care organization.

Both references emphasize the need for an organized, consistent planning process to address emergencies. The JCAH suggests that the process consist of four steps: problem identification, problem analysis, problem resolution, and evaluation and modification of plans.

Problem Identification: This is the key step to developing an effective plan. If the parameters of the problem are clearly identified, the solution is often obvious. During the problem identification phase, the organization needs to consider three important aspects. First

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important aspects. First, and often most complex, is the general environment. The external environment--factors such as suppliers of goods and services, geography, and weather patterns--and the internal environment--staff, space, and operational issues--must be assessed. The second aspect is that of special considerations. Each health care organization is unique in some way. The unique characteristics may be a help or a burden in an emergency. Regardless of its form, the uniqueness must be accounted for. The third key point is the level of risk of the organization's involvement. This question is a specific consideration of the larger issue of the external environment. The risk of involvement may be a factor of proximity or a factor of weather or a combination. Whatever the underlying cause, the risk must be evaluated so it can be accounted for in emergency plan operations.

Problem Analysis: Problem analysis is difficult to execute. Once a careful environmental study is complete and the variables that must be addressed by an emergency plan are established, an organization must identify resources that will be available during an emergency and evaluate their impact on the scope of the possible response due to constraints imposed by the variables. In many cases, such as planning for a significant radiation emergency, the problem analysis process is limited to "ready, fire, aim" thinking. The minimal experience available does not give planners adequate information to do better than guess at limitations that may occur as a result of a catastrophic event. Under these conditions, it is often useful to forecast best, worst, and most likely scenarios and take a conservative approach to development of plans.

Problem Resolution: This is generally relatively straightforward. Once the identification and analysis processes have been completed, the elements for designing and executing emergency plans are available.

Monitoring and Evaluation: The final phase, monitoring and evaluation, is the most aggravating part of the planning process. It is in this mode that assumptions made earlier begin to unravel and it becomes apparent that plans fail to address critical operating needs. This failure is discouraging because the preceding steps are arduous and must be repeated as often as necessary to create effective plans. This phase is the point in the emergency planning process that JCAH surveys often find inadequate in an emergency plan. Failure occurs when achievement of success is slow or when errors are dismissed as artifacts of a drill. Monitoring and evaluation require objective assessment of all aspects of emergency plan drills, because things certainly will get worse under actual conditions as people and resources become stressed and no one can stop the event.

#### MANAGEMENT OF AN EMERGENCY

During each of the four steps of the planning process, the JCAH requires that three essential ingredients be accounted for: facility

preparedness, staff preparedness, and patient management. Each plays a significant role in the management of an emergency, and each must be studied in detail as an integrated part of emergency operations rather than as a stand-alone problem. As organizations develop plans that address these three issues, a number of points of consideration arise.

Facility Preparedness: When studying how a physical plant will perform during an emergency, six difficult questions must be answered.

The use of space in an emergency must be carefully considered. If confronted with a biological, chemical, or radiation emergency, it may be necessary to provide decontamination or isolation areas. If the emergency involves many injured, it may be necessary for a health care organization to house families of staff and employees. It also may be necessary to abandon a building in such an event, as with an earthquake. Each possibility, including alternative uses for space, must be considered.

Sources of supply and resupply must be established and confirmed. If an emergency requires use of special drugs or supplies for treatment of victims, suppliers may be nonexistent or limited. In a very short period, this can become an insurmountable roadblock in trying to manage an emergency.

Security plans for management of buildings and surrounding areas are needed. Uncontrolled access during an emergency can result in chaos as health care staff struggle to transport patients and to move themselves and supplies to areas where they are needed. In the United States, a large-scale emergency such as the Chernobyl disaster would become known much more quickly than it did in the Soviet Union, and the resulting panic could result in health care organizations being inundated with persons seeking active or preventive treatment. Without well-formulated security plans, the operations of a health care organization could be halted.

Utility functions such as electricity, heat, and water supply are a significant part of the emergency preparedness process. It is possible that normal utilities will be contaminated or lost. To address this possibility, a health care organization is required by the JCAH to develop plans for an orderly shutdown and recovery process for each utility system. In addition, plans for dealing with the loss of a utility system are required. As part of this thinking process, an organization is required to define conditions under which operations are no longer possible in a building.

Communication is the "nervous system" of an emergency management plan. Communications with staff, news media, and the public are essential. Each organization should develop specific channels of communication and notify all those affected as far in advance as possible. In a radiation emergency it is possible that the greatest good for the greatest number of people may be achieved by health care professionals providing competent information to the public about

treatment and prevention. Knowledge of the short-, intermediate-, and long-term consequences of radiation exposure can prepare physicians to provide such information. It is important as part of the emergency preparedness concept that experts in various aspects of toxic exposures be identified in order to provide accurate and timely information.

The final consideration is establishing the means by which patients, staff, and information will travel. This is important for two reasons. First, if patients and staff are not able to get together in a timely manner at an appropriate location, emergency management efforts will be valueless. Second, in modern health care there is substantial reliance on machine-generated data for making informed medical decisions. To provide this information, patients or samples of their fluids and tissues are sent to specialized areas where several obstacles may interfere with successful completion of the task. First, the volume of information requested may simply overwhelm the capability of the staff and equipment. Second, the results may be separated from the patient by traffic routing for both. Third, no method of transmitting results may be available. The consequences can range from simple aggravation to patient injury. It is this aspect that health care organizations often greatly overestimate in assessing their capabilities of coping under stress. This aspect should be carefully studied in the planning process and explicitly tested and measured in drills or actual emergencies.

Staff Preparedness: This is a tricky and involved process. Few health care professionals willingly admit limits. When addressing staff preparation, the attitude should be that we can do anything, but we cannot do everything. With this in mind and with a firm understanding of the capabilities and limitations of the physical plant, it is easier to address staff problems. In an emergency, it is important that each staff member have a clearly defined chain of responsibilities ending at the point, "If all else fails, do this." In this manner the organization can help prevent a form of gridlock in which no one is sure who is in charge and therefore no one is able to act. Contained within this set of instructions are the capabilities of staff under optimum to worst-case conditions.

Once the information is developed, it needs to be distributed and responsibilities assigned by person or position. The instructions should be as concise and broadly applicable as possible. Complex decision trees describing what to do for which disaster delay and confuse the response.

The third element of staff preparedness is education and training. Education provides staff members with a conceptual framework and a general set of goals, and training addresses specific responsibilities. The JCAH specifies that each accredited hospital conduct drills every six months that require activation of emergency plans. Health care personnel should consider additional training and practice to address aspects of weakness uncovered during required drills as part of their ongoing commitment to preparedness.

Patient Management: This is a clinical function and will be discussed here only in general terms. During the planning process, it is important that physicians, nurses, and administrators establish chains of command and guidelines for the admission, transfer, and discharge of patients. The guidelines should address the plans described earlier for use of facility and staff, including those for the transport and identification of patients. The process of acquiring diagnostic information is perilous when one is in a hurry. An efficient and traceable process of identifying the location and relative condition of the patient can obviate many perils.

The last but certainly not the least important consideration is the management of continuing care for patients in the facility. Adequate staff and equipment must be reserved to provide high quality care to these patients.

Once these elements are considered and plans are formulated, an organization needs to look outward to other health care organizations. In particular, attention should be directed to sharing unique or complementary staff and equipment. One person involved with emergencies in industry stated that training with regard to unusual operations, which may involve 20% of workers' time, should receive 80% of the emphasis. Outside entities can greatly influence the success or failure of an emergency plan.

#### PUBLIC INVOLVEMENT IN EMERGENCY PLANNING

When dealing with the public, three factors need to be addressed. First, communication is essential during and after an emergency, as well as before as a form of public education. Second, a health care organization needs to recognize that many of the consequences of an emergency may be mental distress rather than physical injury. In the planning process for the community, mental health and community support services should be considered as adjuncts to the trauma management plan. These resources may be involved over an extended period, for psychological effects may outlive the physical effects of an emergency.

The third element of public involvement is working with industry. During the planning process, health care organizations should survey nearby industries to evaluate what the consequences of a serious industrial emergency might be. Through such contacts, the organizations can often establish what supplies and information will be needed to manage an emergency effectively.

#### JCAH SURVEYS

For the JCAH, the preceding discussion culminates in the survey process with which it seeks to determine how well an organization has formulated, disseminated, and evaluated its emergency plans. The JCAH also identifies the level of standards set for performance to see that they are high enough and yet achievable. The survey process also

determines how effective teaching processes are and whether an active organizational management team that leads by example is present. The survey measures an organization's ability to evaluate its own performance objectively in an emergency, whether real or a drill, and its ability and willingness to change when weaknesses are discovered. Planning for emergencies is a continuing and complex process involving all members of the health care team. The goal is to define and refine the capabilities of an organization to respond in times of stress--capabilities that are not developed "by accident."