

Ministry of Health

EMERGENCY MANAGEMENT DOCTRINE

Guidance for Health Planners



MARCH 2005

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Section 1

The Purpose and Application of Doctrine

General

The word doctrine is a derivative of the Latin *doctrina*, meaning teaching. Its purpose is to establish a body of knowledge which provides direction and aids understanding. A sound doctrinal framework should provide guidance for emergency managers and responders, establish the basis for operational and training guidelines, and help individuals to think more clearly during the inevitable confusion of an emergency response.

Health emergency management doctrine provides a common approach which is not bound by prescriptive rules. When paired with effective training, doctrine does not constrain individual initiative; rather it leads to consistent behaviour, mutual confidence and effective collective action. It embraces established wisdom in the areas of problem solving, decision-making and planning and is sometimes defined as “what is taught”. For the purpose of this document, it is defined as: *fundamental principles to guide the actions of health emergency managers and responders during an emergency or disaster.*

Doctrine deals with current capabilities and is written as guidance for emergency activities – it provides a foundation for an emergency response, but doctrine is not dogma. It can be altered or even ignored, but care must be taken to ensure that the underlying principles are not abandoned. Sound doctrine evolves in response to experience and knowledge and represents the distilled insights and wisdom gained from experience.

Well-developed doctrine is inherently flexible, allowing emergency managers and responders to seize the initiative and adopt unorthodox or imaginative courses of action as opportunities arise. It should be seen as a way of thinking, not guidance on what to think. By building on lessons from the past, doctrine provides the rationale behind an emergency response and can also assist in the determination of appropriate roles and objectives.

Categories of Doctrine

In health emergency management, doctrine exists at two levels – strategic and operational:

Strategic Doctrine – sets out fundamental and enduring principles which guide health emergency management. It establishes the framework for an effective response.

Operational Doctrine – applies the principles of strategic doctrine by describing capabilities and organizations necessary for an effective response. At the site level, operational doctrine identifies specific actions by responders and describes the proper use of resources to achieve objectives.

This document deals primarily at the strategic level. Some overlap between the levels of doctrine is inevitable, and it is not essential to keep the levels completely separate. The objective of health emergency management doctrine is to construct a framework that explains how the response to a health emergency should be conducted.

Purpose of Doctrine

Doctrine is concerned with the application of policy, and should assist in shaping perceptions about dealing with health emergencies. Doctrine is always subordinate to Canadian and provincial laws and government policies.

Doctrine influences the development of policy in the sense that policy must reflect what is possible. In contrast with the potentially changeable nature of policy, doctrine is based on fundamental lessons learned over time about the ways in which resources can be used effectively in response to a health emergency.

Doctrine says, in essence, “*all things being equal, this is how we would prefer to operate*”. Strategies, in contrast, deal with concrete situations in particular places at specific times.

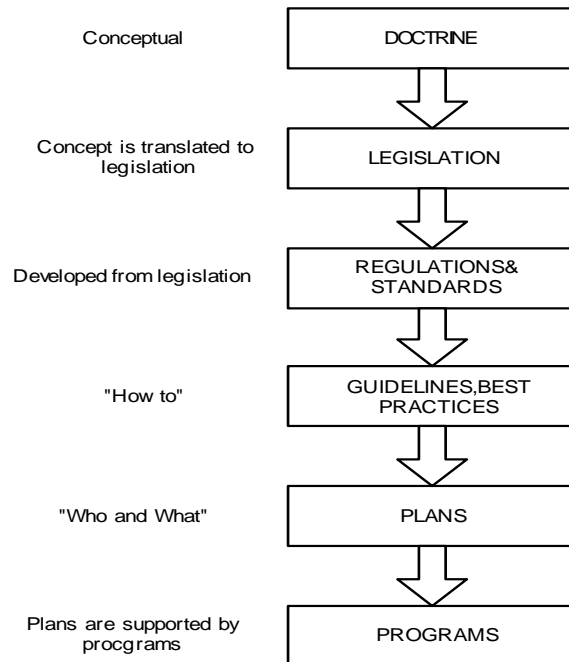
Doctrine should be part of emergency management training and education. A thorough understanding of the principles underlying a provincial response to a health emergency is essential for everyone within health sector.

Application of Doctrine to the Health Sector

Comprehensive emergency management encompasses mitigation, preparedness, response, and recovery and reflects the idea that successful management of vulnerabilities, resources, and the environment will reduce the likelihood of an impact exceeding the disaster threshold. A program based on comprehensive emergency management ensures resources are being committed to emergency management in a balanced and effective manner.

Health systems across all jurisdictional levels in Canada are faced with the challenge of preparing for and responding to new and re-emerging health threats including highly infectious diseases, major disasters and terrorist attacks. Such events can not only overwhelm the capacity of local hospitals to provide adequate care to patients and/or victims, but almost always require coordinated planning, communications, and support from other jurisdictions, not only regionally but also provincially and federally. The first step in effecting a system capable of responding to such threats is to establish a consistent, inter-jurisdictional operational methodology for managing complex health emergencies, as well as to guide the development and maintenance preparedness programs and activities.

Health emergency management doctrine contributes to the emergency management framework as illustrated below:



A *Program* denotes activity that is continuously ongoing, whereas a *Plan* is normally an established series of pre-selected actions that occur in response to defined circumstances.

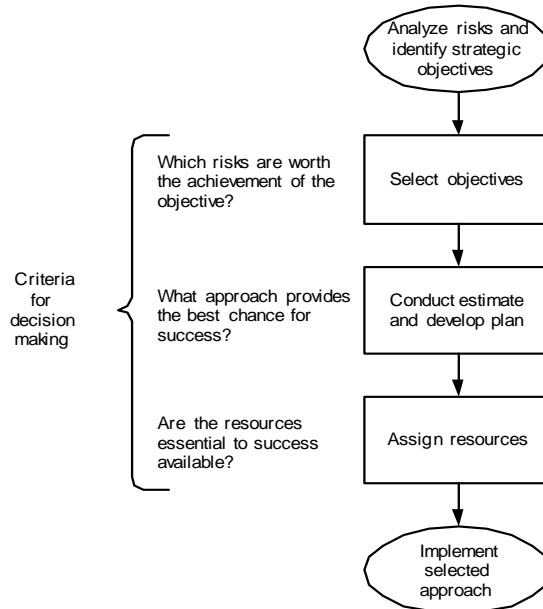
In the case of public entities, consideration should be made for periodic review of existing legislation, regulations, codes, and authorities to determine whether adequate flexibility exists to accommodate evolving programmatic policy or if new legislation should be developed and introduced through a legislative initiative.

This is particularly relevant as program requirements change to comply with changing roles and relationships in and among varying levels of government.

Strategic Approach

Health EM doctrine exists at the strategic level and applies the concept of comprehensive emergency management within an integrated framework. It is designed to set out the steps to be taken by the ministry in the event of an emergency or disaster, and to provide guidance on the coordination of emergency management with other components of the provincial health sector.

A strategic approach is the art of devising and employing a plan or process towards a goal. It seeks to create a desired pattern to events and represents a combination of policy and doctrine designed to facilitate a coherent and timely response to a health emergency. Determining a viable and affordable emergency structure to support the planned framework is an inherently complex and iterative process, as illustrated.



A strategic approach to doctrine utilizes existing resources and programs to achieve emergency management goals efficiently and effectively, utilizing best practices at every level.

Section 2

Health Emergency Management Framework

General

The main purpose of health emergency management doctrine in BC is to set out the overall framework for emergency management in the province in order to develop a common understanding of the concept.

This, in turn, is designed to assist in the ongoing development and implementation of emergency management programs at the provincial and local government levels, and in the establishment of linkages with other partners and stakeholders.

Health Emergency Management

The term *emergency management* is widely recognized as the field of dealing with extreme harmful events. Some health organizations refer to this as *disaster management* in order to differentiate this work from responsibilities for urgent or emergent health care that is often referred to as “emergency medicine”. Essentially, emergency management is the professional discipline and process that addresses an organization’s vulnerability, resources and environment as a means of making the organization safer.

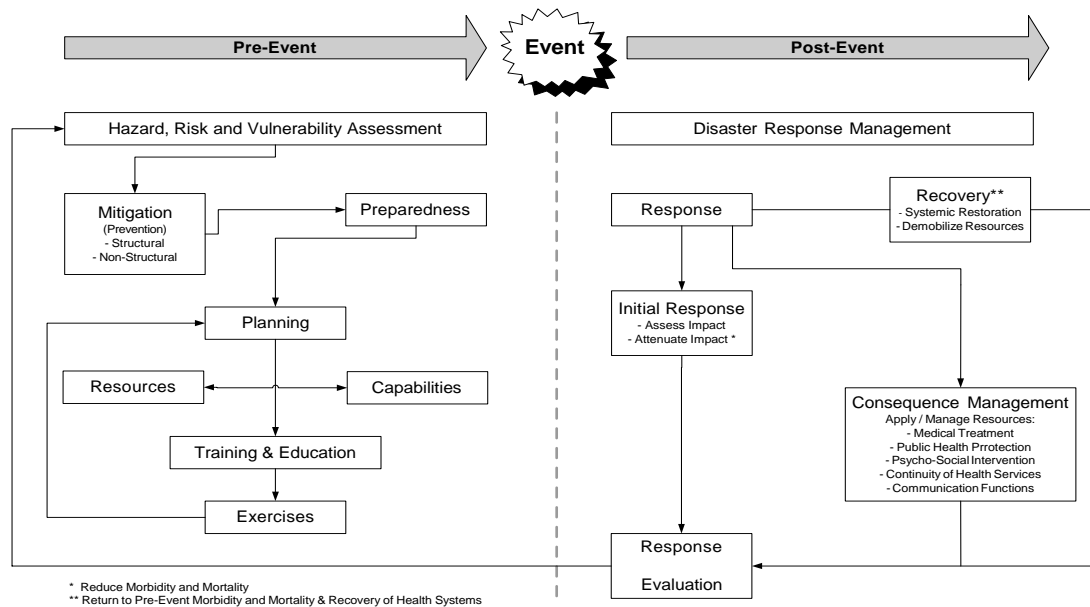
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emergencies, as well as to guide the development and maintenance preparedness programs and activities.

National Framework

The *National Framework for Health Emergency Management* describes both the pre-event activities that comprise an ongoing emergency management program and the response and recovery activities that only occur after an impact:



The Network on Emergency Preparedness and Response has developed and endorsed the *National Framework for Health Emergency Management* (NFHEM). The NFHEM provides guidelines and principles for the development of a more integrated, comprehensive health emergency management system. Consensus has been established for using the NFHEM to build a common platform for cross-jurisdictional stakeholders to manage the health implications of disease outbreaks and emergencies throughout Canada.

In April 2005, the Federal/Provincial/Territorial Ministers of Health agreed to the formation of the Pan-Canadian Public Network to enable F/P/T governments to better anticipate, prepare for, and respond to public health threats. Within this Network, there are four federal/provincial/territorial expert groups or networks which have some level of responsibility for emergency management in Canada:

- Emergency Preparedness and Response;

- Canadian Public Health Laboratories;
- Communicable Disease Control; and
- Surveillance and Information.

While the mandates of these networks are distinct, managing the health implications of natural and human-induced emergencies requires the integration of emergency management elements as they relate to the efforts of all four networks. The CPHN Council has recognized the FPT Emergency Preparedness and Response Network as the Expert Group on Emergency Preparedness and Response. Within this context, the Expert Group on Emergency Preparedness and Response is continuing to lead and facilitate efforts to establish a more integrated and coordinated national health emergency management system in Canada.

Provincial Framework

The *BC Emergency Response Management System (BCERMS)* is a standardized emergency management system with a set of policies and guiding principles and which incorporates the widely-used Incident Command System (ICS). All ministries, crown corporations and most local governments have adopted BCERMS.

The integrated response concept incorporates a pan-government approach to emergencies, using a *Provincial Emergency Coordination Centre (PECC)* as the single window through which the response is coordinated. The PECC becomes the focal point of the provincial government response in a major emergency or disaster. The PECC is maintained and managed by the Provincial Emergency Program (PEP).

In the event of a major disaster or emergency, the PEP will also normally open one or more *Provincial Regional Emergency Operations Centres (PREOCs)* from which it coordinates the provincial response and establishes liaison with local governments and federal agencies.

In an emergency, volunteers across the province provide an array of public services, including search and rescue, air transportation, highway rescue, emergency social services and radio communications.

Legislation

Legislation requires the provincial government to have comprehensive emergency plans respecting preparation for, response to, and recovery from emergencies and disasters. It also requires a *Provincial Emergency Program*

(PEP) for the coordination of emergency planning, preparedness and response. Relevant legislation includes:

<i>Emergency Program Act [RS Chapter 111] 1996:</i>	This Act requires that ministers develop emergency plans and procedures to be followed in the event of an emergency or disaster and set out the manner in which and the means by which the government will respond and recover. The <i>Emergency Program Act</i> takes precedence over all other provincial legislation.
<i>Health Authorities Act [RS Chapter 189] 1997:</i>	The Act empowers health authorities to develop plans for health services and to provide the infrastructure necessary for the delivery of direct health services within a geographical region by developing and implementing regional standards. In carrying out their purposes, Health Authorities must have due regard to the provincial standards and specified services and the community health plans for the communities in the region.
<i>Health Emergency Act [RS Chapter 162] 1974:</i>	The Act mandates a Commission to oversee the provision of ambulance services by providing an infrastructure to provide emergency health services in the province. The purpose of the ambulance service is to carry out triage, treatment and transportation of the sick and injured by providing out-of-hospital care.
<i>Health Act [RS Chapter 179] 1997:</i>	The Act requires the minister to: <ul style="list-style-type: none"> (a) take account of the interests of health and life among the people of British Columbia; (b) make sanitary investigations and inquiries about the cause of disease and especially of an epidemic; and (c) make suggestions as to the prevention and interception of contagious and infectious disease the minister believes most effective and proper and as will tend to prevent as far as possible the rise and spread of disease.

In the case of public entities, consideration should be made for periodic review of existing legislation, regulations, codes, and authorities to determine whether adequate flexibility exists to accommodate evolving programmatic policy or if new legislation should be developed and introduced through a legislative initiative. This is particularly relevant as program requirements change to comply with changing roles and relationships in and among varying levels of government.

Crisis and Consequence Management

The response to emergencies will normally have two components:

- Crisis management is predominantly a first responder function and includes measures to identify, acquire, and plan the use of resources needed to anticipate, prevent, and/or resolve a threat. A crisis management response may include traditional law enforcement missions, such as intelligence, surveillance, tactical operations, negotiations, forensics, and investigations, as well as technical support missions, such as agent identification, render safe procedures, transfer and disposal, and limited decontamination. In addition to the traditional missions, crisis management also includes assurance of public health and safety.
- Consequence management is predominantly an emergency management function and includes measures to protect public health and safety, restore essential government services, and provide emergency relief to governments, businesses, and individuals affected by the consequences of emergencies or disasters.

Section 3

Key Functional Concepts

Guiding Principles

The following fundamental principles guide the development of health emergency doctrine:

- *Primacy of Preserving Human Life.* Preserving human life constitutes the first priority and will always take precedence over other response and recovery requirements.
- *Role of Regional Health Authorities and Local Governments.* Emergencies generally begin and are initially responded to as local events. The vast majority of events are dealt with at the HA or local level, and direct Ministry involvement may not be necessary in many instances except for monitoring and reporting.
- *Effective Communications.* Information sharing between agencies is critical to the success of emergency management. Effective information sharing and timely reporting is essential for informed decision making at all levels.
- *Seamless Transitions.* Emergency operations must transition smoothly from simple to complex situations and from routine, day-to-day operations to catastrophic events. Transition mechanisms must be addressed in emergency plans at all organizational levels.
- *Standardization.* Effective emergency management operations require interoperability and compatibility in systems, procedures, and communications. Doctrine provides a core set of concepts, principles, terminology, and technologies which must be standard among all health organizations in the province.
- *Utilization of Best Practices.* Sound doctrine incorporates best practices from emergency management theory and practice, and requires review from lessons learned. Doctrine must also be responsive to research and development and technological advances.

Integrated Disaster Health Services

Integrated disaster health services (IDHS) involves a province-wide partnership, embracing communities with comprehensive healthcare capability, including psychosocial intervention, in the wake of a disaster. It will provide an efficient community capability to deliver quality health care to the victims of a domestic disaster at a disaster site, in transit from the impacted area, and on to definitive care facilities. Its principal characteristics are:

- community based;
- emergency/primary care focused;
- multidiscipline;
- all-hazard, common consequence focused;
- locally activated; and
- indemnified against civil liability by the province.

The model is based on the assumptions that 60 percent of casualties do not require care beyond emergency/primary care intervention and that the other 40 percent may require acute care intervention – fifty percent of which are non urgent (Priority 2).

The term disaster health services vice emergency health services is used to differentiate the delivery model for mass patient events which overwhelm the health system from that employed in the management of routine emergency (unscheduled) health care encounters.

The mission of the IDHS is to establish networks of local volunteer medical and public health professionals who can contribute their skills and expertise in responding to emergency/disaster situations.

The IDHS is comprised of locally based, medical and public health volunteers who can assist their communities during emergencies, such as an influenza pandemic or a natural disaster. It can also offer education and prevention services to improve the public health infrastructure of the communities.

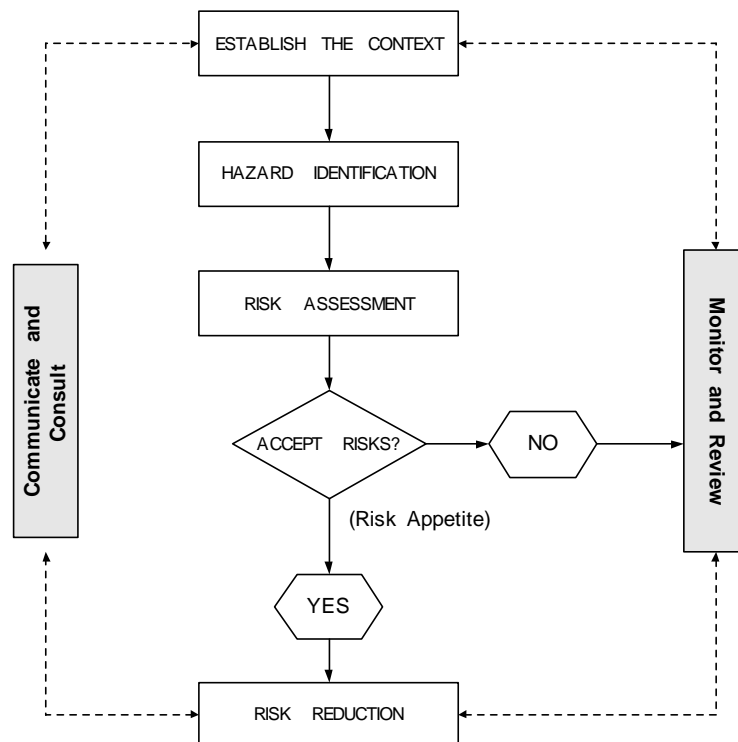
Risk Management Approach

Risk management comprises a systematic approach to setting the best course of action under uncertainty by identifying, assessing, acting upon and communicating risk issues. It involves planning and implementing decisions that will minimize the adverse effects of accidental and business losses through:

- providing a process for dealing with risk;

- shifting the focus to the causes of risk rather than the effects of risk, to permit resources to be allocated effectively;
- evaluating the level of risk associated with various hazards and the setting of priorities;
- identifying risk reduction measures;
- reducing risk in a continual process to promote assessment and evaluation of hazards and vulnerabilities; and
- focusing on the implementation of best emergency management practices.

The management process includes hazard identification and profiling, vulnerability assessments, the assignment of a risk rating and the allocation of appropriate resources. All provincial health emergency programs must employ a formal risk management process to prioritize the risks in order to inform its planning for resource requirements and application. Risk management programs should be based on the following structure:



The assessment should draw as much as possible on unbiased independent evidence, consider the perspectives of the whole range of stakeholders affected by the risk, and avoid confusing objective assessment of the risk with judgement about the acceptability of the risk.

When the assessment is compared to the risk appetite, the extent of action required becomes clear. It is not the absolute value of an assessed risk which is

important; rather, it is whether or not the risk is regarded as tolerable or how far the exposure is away from tolerability.

Mitigation

Mitigation refers to actions intended to eliminate or reduce the risk of future impacts from hazards to vulnerable communities. These actions are prompted by the potential risk of a hazard, rather than an imminent threat. Mitigation may be structural, involving physical measures intended to eliminate or reduce risk, or non-structural, comprising social methods aimed at managing the activities that contribute to the risk. Mitigation measures are particularly important for facilities providing emergency health care, as these facilities will be in high demand following an emergency or disaster.

Mitigation is concerned with preventing a harmful interaction between extreme events and a vulnerable community. The decision to mitigate a hazard is reached through the risk management process, and decisions will be influenced by costs, political perspectives, past experiences and other issues that will contribute to risk management.

Mitigation will be an established component of the strategic emergency management program within the ministry. For the purposes of this plan, key mitigation measures will include assessing and directly reducing the risks to health sector facilities and programs, and, in conjunction with health authorities, advocating for risk reduction measures throughout the province. The objective is to integrate mitigation activities into all emergency management planning to control costs and reduce hazards.

Preparedness

Emergency preparedness consists of the activities that take place before an incident that increase an organization's readiness to respond. It consists of activities designed to:

- plan for effective response to and recovery from disasters;
- arrange for both internal and external resources to be available when needed;
- provide education and training for everyone with a role during a disaster, from first responders to members of the public, with the education and training

needed to respond effectively;

- provide education and public awareness about emergency preparedness;
- train, exercise, and evaluate emergency plans; and
- revise plans and procedures.

Preparedness reflects the acknowledgement that something can happen, the assignment of a responsibility to respond and a commitment to put the plans, resources and infrastructure in place to ensure the response capability. It is implemented through a continuous cycle of planning, training, equipping, exercising and evaluating.

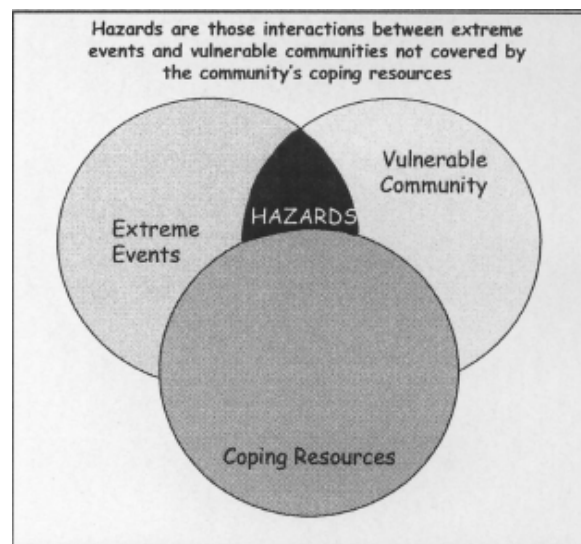
The planning component of preparedness encompasses both emergency response planning and business continuity planning. The two concepts are linked – response planning deals with how the ministry will organize and react to assist affected communities cope with the extraordinary demands of a disaster.

Managing Hazards

The ability to manage a disaster response effectively depends in part on the ability of the emergency management system to identify and prepare for a range of predictable hazards.

Hazards must be considered in terms of the threat and the threatened community, and mapped accordingly. For instance, a tornado, by itself, is simply an extreme weather phenomenon, whereas a town that is located in an area that experiences tornadoes has a tornado hazard.

Hazards must therefore be considered in the context of interactivity. To identify a hazard, the extreme events that could potentially impact on a community must be considered and the vulnerability of the population to the effects of these events can be estimated. The resources required for the community to cope can then be identified. The diagram on the



preceding page illustrates the relationship between an extreme event and a vulnerable community's coping resources.

In this context, a hazard is a situation or condition with the potential to harm a community or environment, which may be natural, accidental or intentional.

Categories of hazards include:

- *Natural Hazards*. These include wildfires, storms, floods, cyclones, tsunamis, earthquakes, weather extremes;
- *Technological Hazards*. These are caused by the failure of socio-technical systems. These include dam and levee failure and systems failures related to agriculture (e.g. drought), food contamination, industrial sites, infrastructure and transportation;
- *Biological Hazards*. These include the spread of disease or pests among plants, animals or people;
- *Civil and Political Hazards*. These include terrorism, sabotage, civil unrest, hostage situations and enemy attack; and
- *Organizational Hazards*. These include poor organization, workforce disruption, inadequate resources, low levels of training or competence, and/or a lack of awareness of staff responsibilities in an emergency.

Hazard analysis involves identifying and profiling hazards, assessing vulnerabilities and risk, determining probability scenarios and outcomes, and identifying capabilities and shortfalls.

The health sector has processes for collecting and assessing this information. It will also be necessary to gather information on the vulnerabilities within specific infrastructures and economies, including looking at the health sector's own staff, facilities and programs for vulnerabilities.

Within this plan the identification and profiling process is only completed in outline – local authorities complete the detailed analyses of hazards. There is some requirement for local analysis to be conducted regionally at the Health Authority level.

Hazard management involves considering a full range of threats and the implications of their consequences to both the health of the population and the health sector. The ministry's focus will be on preparedness, reflecting the concept that successful management of vulnerabilities, resources and the environment will reduce the likelihood of an incident exceeding the disaster threshold.

The ministry will undertake an ongoing hazard/vulnerability assessment program, in conjunction with health authorities, to maintain appropriate information on vulnerable communities and environments.

Business Continuity

Business continuity is an ongoing process designed to ensure that the necessary steps are taken to identify the impact of potential losses, maintain viable recovery strategies and recovery plans and ensure continuity of services in the event of a major failure, emergency or disaster. Health programs are resourced to operate and to effect business recovery through their *Business Continuity Plans*.

Business continuity plans ensure availability of government services, programs, and operations and the timely resumption of services. Policy requires that each ministry must develop business continuity plans and procedures to support government business objectives and availability of essential services.

Ministries must establish the capability to resume essential services by putting appropriate risk mitigation processes in place to prevent and mitigate the effect of business interruption and support the recovery of business activities.

Comprehensive Emergency Management

Emergency management describes the process of managing complex systems and resources to address extreme events. The sum of all emergency management activities conducted by a response organization may be collectively referred to as an *Emergency Management Program* for that entity.

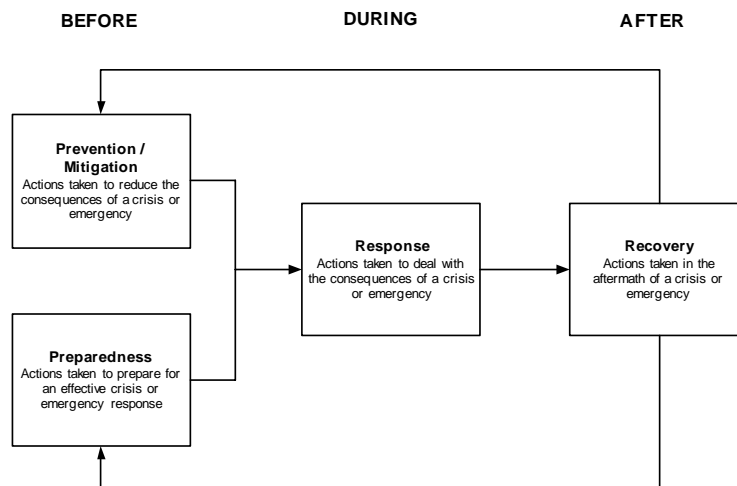
Comprehensive emergency management requires an integrated approach through all four phases of emergency management:

- *Prevention/Mitigation*. This phase encompasses actions to avoid an incident, to intervene to stop an incident from occurring or to mitigate an incident's effects. It involves actions to protect lives and property and to defend against

attacks, and may include public health surveillance and testing processes, immunizations, isolation or quarantine.

- *Preparedness.* This phase includes the activities necessary to build and sustain performance across the other phases. It involves efforts at all levels: to identify risks or threats; to determine vulnerabilities; to identify resources available and to address those vulnerabilities; to identify requirements or shortfalls; and conduct training and exercises.
- *Response.* This phase incorporates the activities necessary to address the immediate and short-term effects of an incident. Response activities include assessing preliminary effects, activating and deploying emergency resources, executing an emergency management plan, allocating existing resources in support of the plan and obtaining additional resources to sustain response operations.
- *Recovery.* The final phase encompasses those actions necessary to bring a community back to normal. It entails the coordination and execution of business continuity plans and the reconstitution of government operations and services.

The phases are interdependent and, in practice, an affected community will address all of the phases simultaneously although the emphasis may shift between them. The health and emergency social services sectors need to be involved in all phases. This integrated approach is illustrated below:



Section 4

Command and Control

General

The Ministry of Health is responsible for the effective management of a public health emergency. The Ministry will work within the framework of the integrated provincial emergency response structure while ensuring direct operational control of the health situation.

The Ministry will provide operational guidance, advice, and where applicable, resources to the Health Authorities. The Ministry will also provide ambulance services to the province and facilitate inter-regional cooperation in emergency health matters

The Ministry will support the Health Authorities in the development of emergency management best practices and plans, including their communication, cooperation and coordination at the corporate and local levels with other emergency response agencies.

National Emergency Response System

The *National Emergency Response System* (NERS) is an all-hazards system involving mitigation, prevention, response and recovery, with a managed interface between the federal and provincial/territorial levels. It provides interface between federal and provincial officials at each level of emergency response management.

The Network on Emergency Preparedness and Response has developed and endorsed the *National Framework for Health Emergency Management* (NFHEM). The NFHEM provides guidelines and principles for the development of a more integrated, comprehensive health emergency management system. Consensus has been established for using the NFHEM to build a common platform for cross-jurisdictional stakeholders to manage the health implications of disease outbreaks and emergencies throughout Canada.

Federal/Provincial/Territorial Ministers of Health have agreed to the formation of the Pan-Canadian Public Network to enable F/P/T governments to better anticipate, prepare for, and respond to public health threats. The CPHN Council has recognized the FPT Emergency Preparedness and Response Network as

the Expert Group on Emergency Preparedness and Response. Within this context, the Expert Group on Emergency Preparedness and Response is continuing to lead and facilitate efforts to establish a more integrated and coordinated national health emergency management system in Canada.

National Health Incident Management System

The National Health Incident Management System (NHIMS) is intended to be a comprehensive management scheme that ensures a coordinated and organized federal, provincial/territorial, and regional response and recovery capacity to any and all emergency incidents. The NHIMS uses methodologies and principles of the Incident Management System (IMS) to provide a management and accountability structure, combined with appropriate planning and communication procedures, to respond effectively to emergencies and disasters.

The broad spectrum of components of NHIMS includes operations and control management, qualifications, technology, training and publications. Together, these components will:

- establish an incident management system that sets out the roles, responsibilities and standard procedures to be used to coordinate the delivery of emergency response services, and
- coordinate emergency response services and resources according to guidelines and protocols established within the incident management system.

Provincial Integrated Response Structure

In an emergency or disaster, the ministry will contribute to and become an integral part of the coordinated provincial response. In this respect, the ministry will coordinate its emergency management activities with the Provincial Emergency Program and provide liaison staff to the PECC to provide the appropriate health expertise and input. Similarly, the health authorities are expected to provide liaison to the appropriate PREOC(s).

There will be many aspects of health emergency management that require direct oversight by the provincial health structure. Accordingly, a comprehensive emergency health emergency management structure will be put in place to complement the integrated provincial emergency response and to ensure that public health aspects of the response are coordinated within the medical sector.

The relationship of the health emergency sector to the provincial integrated structure is illustrated below:

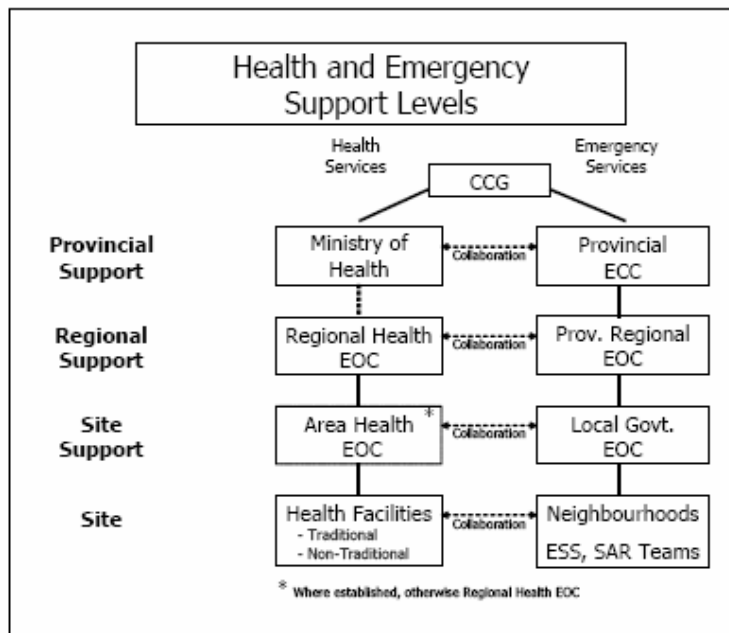


Figure 1. Possible Health and Emergency Support Levels in a Pandemic

Operational Priorities

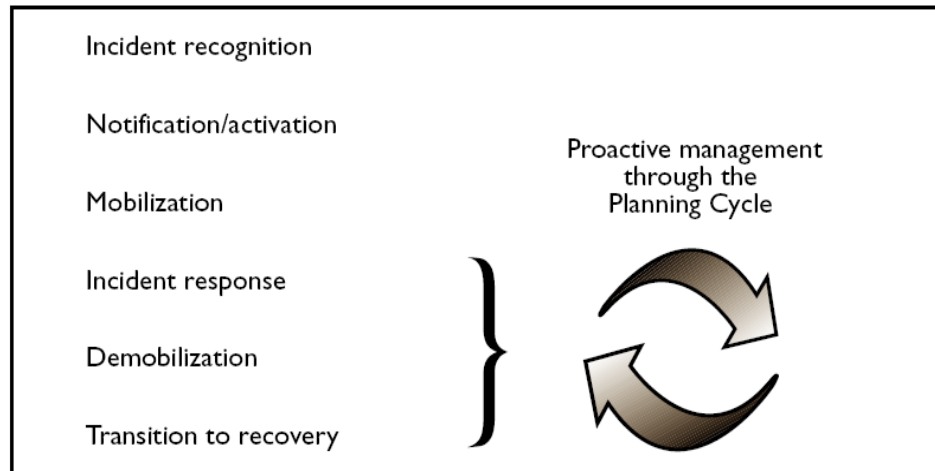
The ministry's operational priorities in a health emergency will be to maintain situational awareness, provide oversight on health aspects of the emergency, keep the government and the public apprised of the health situation and provide support to the Health Authorities.

Health Authorities will develop policy to clearly establish the understanding and parameters of the organization's health emergency management role and responsibilities.

Health Authorities will develop policies and guidelines that flow from this doctrine and supporting plans to specifically address their internal and external preparedness, response and recovery programs. They are expected to use a strategic approach to establish a framework and plans for development of effective regional health emergency management programs and activities.

In the event of a major disaster which affects multiple health authorities and threatens to overwhelm their resources, the ministry must be prepared to take direct command to ensure the delivery of health services.

The response to an emergency will always be at a level appropriate to the scale of the situation and will be in concert with the integrated provincial response model. The response structure and activities will conform to BCERMS and will normally include the following stages:



Jurisdictional Management

There are some emergencies in which the federal government will have jurisdiction, including terrorist incidents, emergencies related to animal health and emergencies which occur on federal lands within the province. Under the federal Emergency Preparedness Act, provinces may also request federal assistance as circumstances warrant to supplement their own response capabilities.

Federal and provincial emergency planning will be integrated to the extent possible to avoid duplication of effort, clarify intents and roles, take best advantage of different capabilities and assure the timely flow of essential information between orders of government.

Communications and Information Management

Health emergency management requires a dedicated emergency communications and information management system to ensure system integrity, security and efficiency.

It is an accepted principle of emergency management that a successful response to an emergency must include the ability to have personnel and resources operating in a pre-arranged, coordinated manner to allow agencies from different sectors to function together within a common management structure. In this respect, an over-riding long-term vision for all within the provincial health sector

should be an integrated provincial disaster health services network that can respond effectively to any health emergency event.

To meet this requirement in the provincial health sector, the E Team communications and information management software will be utilized. It represents an effective means of collecting, collating and distributing information, controlling resources and providing real-time communications in an emergency. It permits rapid information sharing across multiple platforms, incorporating integrated text and graphical information displays with integrated mapping. It also provides operational and logistical situation reporting and the tracking of incidents, tasks and inventory.

The E Team emergency management system facilitates command and control, enhances situational awareness and permits the rapid collation and fusion of critical data in an emergency and will be used pan-provincially in the health sector.

Section 5

Health Emergency Operations

General

The purpose of this section is to outline the concept, rationale and principles of health emergency operations.

Concept of Operations

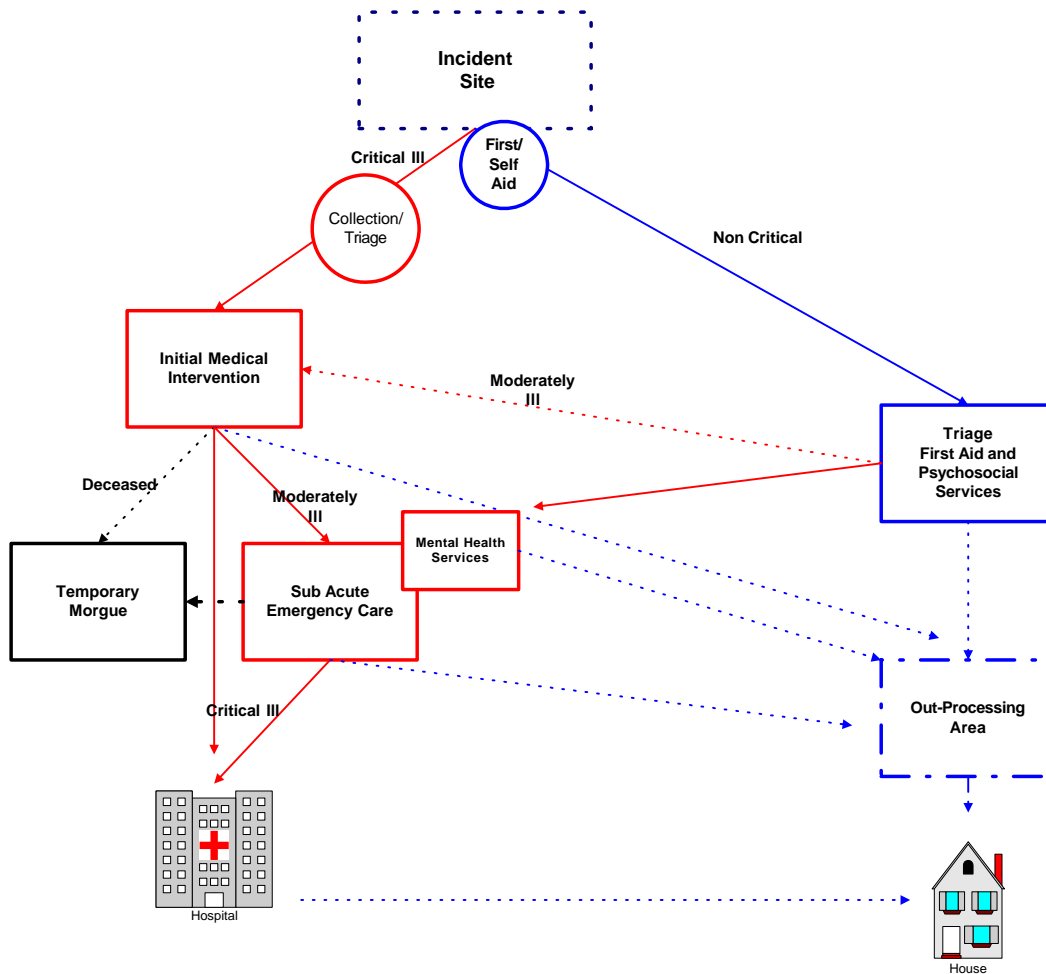
A health emergency response in BC will be based on the *Integrated Disaster Health Services* (IDHS) model.

IDHS is a community-based rapid response capability that integrates all available public and private sector health care resources including associated care providers. The IDHS is designed to supplement the public health care system until other provincial resources can be mobilized or the situation resolved.

First responders within the community will normally consist of police, fire and ambulance services. They secure the site and provide first aid, triage, treatment and transportation in the pre-hospital setting. The organization at the site level, and all subsequent levels, will conform to the British Columbia Emergency Response Management System (BCERMS).

Triage will initially identify patients with *critical* or *non-critical* illness or injury, and appropriate patient management system will be implemented. Local services will be utilized to establish a site for initial medical intervention for the critically ill, and further triage for non-critical cases.

The concept of operations for the handling of patients within the IDHS is illustrated below:



Personnel first on the scene will take immediate steps to assess the nature and extent of the problem. First responders will concentrate their effort and resources on the specific tasks within their areas of responsibility – for example, the police will concentrate on establishing cordons, maintaining security and managing traffic, while ambulance personnel will provide initial treatment, triage and transportation. They will act on delegated responsibility from their parent organization until higher levels of management are established.

Priorities at the site will include:

- casualty clearing station(s) to which the injured can be taken;
- an ambulance loading point for those who need to be taken to hospital;
- a collection/assembly point for survivors before they are taken to a reception centre;
- possible helicopter landing site(s);

- a rendezvous point or points for all responding personnel, which may be some distance from the scene in the event of a bomb incident or incidents involving hazardous materials;
- a marshalling area for assembling vehicles and equipment;
- a body holding area that is under cover and protected from public view; and
- a media liaison point.

Sufficient supplies and equipment will be available to sustain emergency operations for a period of 72 hours, while providing medical care at one or more fixed or temporary care sites. In a disaster situation, responsibilities will include patient triaging, providing high-quality emergency/pre-hospital care and preparing patients for evacuation.

In some situations IDHS could provide primary medical care/triage or sub-acute sustaining care to reduce demand on the acute care system. Such a scenario might include assisting with mass chemoprophylaxis (mass vaccination program).

Patient Management Concept

The basis of emergency patient management is the ability to deliver quality health care to the victims of a disaster at the site itself, in transit from the impacted area and on to definitive care facilities. Care will be designed to:

- provide effective first aid treatment and life-sustaining procedures immediately following injury or the onset of illness.
- protect patients from complications, including protection from environmental effects;
- safely evacuate patients to a secure area where definitive care can be provided; and
- document personal particulars of each patient and basic details of the illness or injuries sustained and treatments given.

Patient management is a continuous process, increasing in complexity with the clinical needs of the patient. While optimal patient management is never compromised except as dictated by the emergency situation, it is necessarily a balance between many conflicting factors which are outlined in this section.

Surge Capacity and Capability

The concept of medical surge forms the cornerstone of preparedness planning efforts for major medical incidents. It is necessary, therefore, to distinguish between surge capacity and surge capability in analyzing the needs of health emergency management.

Medical surge *capacity* refers to the ability to evaluate and care for a markedly increased volume of patients – one that challenges or exceeds normal operating capacity. The surge requirements may extend beyond direct patient care to include such tasks as extensive laboratory studies or epidemiological investigations. Because of its relation to patient volume, most current initiatives to address surge capacity focus on identifying adequate *numbers* of hospital beds, personnel, pharmaceuticals, supplies, and equipment.

Effective strategies for surge capacity require a systematic approach to meet patient needs while preserving quality of care and the integrity of the health care system. Mechanisms must be developed to allow facilities to coordinate existing resources and then obtain outside assistance in a timely and efficient manner. In this way, facilities can transition from normal operations to surge capacity to meet the needs of a catastrophic event, and then back to the baseline.

Medical surge *capability* refers to the ability to manage patients requiring unusual or very specialized medical evaluation and care. Such requirements span the range of specialized medical and health services (expertise, information, procedures, equipment, or personnel) that are not normally available at the location where they are needed (e.g., pediatric care provided at non-pediatric facilities). Surge capability also includes patient problems that require special intervention to protect medical providers, other patients and the integrity of the medical care facility. It also incorporates patient problems that require special intervention to protect medical providers, other patients and the integrity of the medical care facility.

The health sector needs to mitigate the impact of a potential surge situation by ensuring that the required resources are in place. There are three key components to successful mitigation, namely:

- promote wellness to reduce the overall impact during a major emergency;
- address the needs of vulnerable populations during times of crises; and
- have an active, integrated emergency management structure in place.

Meeting the challenge of managing post disaster surge will require the mobilization of both traditional and non-traditional health service providers in an

integrated concept. This will draw upon community health and emergency social services resources normally outside the purview of the health authorities within an *Integrated Disaster Health Services* model.

Coordinating Diverse Operational Systems

Coordinating diverse operational systems within the health sector, referred to as *interoperability*, is defined as the ability of organizational structures to provide services to and accept services from each other and to use the exchanged services to enable them to operate effectively together.

Health emergency doctrine should be consistent at all organizational levels. The objective is to manage relationships to permit effective operational integration in an emergency.

Interoperability deals with the ability of diverse operational systems to work toward the achievement of common objectives. When entities are interoperable, the doctrine and procedures they use are coordinated to allow them to function together effectively.

The goal of interoperability within the health sector in BC is to resolve differences and remove obstacles to the effective functioning of health organizations on a pan-provincial basis.

In the unpredictable circumstances of a major health emergency, interoperability among health organizations and partners will increasingly be the key to success. The objective is to be fully interoperable on a pan-provincial basis and to have compatible doctrine with all key partners.

Types of Casualties

Mass casualties may result from an extreme event such as an earthquake or other natural disaster. The types of casualties will include:

- *Severe Injuries*. Severe injuries are the initial event in a dynamic process, which, if not interrupted by treatment, follows a definite and predictable course. Injuries may consist of damage or destruction to the skin, allowing infection to enter the body, and to the deep tissues (muscle, nerve, vessel, bone, organ) causing temporary or permanent loss of function.
- *Shock*. The major effects of injuries are shock and infection. The shock-producing effect of blood loss from injury is worsened by other fluid depletion, such as from significant burns, vomiting, diarrhoea, perspiration, or limited fluid intake. For those with very severe shock, the Advanced Trauma Life

Support (ATLS) principle of the "golden hour" applies. These patients must reach surgical care within one hour to have a reasonable chance to survive. Severe shock is the principle cause of mortality in the early hours after wounding and severe shock that persists longer than six hours leads to irreversible changes in the body.

- *Infection.* At the time of injury, affected tissues are extensively contaminated and this leads inevitably to infection that remains localised for about eight hours. Beyond this time, it becomes deep and spreading. Antibiotics may keep infection localised for a longer period. This, along with unresolved shock (which is deepened by infection), would produce a second peak of mortality at six to eight hours if surgical care had not been provided by this point. Thus, the "in less than six-hour rule" is used to site surgical facilities and to determine evacuation requirements.

Initial Treatment

The processes constituting shock and infection are brought under control by surgery and antibiotic therapy. With certain exceptions, injuries are treated by delayed primary closure. In this technique the wound, including the skin, is left open after debridement, and closed some four to six days later (delayed primary closure).

After initial surgery there is an obligatory period of immobilisation, the length of which is dictated by the patient's condition and the availability of resources for evacuation.

Importance of Time

Time is a critical factor in patient survival and recovery. Hence, timeliness in providing emergency care and emergency surgery to the injured/ill is crucial. The interval between injury/onset of illness and initial definitive treatment is critical to the probability of patient recovery.

In order to reduce morbidity and mortality rates, resuscitation and stabilisation should be initiated within the first hour of trauma management. A proportion of patients resuscitated will deteriorate or remain unstable. Trauma patients will require hospital level emergency intervention as soon as possible.

Life/limb-saving clinical intervention must be provided as soon as possible, ideally within the first hour, but completed not later than six hours following onset of life/limb threatening illness/injury.

Mass Casualties

Mass casualties may result from any type of emergency. The term *mass casualties* applies with any number of casualties produced in a relatively short period of time that overwhelms the available logistic, particularly health care, capabilities. This disparity may involve medical staff, facilities, equipment, supplies, communications and evacuation means.

With a large number of casualties, the disparity may be multiplied many times, greatly disrupting the doctrinal approach to treatment and evacuation. However, a mass casualty situation also exists when one person is confronted with two critically injured casualties at the same time. When mass casualties occur, patients already in a treatment facility may also have to be managed according to mass casualty procedures until the overall situation is resolved.

When an emergency event results in casualties in numbers that exceed the capabilities of provincial medical resources, the medical system must alter the standards and scope of services that they normally provide. These alterations will be with the objective of providing the greatest good for the greatest number. The responsibility for authorising use of mass casualty procedures rests with the Ministry of Health, on the basis that the situation is finite and conventional methods will be reinstated as soon as possible.

A severe mass casualty situation may necessitate a triage process, as set out below.

Triage

Triage is the evaluation and classification of casualties for treatment and evacuation. It consists of the immediate sorting of patients according to type and seriousness of injury, and likelihood of survival. The decisions that must be made concern the need for resuscitation, the need for emergency surgery, and the futility of surgery when the intrinsic lethality of certain wounds is clearly overwhelming. The objective is to preserve life and limb for the greatest numbers of patients.

In a mass casualty situation, simple lifesaving procedures that can be rapidly performed should be given the highest priority. Life takes precedence over limb and functional repair over cosmetic concern. The following classification system may be used:

- *Immediate.* The patient has a high chance of survival, but requires urgent resuscitation and/or life-saving surgery that can be accomplished quickly and with available resources;
- *Delayed.* The patient can tolerate delay prior to surgical intervention without unduly compromising the likelihood of a successful outcome. To mitigate the effects of delay in surgery, sustaining treatment is required such as stabilizing intravenous fluids, antibiotics, catheterization, gastric decompression and relief of pain;
- *Minimal.* Neither life nor limb is in serious jeopardy, though a limb or organ may have sustained crippling injury. The status of the patient is relatively stable and evacuation can take place as transport becomes available; and
- *Expectant.* Casualties in this category have injuries or illness so extensive that even if they were the sole casualty and had the benefit of optimal resource application their survival would be unlikely. In a mass casualty situation this type of patient might place an unsustainable demand on limited resources that could prejudice the treatment of patients with a better prognosis.

Stress Casualties

Stress Reaction is a term which encompasses an array of reversible effects caused by an extreme event, and stress casualties may be expected in an extreme event. The term refers to the temporary psychological upset causing an inability to function normally. Stress is a normal reaction to an abnormal situation and does not constitute a psychiatric illness although, incorrectly managed, may become one. It may present as depression, agitation or psychosis.

Personnel with acute stress reactions requiring management may exhibit symptoms within 48 hours after exposure to even a short period of intense abnormality. Chronic stress reactions occur in personnel who have been exposed to intense abnormality for protracted periods (i.e., several days or longer).

Initial treatment of minor stress reaction casualties consists of removing the casualty from the scene of the emergency, allowing rest and food, and providing an opportunity to discuss the stressful situation with an empathetic listener. Psychiatric nurses and stress management-trained medical staff manage the initial response. Treatment remains simple, and drugs are used only when vital. Stress casualties who do not respond to initial treatment will need complete removal from the scene of the emergency for further medical intervention.

Patient Management Continuum

Patient management during disaster response operations is organised into a continuum of care extending from the incident site, through emergency and acute care services to full recovery.

Disaster health services during the pre-hospital phase will be largely dependent on first aiders (medical first responders, paramedics and other private sector health care providers) including physicians, nurses, and mental health counsellors. Components of the care continuum are:

- *First/Self Aid.*

First/self aid is the emergency or life-saving care given to an ill, sick, or injured person when a health care provider is not immediately available. As it is, care provided to casualties before entering the care of the health services, it is not considered as patient management. First aid includes the application of measures (restore breathing and heartbeat, to stop bleeding, and to intervene against shock and infection) to prevent a casualty's condition from becoming worse and the use of proper methods in moving a casualty to a point of relative safety to await care and evacuation by medically trained personnel. The capacity of individuals to cope in a post disaster situation will be significantly enhanced by adherence to a familiar process for accessing health care and information.

Existing organizations, such as Neighbourhood/Block Watch, should be engaged at this level with support being dependant on individual, family, neighbourhood and community resources, such as the 72 hour self-sufficiency kits recommended by emergency management practitioners.

- *Initial Medical and Psychosocial Intervention.*

This is the initial care provided by trained personnel, provided as soon as possible after injury or onset of illness, usually by paramedics. It includes the application of examination techniques, performance of emergency or life-saving measures, and continual observation and care to ensure that the airway remains open, that bleeding has been controlled and that shock, infection and further injury are prevented. Initial medical care may include basic intravenous and prophylactic therapies applied by non-medical personnel, such as medical first responders, and arrangement for evacuation.

While this level of care falls within the Emergency Health Services mandate, effective support would require the mobilization of both public and private

sector resources, e.g., general practice physicians, nurses, first responders and first-aiders. Resources would be drawn from BCAS Medical Support Units, pre-positioned National Emergency Stockpile System (NESS) Casualty Collection Units (CCU), private clinics, pharmacies and, possibly dental and veterinary practices.

- *Emergency Medical Care.*

Medical skill and judgement of a higher degree are applied in a relatively safe environment, with time to conduct a more thorough examination and begin a plan of treatment. This focuses on the initial trauma life support (stabilization) of the patient within the capability of pre-hospital treatment facilities operating at the minimum level of capability. Typical care would include:

- maintenance of cardio-respiratory function; control of haemorrhage;
- alleviation of shock through vascular volume replacement;
- relief of pain and control of body temperature;
- reinforcement of dressings and splints; and
- protection from complications, including environmental and weapons effects.

This level of support also falls within the Emergency Health Services pre-hospital care mandate. Timely and effective support would require the mobilization of the full spectrum of public and private sector medical resources, both professional and para-professionals, including retired practitioners. Resources could be drawn from BCAS Medical Support Units, pre-positioned NESS Advance Treatment Centres (ATC), private medical clinics, pharmacies and medical supply distributors.

- *Emergency Treatment and Sustaining Care: “The Treatment Bridge”.*

Care that ensures earlier efforts toward stabilisation are not compromised. It is provided both in transit in the evacuation vehicle and in medical facilities along the evacuation route. This includes the application of clinical judgement and skill of a team of physicians and other health services personnel, supported by a broad range of drugs, equipment and supplies, intravenous fluids.

The provision of sub-acute patient holding is limited to: examinations/ observations; hydration; pain management; and antibiotic/antiviral therapy – there is no capacity for mechanical interventions. Sub-acute care is characteristic of a temporary emergency health centre, such as the NESS 200-bed emergency hospital. Arrangements are made (matching patient

needs with available capacity) to evacuate patients requiring a more comprehensive scope of care to an appropriate acute treatment facility.

- *Acute/Tertiary Care.*

Access to the acute/tertiary care level is essential the window to the public (funded) health system. It is at this point in the continuum of care that casualties/patients become the full responsibility of the provincial system. That said, one must recognize the reality that at any point in time the Canadian health system works at 115 to 125 % capacity – thus no available surge capacity.

The patient care continuum is illustrated diagrammatically at Appendix 1.

Patient Evacuation

The management of patients following an emergency will be based on the concept of providing treatment as early and as close to the emergency site as possible. Patient management will be guided by the following principles:

- *Minimum Handling.* Handling can increase shock and otherwise have an adverse effect on a patient's general condition.
- *Speed.* If morbidity and mortality rates are to be minimized, patients must reach appropriate levels of care as soon as possible.
- *Staging.* If a patient is evacuated it should be in stages. A patient's condition deteriorates rapidly under the stress of long evacuation routes, however this can be partially alleviated by staging – during evacuation the patient is periodically admitted temporarily to a treatment facility for sustaining care. The staging interval should be every two hours and not more than four hours.

Under those circumstances in which disaster victims are evacuated to a different locale to receive definitive medical care IDHS resources may be activated to support patient reception and disposition of patients to hospitals.

The *British Columbia Ambulance Service* (BCAS) provides emergency pre-hospital treatment and transports patients by ambulance to appropriate medical facilities.

BCAS responsibilities include coordination of ambulance services, triage, treatment, and transportation in the pre-hospital setting. As an initial health emergency response agency and part of the health system continuum, BCAS is

obligated to ensure a coordinated and organized initial response to emergency events.

Mass Fatalities

A mass fatality incident is defined as *any incident where the number of fatalities is greater than normal local arrangements can manage*. The response to a mass fatality incident will require special arrangements to be implemented at Health Authority and local government levels, depending on the capabilities at each level and the scale and the complexity of the emergency.

In a major emergency the priority will be to save lives and to treat casualties. The ambulance service will co-ordinate the initial response at the scene of an incident and provide casualty assessment. The ambulance service will provide for transportation of casualties, however they would not normally transport fatalities. Deaths that occur enroute to hospital or occur at a hospital would normally be placed in a hospital mortuary.

Hospital mortuary facilities may be considered but should not be relied on when considering the designated mortuary for a mass fatality incident. The issue of capacity should be an important factor and it may be that public or temporary mortuaries offer advantages in some cases.

Such plans may provide for establishing a temporary or disaster mortuary, or adapting an existing facility. This may include providing additional victim holding capacity at an existing site, if appropriate. As the emphasis moves from immediate response to recovery, the local authority will take a leading role to support the coroner and facilitate the rehabilitation of the community and restoration of the environment.

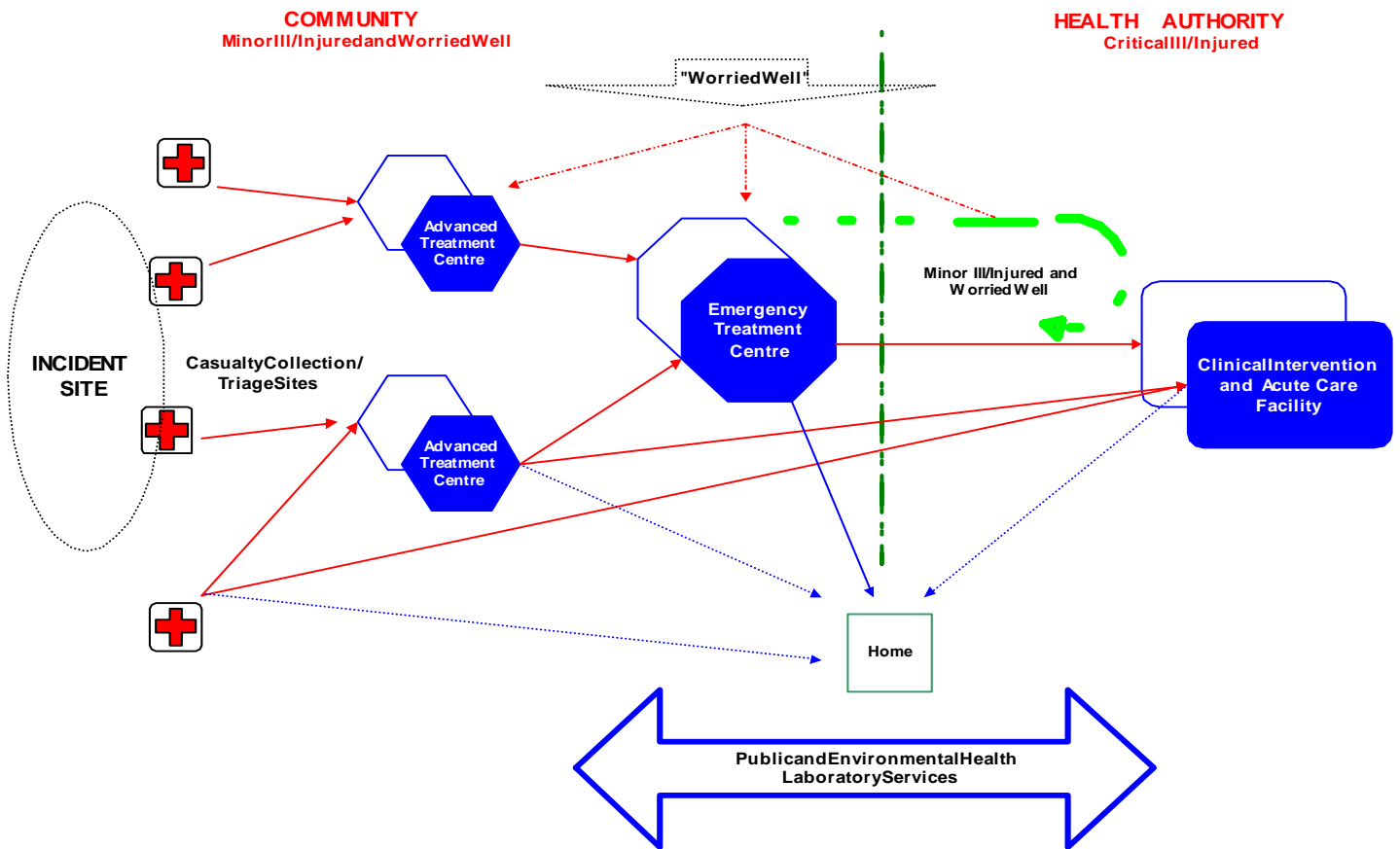
Dealing with fatalities may present significant physical, health and environmental risks. Persons at and near to the scene and other key facilities such as mortuaries will be particularly at risk. Health and safety issues should therefore be integrated into the planning processes as far as possible. In particular consideration should be given to protecting responders and other staff, especially at a temporary mortuary.

There may be instances where the response requires that work is delayed until safe operating arrangements are put in place, such as the recovery of casualties and victims. It is important to ensure that all responders and other personnel are not endangered in a way which would increase the potential for further casualties and fatalities.

The nature of temporary mortuary sites will vary considerably, and it is probable that these will consistently fall short of the standards of purpose-built facilities in respect of environmental, health and hygiene arrangements. This includes expanding facilities to cope with a range of functions required for disaster options.

Normal use of such sites will also be a major consideration both in terms of the potential preparation time and availability following a major emergency.

PATIENT CARE CONTINUUM



Section 6

Utilizing Provincial Health Resources in an Emergency

General

This section provides an overview of how health resources should be used in an emergency. Although it deals with resources generically, reference is made to certain key provincial health entities, as provincial health doctrine is centred on those organizations.

Detailed roles and responsibilities of specific provincial health entities are set out in applicable emergency legislation and plans.

Regional Health Authorities

Under BC health arrangements, the regional Health Authorities will play the key role in the delivery of health emergency services. Health authorities are expected to develop and implement when necessary a comprehensive emergency response plan, integrate the Health Authority emergency response with the provincial emergency structure, and cooperate with and provide assistance to other health authorities in the event of an emergency that requires sharing resources.

The health authorities communicate among themselves at the corporate and senior staff level, and some inter-authority coordination may be done in this way. However, their activities will be coordinated centrally by the Ministry of Health during an emergency. The Ministry will ensure the mobilization of the full array of available health care resources from both the public and private arenas.

The decentralized nature of the BC health structure will place significant responsibilities on the regional Health Authorities during a major emergency. Thorough advance planning is essential, and plans at all levels must be coordinated, evaluated and practiced. The Health Authorities are required to produce plans for the regional response to an emergency, develop appropriate linkages with the integrated provincial emergency structure, coordinate contingency staffing arrangements, develop emergency communications links and ensure that sound, tested arrangements and facilities for an effective emergency response are in place.

The Provincial Health Services Authority (PHSA) will support the regional Health Authorities during an emergency and continue to provide applicable programs and specialized provincial health services. PHSA operations and priorities will be adapted to the conditions and priority requirements of the emergency in consultation with the Ministry of Health.

Each of the organizations' health emergency programs is responsible for planning and guiding the emergency management activities throughout their organizations to ensure that all services and departments will be capable of continuing or quickly restoring their services after an emergency event. When such an event occurs, the responsibility to respond and carry on belongs to every department within the organization, and leadership of the response is to be provided by the most qualified person on the scene at the time.

Hospitals

Hospitals will be the key link in the health emergency response and are required to maintain emergency plans which cater for surge management. Priorities for hospitals in an emergency will be:

- protect the facility (life and property);
- react to community needs;
- continue to provide services; and
- safety.

Hospital emergency plans will require each facility to have a tested disaster response infrastructure which includes defined circumstances under which the plan is activated, a designated EOC and predetermined roles and lines of authority.

Patient management in the hospitals will not require significant change during an emergency, however they may in some circumstances be required to operate with limited resources.

Epidemiology and Laboratory Services

Epidemiology services provides information, professional advice and specialist support in the control of communicable disease and infection. In a health emergency, activities will include:

- investigation, intervention, monitoring and coordinated reporting of communicable diseases; and

- consultation to infectious disease control staff including the Ministry, provincial laboratories, local hospitals, managed care organizations and private physicians.

The main responsibility of the public health laboratory network is to establish early diagnosis of diseases with high mortality rates and to notify the appropriate authorities through established channels.

Laboratories should focus on tracer diseases, especially with respect to outbreak characteristics (for example, circulating microbial serotypes, antimicrobial resistance profiles, virulence factors, sources, vectors, risk factors) and trend analysis. Diseases typically associated with disaster situations include:

- water-borne and foodborne diseases;
- acute respiratory infections and reemergence of subacute infections;
- bacterial meningitis;
- vector-borne diseases;
- zoonoses;
- vaccine-preventable diseases

Laboratories must coordinate their activities closely with applicable emergency and epidemiology programs.

Centre for Disease Control

The generic responsibility of a Centre for Disease Control in an emergency is to ensure that the applicable health infrastructure is fully prepared to respond. Core components will be:

- preparedness planning;
- surveillance and epidemiology;
- outbreak verification;
- laboratory capacity for biological and chemical agents;
- health information & communication systems;
- training; and
- establishing key liaisons both nationally and internationally.

The *BC Centre for Disease Control* (BCCDC) is an agency of the Provincial Health Services Authority with the responsibility to support a comprehensive program of communicable disease and environmental health prevention and control.

During a major emergency the BCCDC will be responsible for rapid needs assessments, disease surveillance and public health interventions. Tasks may include rapid laboratory diagnosis, epidemiologic investigations and the implementation of control measures.

Emergency Social Services

Emergency Social Services (ESS) are those services provided on a short-term basis (generally for 72 hours) to preserve the emotional and physical well-being of evacuees and response workers in emergency situations. ESS will normally involve the establishment of one or more reception centres to provide a number of essential services including food, clothing, lodging and family reunification.

ESS provides temporary relief to individuals and families in the aftermath of an emergency or disaster. The aim is to address basic human needs distinct from medical or psychological issues: these include emergency food, clothing, lodging, registration and inquiry services to reunite evacuated families, reception center services and personal services. ESS takes a societal perspective and is directed at both the mental and social wellbeing of the community members.

ESS may also encompass specialized services such as referrals to other agencies, volunteer services, communications, first aid, public information, financial assistance, transportation, recreation, child care and assistance with pets.

In BC, local authorities are responsible for planning and operating ESS. The provincial government is responsible for assisting local authorities and only if requested, such as in major disasters, will the province take over control of the response. The provincial government is also responsible for providing emergency response operations in Stikine Region of the province where there is no local government structure.

Local authorities are responsible for planning and operating ESS and for the provision of ESS teams to:

- identify facilities suitable for use as Reception Centres;
- recruit and train volunteers;
- establish linkages with key local emergency responders and non-government disaster agencies; and
- reach agreements with local businesses and service organizations to supply goods and services during emergencies.

The federal government, through Health Canada, supports ESS by providing such resources as a national stockpile of reception centre kits and mobile feeding units, developing guidelines, and monitoring emerging issues and trends.

Health Emergency Response Teams

Health Emergency Response Teams (HERT) are employed during a major disaster to provide a health response surge capacity. The teams are made up of local medical support teams, nationally funded and deployed. They will assist provinces, territories and other jurisdictions, on request, in mitigating the medical and health effects of major disasters.

In the event of a public health emergency, the federal government would activate HERTs at the request of the province. HERTs may be structured as follows:

- *Disaster Medical Response Teams* – to be located in major centres across Canada;
- *Specialized Issue-Specific Teams* – infection control, epidemiology teams; and/or
- *Rapid Response Teams* – medical, nursing and other personnel to liaise with provincial/territorial counterparts to assess HERT response and to coordinate HERT resources.

In an emergency, a provincial request may be made for the provision of HERTs with a particular complement of health professionals. This could be for a team that can treat a particular form of trauma, or could be a mixed team to set up a hospital or undertake a range of emergency tasks.

An inventory of applicable skills will be maintained at the provincial level to assist in the coordination of HERT resources. Requests for HERT teams should be forwarded to the ministry EOC, from where it will be coordinated with the *Public Health Agency Canada* regional office or liaison desk.

Coroners Service

A major emergency or disaster may result in mass fatalities that would overwhelm the morgue capability of health institutions and funeral homes. In such cases, current processing requirements may be waived or adjusted in order to allow for rapid processing and burial.

In an emergency, the Coroners Service will be responsible for establishing the identity of the fatalities and the cause and circumstances of death. Essentially, they will determine who has died, how, and when and where the death came

about. The Coroners Service will also play a vital role in contributing to the accurate monitoring and tracking of the effects of an emergency.

Following the removal of the deceased from the emergency (which in most circumstances will be led and coordinated by the police and carried out by trained body-recovery teams), it will be for the coroner to decide whether a post mortem is required to establish the cause of death. On the instruction of the coroner, a pathologist carries out the post mortem. If the death does not require an inquest, the death may be registered on receipt of a coroner's certificate detailing the cause of death; if an inquest is required, the coroner registers the death when the inquest is concluded.

When dealing with fatalities in an emergency, the Coroners Service will liaise with the local government in whose area the coroner considers it appropriate to establish temporary or additional mortuary arrangements. Plans for such provision should exist and be agreed beforehand to identify and improve the capability to respond to incidents where established mortuaries are deemed unsuitable. During a declared provincial emergency, the coroner may request the assistance of local governments in the identification, collection, temporary storage and burial of the deceased.

Many local governments rely on temporary mortuary plans while recognizing that these could present problems should there be high numbers of fatalities. The coroner will decide, in consultation with others whether to authorize the removal of bodies to an existing designated disaster mortuary or a temporary mortuary.

The Voluntary Sector

Volunteers can provide a wide range of operational and support skills and services to health responders. These skills and services include first aid, support to ambulance services, supporting hospital personnel, referral to other organizations, rescue, refreshments and emergency feeding, searching for survivors, transportation and medical services (e.g. diagnosis, administration of drugs).

Volunteers are also an excellent source of psycho-social support, including comforting, befriending, listening, help lines, support lines, support networks, advice, counselling, spiritual support and group therapy.

The volunteer sector is also a potential source of equipment, particularly in the early stages of an emergency response. This could communications devices, medical aid equipment (e.g. mobility aids), bedding, clothing and hygiene packs.

Health emergency plans should document the capabilities and capacity of local voluntary organizations and the means of accessing their services, whether as individual volunteers or as members of local or national volunteer organizations. An agreed processes for activating call-out mechanisms and systems for organizing, managing, briefing and debriefing volunteers should be developed. The voluntary sector should also be included in post-response review and evaluation activity.

Agencies using volunteers may become responsible for the health and safety of volunteers and will need to ensure that they are properly equipped, trained, supervised and supported.

Public Affairs

During major emergencies, demand for information will be unrelenting. The media require information to advise the public about the emergency, and media facilities may also be used to distribution of public information. It may be necessary to use the media for the distribution of alerts and warnings under some circumstances.

It is essential that all emergency public information activities be coordinated among stakeholders. Every effort must be made to coordinate the release of information among Health Authorities, other government ministries and agencies, local authorities and non-government agencies. When an event has province-wide implications and attracts extensive political, public or media attention, the overall provincial emergency public information response must be centralized and coordinated at all provincial levels.

An overall communications strategy must be developed with the following objectives:

- to explain the causes, threats and potential impact of the emergency and what is being done to mitigate them;
- to provide accurate, consistent and timely advice and balanced messages to instill confidence that the BC Government and health sector are responding effectively to the emergency;
- to deliver clear and consistent advice and instructions to the public regarding the steps they should take to protect their own health, limit the spread of infection, care for their families and obtain medical assistance;

- to provide information and reassurance regarding medical treatments necessary and/or available and bereavement support; and
- to inform the public of any measures required to preserve essential services, and any wider restrictions.

Effective and timely communications are essential to increase public awareness and to engage key agencies and stakeholders in the planning process. The communications strategy must consider the information needs of communities, health professionals and health facility staff, the media, other government organizations, key non-governmental organizations, industry representatives (e.g., pharmaceutical sector, medical supply sector), port and airport authorities, municipal officials and First Nations.

It must be recognized that citizens are unlikely to distinguish between levels of government in the event of a health emergency, and public communications among all involved organizations must be clear, concise and consistent.

Section 7

Integrating Community Services

General

IDHS requires a community-based response that integrates all available public and private sector health care resources including associated care providers. The IDHS is designed to supplement the public health care system until other provincial resources can be mobilized or the situation resolved and the civil sector is essential to an effective response.

Part of the mission of the IDHS is to establish networks of local volunteer medical and health professionals who can contribute their skills and expertise in responding to emergency/disaster situations. The IDHS is comprised of locally based, medical and public health volunteers who can assist their communities during emergencies, such as an influenza pandemic or a natural disaster.

A committed and focused utilization of community health resources is particularly important in the early stages of the response.

Local Governments

Close collaboration among local governments and health professionals throughout the stages of preparedness, response, and recovery is essential in an emergency.

Local governments, including municipalities, regional districts and First Nations will be affected in foreseeable ways. Employees may be affected by the emergency and the resulting loss of skills and knowledge is likely to interrupt the delivery of critical public services, such as police and fire protection, water delivery and waste disposal. The local transportation infrastructure may become unusable for a period of time.

Well-managed community response and recovery efforts, in partnership with local and regional health authorities, can reduce the consequences of the emergency. In order to execute with confidence the actions available to reduce the risks, local governments must understand the factors contributing to the emergency. Elected officials, senior administrators, and general staff members must have training and clearly understand both the risks involved and what they are expected to do.

A local government's first responsibility is to its employees and the public services they provide. Protecting the local workforce will help avoid interruptions to essential services, and will require creative measures to mitigate the effects of the emergency. In addition, local governments should have personnel and facilities available to assist health professionals in caring for community members.

Community Health Services

Local public health authorities are responsible for planning the local response to an emergency, with direction from the Ministry and Health Authorities. This involves liaison with local partners (e.g., emergency responders, hospitals, mortuary services) to facilitate a coordinated response when the emergency occurs.

The provision of primary and community care services covers a range of health professions, including general practitioners, community nurses, health visitors, mental health services and pharmacists, many of whom would need to be involved particularly during the recovery phase of an emergency. In the early stages, following an incident, the focus would be on the follow-up to injuries incurred at the incident, i.e. the continuing recovery of patients, physiotherapy, chest clinics, orthopaedic clinics, dressings, drug regimes and the post-traumatic stress caused by the event. Depending on the nature of the emergency, there may then be a requirement for more long-term health monitoring/surveillance. Appropriate health sector organizations ensure that these services are engaged in NHS emergency preparedness activities.

Meeting the challenge of managing a post-disaster surge will require the mobilization of both traditional and non-traditional health service providers. Essentially, the model will draw upon community health and emergency social services resources outside the purview of the health authorities. Envisaged partners in the model would include, but not be limited to: BC Ambulance Service, BC NurseLine, BC BedLine, private practitioners (physician, nurses, occupational/emergency first-aiders) and clinics, and community health and social services agencies.

The success of the response to a major emergency will rely in large part on adapting these health services to the critical needs of the event. The effects of the emergency may result in a shortage of staff, a need for flexibility in utilizing human resources and a highly focus effort from all organizations and entities involved.

It is therefore essential that health professionals, health unions and associations and other components of the health sector work together in a cooperative and focused manner with the common objective of dealing decisively with the effects of the emergency situation. All health sector entities should prepare and maintain a personnel skills inventory to assist with enhanced staffing requirements and should be prepared to respond to an emergency based on the following objectives:

- work toward enhancing community health infrastructure and strengthening response capabilities in the event of an emergency/disaster;
- match community needs for emergency medical response and public health initiatives with locally available capabilities;
- coordinate community resources for effective mass casualty management in disaster situations (including epidemic/pandemic events);
- supplement the community's existing emergency medical response capabilities and public health infrastructure. Coordinating with local response partners is critical, as is developing and nurturing a broad network of partners. Drilling with response partners will be necessary, as will close communications during and after an actual crisis or engagement;
- carry out triage, first aid, resuscitation to coordinate transport of the injured to the most appropriate hospital or treatment area;
- provide and coordinate qualified and experienced medical teams to assist at the emergency site to provide and coordinate public health resources for the maintenance of general health in the community;
- provide psychological support for victims and team members; and
- provide an interface for simultaneous responses and early activation of recovery plans.

Other Community Resources

The community can play a vital role in the response to and recovery from emergencies. It can provide resources, expertise and knowledge in support of the response agencies. Members of the community may need to provide self-help and can also provide support for local vulnerable people who may need physical assistance or reassurance.

There will also be local networks for the dissemination of information that the response agencies need to pass on to the local community. The community may also be able to advise on the different cultural or language needs of its members.

In the recovery phase, members of the community will want to help themselves and support each other, and may establish support groups. They should be consulted at all stages when the response agencies are developing their recovery strategies. It is particularly important to consult the community before establishing plans for any rebuilding or regeneration of the affected area. The community should also be involved in any memorial services or appeal funds.

The Media

The media require information to advise the public about the emergency, and media facilities may also be used to distribution of public information. It may be necessary to use the media for the distribution of alerts and warnings under some circumstances.

Citizens are unlikely to distinguish between levels of government and the independent media in the event of a health emergency, and every effort must be made to work with the media to ensure that public communications among all involved organizations is clear, concise and consistent.

The public information strategy will consist of three principal elements, as illustrated below:

PUBLIC AWARENESS (*pre-event*):

Informing and educating the public about risks and preparedness



PUBLIC WARNING (*at the time of an event or when one is likely*):

alerting by all appropriate means the members of a community whose immediate safety is at risk



INFORMING AND ADVISING THE PUBLIC (*immediate and long-term post-event*):

providing relevant and timely information about the nature of the unfolding event –

- immediate actions being taken by responders to minimise the risk to human or animal health and welfare, the environment or property;
- actions being taken by responders to assist the recovery phase;
- actions the public themselves can take to minimise the impact of the emergency;
- how further information can be obtained; and
- end of emergency and return to normal arrangements.

The strategy must consider what information is already in the public domain. This will help determine what additional information from the risk assessments and plans will be necessary or desirable to disseminate.

Section 8

Terrorism and CBRN Events

General

Response to a terrorist event falls under the jurisdiction of the Government of Canada, as set out in the *National Counter Terrorism Plan (NCTP)*. This NCTP establishes lines of communication and policy direction to guide responders and senior government officials in resolving a terrorist incident, and describes authorities and responsibilities of federal departments and agencies. Solicitor General Canada has the responsibility for the NCTP.

Although the response to a terrorist act in BC will be managed federally, ministries and agencies of the provincial government will be substantively involved and the province will provide much of the emergency coordination as well as the physical resources and equipment required by the response. The provision of health emergency services will remain the responsibility of the province.

The Threat

The terrorist events of September 11, 2001 and related subsequent events in London, Madrid and elsewhere has emphasized the requirement for the provincial health structure to be able react quickly and effectively in the event of a major terrorist attack. Potential CBRN weapons encompass a range of agents:

- Biological (such as smallpox, anthrax and plague);
- Chemical (disseminated with explosives or aerosols); and
- Radiological/nuclear (such as a so called “dirty” bomb that uses conventional explosives to scatter radioactive material).

These weapons present a unique challenge. For example, bio-weapons may be covertly deployed, create no apparent crime scene, and remain undetected for several days or longer.

While no specific terrorist threat is thought to be targeted at British Columbia, the province must be prepared to respond effectively should an attack occur in the future.

Terrorism is not just about physical attack. It might take the form of attacks on vital information or communications systems, causing disruption or economic

damage. It also includes threats or hoaxes designed to frighten or intimidate. However, given the difficulty in distinguishing a hoax from the real thing, threats alone can be extremely disruptive and costly. In the face of a credible hoax, there is no option but to respond as if to a real event, with all the consequent demands on resources.

Speed is of the essence when responding to CBRN terrorism. Surveillance is particularly critical in the event of a covert biological release. With a bio-weapon, the release of the agent may not be discovered until days, or even weeks, later. Rapid detection of an outbreak relies on well-trained and vigilant public health practitioners who detect the event and report it to their response partners.

Accordingly, the medical sector has to be aware of, and fully prepared for, the potential for terrorist attacks with devastating consequences. In particular, the sector must recognize and plan for the need to deal with mass casualties under the most demanding and potentially hazardous conditions.

Risk Management

Standard emergency risk management practices will usually be applied to terrorist events, emphasizing the following key elements:

- identify threats;
- establish what needs to be protected, and the vulnerabilities;
- identify measures to reduce risk (security improvements and plans); and
- review security measures and rehearse/review plans.

Some specific analysis required for CBRN events, as set out in the following matrix:

CBRN HEALTH RISK ANALYSIS	
Hazard	
Lethality	The ability of a hazard to cause death without treatment. The lethality of a CBRN hazard can be measured by its case fatality rate and the potential speed of death.
Morbidity	The severity and duration of health effects without treatment.
Communicability	The ability of the hazard to cause secondary cases without quarantine or barrier nursing.
Persistence	The degree of continuing risk of exposure to health individuals related to environmental exposures such as

	air, water, soil, food, animals, bodily fluids, etc.
Event	
Route of exposure	Inhalation, inoculation, ingestion or percutaneous.
Delivery	Norms for attack (e.g. RDM munition)
Attack	Parameters for attack (e.g. area coverage, effect of wind, etc)
Targets	Define potential targets.
Environment	Limitations on uses, effects of terrain, weather, etc.
Secondary Events	Potential for secondary events or exposures.
Detection	Mechanism for event detection or hazard identification.
Damage	
Exposure	Percentage of population potentially exposed.
Casualties	Projected casualties within expected parameters.
Symptoms	Typical symptoms which will aid identification.
Distribution	Probable distribution of damage.

For each identified hazard, an analysis of the capabilities required to implement effective mitigation and response strategies is required.

It is increasingly recognized that there is a significant psychosocial risk associated with terrorist events in general and CBRN events in particular. The goal of risk management in this area is to provide scientifically sound, cost-effective, integrated actions that reduce or prevent risks while taking into account social, cultural, ethical, political, and legal considerations. Appropriate risk management frameworks are typically comprised of the following interrelated elements:

- issue identification, including understanding the social, cultural, ethical, political, and legal context of the problem;
- risk assessment—that is, hazards identified, likelihood of adverse outcomes estimated, risks and benefits characterized;
- identification, selection, and implementation of risk management options; and
- ongoing monitoring of risk management interventions.

Response Concept

To deal with this type of threat, be it covert or otherwise, Health Canada conducts a number of programs for emergency responders in collaboration with

other federal, provincial and territorial partners. Training covers topics such as recognition of biological agents; containment; handling suspicious packages; and recognizing people at border points who may be exhibiting signs of exposure to biological or chemical agents.

Surveillance of radiological threats is undertaken by a number of departments and agencies, including Health Canada's Radiation Protection Bureau. The bureau provides surveillance, notification and implementation for the Federal Nuclear Emergency Plan in response to radionuclear emergencies. It operates a radioactivity monitoring network for testing radiation levels in the air, water and food, participates in global radiation surveillance activities and conducts real-time surveillance for radioactive materials in strategic locations such as airports and embassies.

When dealing with any potential terrorist attack, past experience has taught that the first task is to secure the area and ascertain the nature and severity of the threat. Instances have been reported when a secondary device has been targeted at emergency responders in an attempt to harm rescuers and disrupt emergency operations.

The primary functions that must be performed at any toxic release site include:

- Initial assessment
- Site security and establishment of perimeter(s)
- Agent/hazard identification
- Establishment of a decontamination area
- Entry into a contaminated area and rescue of victims
- Containment and neutralization of agent/hazard
- Decontamination procedures established
- First aid and triage of ill/injured
- Transport of patients to treatment facility
- Post-Entry evaluation examination of rescuers/equipment
- Stabilization of the site
- Site clean-up
- After-action reporting

The most pressing problem involving a terrorist release of a chemical or biological agent is that of identification. As is the case in most common industrial hazardous-materials accidents, the first priority in the management of the incident involves ascertaining the identity and physical properties of the substance that has been released. It is only after the product identity can be ascertained that an effective security perimeter can be established, plans formulated, decontamination procedures initiated and emergency medical

treatment plans made.

Most civilian emergency service agencies, including specialized hazardous materials teams, do not possess the effective testing equipment to help identify sophisticated chemical or biological warfare agents that might be used in a potential terrorist attack. While they may be able to quantify those agents that have civilian counterparts there are any number of others for which they have no testing reagents or detection meters. In such cases military assistance may be necessary.

To facilitate identification, a Canada-wide network of laboratories allows quick testing and identification of bio-terrorism specimens. Its hub laboratory, located in Winnipeg, is one of a small number of Level 4 laboratories in the world equipped to handle some of the world's most virulent pathogens.

CBRN Response Teams

The site of a CBRN incident will require the immediate establishment of a security perimeter and an expert initial assessment of the weapon(s) used, the degree of contamination at the site and other factors. The assessment must be done by trained CBRN rapid response teams.

First responders (police, fire and ambulance services) will have some capability to do an initial assessment, but this may be limited. The Canadian Forces and the RCMP have a rapid response capability, although not in all locations, and Health Canada maintains a Health Emergency Response Team. In BC, the Vancouver Urban Search and Rescue Team has limited CBRN response training.

In addition to tactical teams, a number of government departments have technical resources available, including Environment Canada, Transport Canada, the Canadian Food Inspection Agency, the Canadian Nuclear Safety Commission and Health Canada. These specialists offer a range of services, including providing advice to first responders on the handling of dangerous goods, helping to identify the agent used in an attack, providing air and water modelling for predicting the path of a released substance and conducting laboratory analysis of specimens.

Ambulance Service personnel with the appropriate training will be able to be part of the initial response to a CBRN incident, however other health sector personnel may be unable to attend to casualties at or near the site unless they have the required training and protective clothing and equipment.

Chemical Agents

The possibility of a chemical attack is more likely than either the use of nuclear or biological materials, largely due to the availability of many of the necessary precursor substances needed to construct chemical weapons. Additionally, only rudimentary technical knowledge needed to build a working chemical device.

A likely scenario is the release of a chemical agent into a transportation system (particularly underground), sports stadium, office building, public building or any other confined space that contains a large number of people. These settings provide the terrorist with a tempting target that is sure to provoke widespread fear. Even though such places frequently have security personnel, most would still be considered soft-targets by sophisticated terrorists. Some typical examples of chemical warfare agents include:

- Sarin
- Tabun
- VX
- Soman
- Cyanide
- Mustard/Blistering agents

After identification of a toxic substance has been accomplished, technical information about its physical properties must be obtained. In the case of chemical warfare agents, it is necessary to ascertain whether or not it is a persistent or non-persistent agent. In the case of some non-persistent agents, it is designed to dissipate or degrade fairly readily after it comes in contact with wind, water, sunshine and other natural elements.

Chemical Agent Decontamination

For chemical attacks, non-persistent agents can be cleaned from people and equipment with soap and water. When faced with a more persistent agent, however, the decontamination procedure is likely to be more difficult as the chemicals often have an oily base and are designed to remain in place. Decontamination may require the use of alcohol, acetone or other solvent.

In either case, the need for rapid and thorough decontamination is mandatory. No contaminated person or vehicle be allowed to leave the scene of a chemical release, as to do so would only increase the size of the disaster and could lead to additional injuries or deaths.

Biological Agents

The threat of the intentional use or even accidental release of biological agents is, in some ways, far more frightening to analysts and researchers than that of a chemical release, for which there may be known specific antidotes and counter-measures. A spread of deadly pathogens could take place without any immediate recognition on the part of the emergency or medical community until after the incubation period is over and hundreds or even thousands of people had been infected. To further complicate matters, a biological release could involve a slowly developing, and hard to recognize cluster of extremely ill patients, who are highly contagious and are found at a wide-spread number of locations.

The expert help that local agencies would need must come from the *BC Centre for Disease Control* (BCCDC). Unfortunately, it might be several hours before highly trained specialists could arrive on the scene; in the meantime, local first responders including health and ambulance staff will be responsible for the management of the emergency. Infectious disease specialists from an area hospital or university medical centre may be of assistance in the early hours of a suspected biological release or the recognition of an emerging epidemic. They should be consulted if they are available and willing to offer advice and/or consultation.

Some typical examples of biological warfare agents include:

- Anthrax
- Staphylococcal Enterotoxin B (SEB)
- Bubonic/Pneumonic Plague
- Cholera
- Smallpox
- Other bio-engineered agents

Biological Agent Decontamination

In the case of most biological agents a diluted solution of common household bleach (sodium hypochlorite) may often be effective in decontaminating procedures involving people and equipment. Other antiseptics and disinfectants, as appropriate for the individual biotoxin, can also be used.

With rare exception, when faced with suspected virulent bio-agents, full strength sodium hypochlorite may be dumped into/onto the general area of the released agent and may assist in preventing a further spread of the contaminant. Although not all types of bioagents will be immediately killed by the emergency application of bleach, such an action might be helpful in preventing further infections.

Acute Care Concept

The scope and magnitude of a bioterrorism event may be so severe that health care practices will likely have to change to effectively apply available assets to care for the greatest number of casualties. Decisions will need to be made to ration the use of limited medical resources and the standard of practice will likely differ from standards to which clinicians and patients are accustomed.

In the most severe circumstances, an appropriate hospital facility will be designated as an *Acute Care Centre*, and adapted to the handling of mass bioterrorism casualties. These circumstances will require medical decisions at every level to be made swiftly based on limited information. Staff with limited medical background or experience, such as medical or nursing students, may need to be assigned to patient care in some capacity. All health care providers will have atypically large patient assignments. Patient care will likely have to be prioritized and delivered in a scaled down manner.

The designated facility will be equipped to provide mass care only to patients of a bioterrorism-related illness who require inpatient treatment. It will concentrate on providing agent-specific and ongoing supportive care therapy (i.e., antibiotic therapy, hydration, bronchodilators, and pain management).

The nature of the medical needs and the shortage of staff in a bioterrorist incident may make traditional role delineation impractical. Therefore, divisions of responsibilities for various aspects of patient care and program administration will be based on knowledge, experience, special talents, and to some extent, interests of individual staff members. In this way, each staff member's particular abilities will be fully used and operations will run more smoothly. Non-medical personnel, such as clerks and volunteers, will be engaged extensively throughout the facility to lessen the burden on the clinical staff. Volunteers will be used if available.

Most bioterrorism agents are not associated with secondary spread of infection to healthcare providers or families. For certain agents, such as pneumonic plague or smallpox, victims of bioterrorism will ideally not be discharged from the facility until they are deemed noninfectious. However, consideration must be given to developing home care instructions in the event that large numbers of persons exposed may preclude admission of all infected patients. Depending on the exposure and illness, home care instructions may include recommendations for the use of appropriate barrier precautions, hand washing, waste management, and cleaning and disinfecting the environment and personal care items.

Dealing with Mass Fatalities in a CBRN Event

When dealing with fatalities arising from a CBRN incident there are a number of considerations and issues which arise, particularly the issue of contaminated bodies.

After a chemical incident the majority of any residual contamination and the associated hazard is likely to be on a persons clothing. Most chemicals will be deactivated rapidly once they have been absorbed by the body, although it is possible that the victim may produce toxic emissions and small amounts of chemicals could persist in the nails and hair. However, depending on the chemical, once clothing has been removed and the body decontaminated to remove gross skin contamination, the victim should be relatively safe to handle. Any clothing should be removed and the victim decontaminated ahead of storage, which should be in refrigerated units.

The victims of a biological incident may not develop the disease or die for some days following the attack. Victims bodies will pose the same hazards as someone that caught the disease naturally and as such should be handled in the same way.

Following a radiological release, once contaminated clothing and radiological material on the skin have been removed the body should present little hazard. Bodies will not be radioactive unless radioactive material has been inhaled or ingested when there may be a very low hazard that is easily detected. Existing procedures for dealing with bodies following an accidental release at a civil nuclear reactor site should provide adequate protection for staff.

Once a body has been deemed safe to handle, the police and the coroner will authorize the body to be moved from the incident site and transported to the designated mortuary. All personal involved in the transportation of contaminated victims should wear the correct protective clothing and equipment. Whilst the ambulance service will provide for transportation of casualties, they would not normally transport fatalities. Therefore, local authorities will need to consider alternative arrangements.

Ideally, victims should be examined in the temporary mortuary. Where that is not possible consideration should be given in plans to a disaster mortuary, which could be located at an existing mortuary or at a specially prepared site. Refrigerated vehicles may be used as temporary storage, although the wishes of the bereaved family and the potential stigma attached to such vehicles will need to be considered. The subsequent disposal of the vehicle may need to be

considered. Unnecessary interventions, such as post mortems, should be avoided in order to minimize health and safety risks.

If burial is being considered, burial depth and location should be determined to avoid contact with potential receptors such as ground water. Airtight and metal coffins should be used if appropriate, as should charcoal in the coffin or to line the grave. Burial or cremation of a victim in a chemical resistant body bag is recommended. A crematorium in a remote area should be chosen and fitted with regulation air filters, ashes should be sealed in an air tight container.

Decision-making will always be complex. Much will depend on the nature of the contaminant, how much has been released, factors such as weather conditions and the nature of the environment in which the release has occurred or, in a terrorist incident, the effectiveness of delivery and any action that has already been taken to minimize it. Wherever possible victims will be decontaminated on site, but it is recognized that it may be necessary to remove victims from the area of greatest contamination. Ideally victims should be examined in the one temporary mortuary. Where that is not possible, planning for a disaster mortuary should be considered.

Public Information

Emergency planners should be aware that the release of any biological or chemical agent is likely to induce a psychological reaction on the part of a largely unprotected civilian population. The primary counter to these effects will involve an effective public information strategy to include extensive participation by public information/affairs officers and the media. Every attempt must be made to prevent a panic reaction among those that might potentially be exposed to a CBRN agent.

The swift attendance, at the scene, of an experienced public information officer should ease pressure from the media. It is vital that this person quickly establishes a procedure for dealing with media requests and for regularly briefing them on developments. Rumour and conjecture will flourish in a vacuum, and it is far better that the PIO gains the trust and confidence of the media by providing regular updates on events, even if there is little new to say.

A decision will also need to be taken quickly about the requirement for establishing an emergency media centre. Where possible, the media should be consulted on this. (If the site does not work for them, they will not use it.) The requirement will obviously depend on issues such as the potential longevity, scale and seriousness of the incident or possibly multiple incidents. Issues such

as the need for accreditation of large numbers of foreign media, the ready availability of suitable locations – including power, parking and IT facilities – and the opportunities for media access to the site(s) themselves will need to be considered.

Arrangements should also be made for the media to receive regular briefings from and interviews with senior police officers, fire and ambulance officers and representatives of other key agencies involved, such as transport companies and local authorities. This can best be facilitated in a large covered space where a raised dais and microphone facilities are available. This will ensure more control over the proceedings and a less stressful environment.

While facts may be scarce initially, the media will welcome an honest appraisal of what is 'known' at the time and an account of what is being done, for example, to free trapped people. This should be backed up with a commitment to provide new information as soon as it is available. There should be no speculation on causal factors or half promises that raise expectations. Limitations on the release of information, where this is necessary to avoid prejudicing a possible criminal prosecution, should also be explained.

Press releases and briefings should be released in electronic form as soon as possible, for distributing to the media, local responders' press offices, and for posting on emergency websites. If there is a need to decontaminate victims at the scene, the media will require clear and urgent briefing on the procedures involved.

Section 9

Health Emergency Logistics

General

By definition, disasters are situations within which resources are overwhelmed. The availability and conditions of physical resources is therefore essential to the response, and must be planned in advance. Resource planning must include methods for obtaining of additional resources needed to respond during an emergency. Resource management will ensure that existing resources are operational and that a practiced system for obtaining additional emergency resources is in place and funded.

In BC, the direct provision of medical and related support services in an emergency is primarily the responsibility of the Health Authorities. The Ministry will play an important role in coordinating the emergency resources required by the Health Authorities and ensuring that allocation, consumption and replenishment of the resources is monitored and controlled efficiently.

Fundamentals of Health Logistics

The unique characteristics of medical materiel set it apart from other commodities, necessitating a medical supply management structure. Health materiel requires tight controls and specialized management due to its technical nature, its limited shelf life, and its sensitivity to storage and transport conditions.

Resource management objectives should be identified and maintained for specified hazards. The resource management objectives established should consider, but not be limited to:

- personnel, equipment, training, facilities, funding, expert knowledge, materials and the time frames within which they will be needed; and
- quantity, response time, capability, limitations, cost, and liability connected with using the involved resources.

Logistics must become an integral part of the emergency management command and control system during an emergency, with logistics representation at each level of EOC. A current inventory of internal and external resources must be maintained and tracked, with priorities allocated according to the emergency situation.

Logistics Information Management

The critical nature of health supplies requires a sophisticated management system to ensure accurate tracking of resources and effective distribution of critical health materiel during an emergency.

The E Team automated information management system will be deployed pan-provincially within the health emergency system for this purpose.

National Emergency Services Stockpile (NESS)

The *Public Health Agency of Canada* maintains a national emergency stockpile system to provide emergency supplies to provinces and territories when requested. The NESS includes items ranging from small backpack trauma kits to complete 200-bed emergency hospitals. Items are stored and maintained at eight federal warehouses located across the country and multiple storage sites under federal/provincial/territorial care. The NESS standard is to deliver supplies within 24 hours of receiving a request.

Some of the pre-positioned supplies are on loan to the province under an MOU and may be maintained by regional health authorities under agreements with the ministry. All jurisdictions holding stocks of NESS assemblies are required to have written, integrated emergency plans that address the circumstances under which the NESS assemblies will be deployed and the modalities for such deployment.

Deployment in whole, or part, of NESS assemblies can only be authorized by the ministry.

Disaster Financial Assistance

The province has a program to help disaster victims cope with the cost of repairs and recovery from disaster-related property damage. DFA provides financial assistance to eligible homeowners, residential tenants, farms, small businesses and charitable organizations where uninsurable property is damaged or destroyed by disasters. This includes the cost to repair, rebuild, replace or relocate essential structures, the cleanup or removal of debris and replacement of essential contents. Other DFA costs can include temporary accommodation, personal effects and removal and storage of items.

The *Disaster Financial Assistance Program* (DFA) is administered by the Ministry of Public Safety and Solicitor General through the Provincial Emergency Program under the authority of the *Compensation and Disaster Financial Assistance Regulation, 1995*. Information on the eligibility criteria for the disaster financial

assistance program that is in place to help replace or restore uninsurable essential items that are damaged or destroyed in a disaster situation

Section 10

Training and Exercises

General

Training is a key to minimizing the impact of disasters and to ensure an effective response system.

Individual training involves personal study and participation in workshops, seminars and courses. Collective training involves emergency exercises and other activities which provide individuals and teams with learning opportunities as well as testing and evaluating emergency plans. Training may be provided by any of the following methods:

- *in-house* – specific to an organization’s plans, equipment and responsibilities;
- *interagency* – joint training with other organizations, often coordinated and conducted by provincial or federal departments (e.g. PSEPC); and
- *academic* – utilizing the existing network of academic institutions in both the public and private sectors.

Exercises should be regarded as an integral part of the emergency planning process - not an isolated option. It is important that emergency plans have been prepared and the appropriate staff trained in their roles before an exercise is planned. After any exercise, the plan should be reviewed and amended from lessons learned before the process starts again.

Training Process

Effective training must be part of a comprehensive process which includes effective evaluation and validation. In this context:

- Evaluation refers to the means to examine and judge effectiveness through a defined methodology. The aim of evaluation is to determine to what extent learners were satisfied, whether new knowledge and skills were obtained and whether training objectives were met. Effective evaluation focuses on the outcomes or results achieved during and after training, and not simply the achievement of stated objectives. It utilizes various monitoring and feedback mechanisms applied to training.

- Validation is a confirmation process designed to ensure that the products of training meet the operational training requirement. It measures the readiness of the organization and is the composite result of implementation and testing, evaluation and corrective actions.

Validation of emergency management training is the final step in the process and is essential to determine if the training is effective in supporting and enhancing emergency preparedness and planning efforts.



Appropriate arrangements for evaluation and validation will be made for all training conducted or sponsored by the ministry or within the provincial health sector.

Exercises

Experience within the international emergency management community has shown that the most effective validation methodology is the conduct of exercises. Research indicates that organizations and people respond to an emergency in the way that they have trained, and that it is essential that plans and procedures be exercised if preparations, response and recovery are to be fully effective.

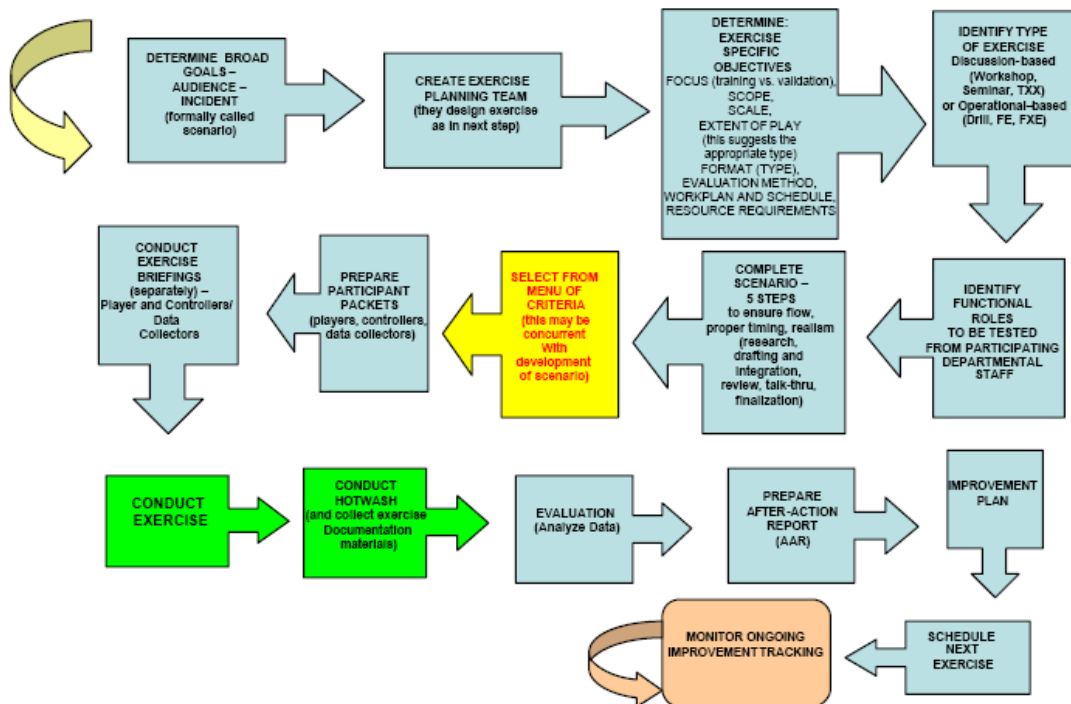
Exercises are an important component of response preparedness and are an essential part of the evaluation and validation processes. When properly designed they bring skills, knowledge, functions and systems together and apply them against realistic event scenarios.

The objective of emergency management exercises is to provide an accurate assessment of the capacity to plan for, respond to and recover from an emergency or disaster in advance of a real event. Well designed and delivered exercises encompass demonstration, practical application and evaluation of proficiency and will:

- test and validate policies, plans, procedures, training, equipment and interagency agreements;
- clarify roles and responsibilities;
- improve coordination and communications among participating organizations;
- reveal planning weaknesses;
- identify resource shortfalls;
- improve individual performance;
- satisfy regulatory requirements; and
- identify areas for improvement.

The Exercise Cycle

Exercises will normally be conducted on a cycle as illustrated below:



An exercise cycle is progressive, meaning that it is built on each successive exercise moving and organization toward the improvement of its emergency preparedness plan. Such a program has in place its own identified goals, and careful planning around those goals is required. It is a process that works through the identification of exercise objectives, design and development, conduct and analysis of the exercise, all of which indicates what works and what does not work for the organization being exercised.

A well-designed exercise will test specific aspects of a plan, identify deficiencies and ensure operational functionality. At both the individual and collective levels it will help deliver practical skills, build confidence, and strengthen the network between individuals and agencies. If properly managed, it will also raise interest in emergency preparedness within organizations and the public.

Types of Exercises

There are five general types of exercises, although different organizations may name and divide them differently. Identifying which type of exercise is needed and whether its purpose is for training or evaluation are important decisions in the exercise design process.

Exercises may take any of the following forms:

Level	Type/Format	Structure
1	Orientation (Discussion-based)	The orientation exercise is conducted at an introductory level to familiarize participants with roles, plans, procedures or equipment. It is presented as an informal discussion in a group setting with little or no simulation. A variety of seminar formats can be used, including lecture, discussion, slide or video presentation, computer demonstration or panel discussion.
2	Tabletop (Discussion-based)	A tabletop exercise is a facilitated analysis of an emergency situation in an informal, low-stress environment. It is designed to elicit constructive discussion as participants examine and resolve problems based on existing operational plans. Tabletop exercises lend themselves to broad discussion of policies and procedures, provide an opportunity for participating organizations and staffs to become acquainted with one another and are good preparation for more complex exercises.
3	Drill (Operations-based)	A drill is a coordinated, supervised exercise activity normally used to test a single specific operation or function. With a drill, there is no attempt to coordinate organizations or fully activate an EOC. Its role is to practice and perfect one clearly defined part of a response plan and to help prepare for more extensive exercises.

4	Functional (Operations-based)	A functional exercise is a simulated, interactive exercise that tests the capability of an organization to respond to a simulated event. This is a moderate-to-high stress activity which simulates an incident in the most realistic manner possible short of moving resources to a field site. A functional exercise is always a prerequisite to a full-scale exercise. Functional exercises are sometimes referred to as <i>Command Post / Control Post</i> exercises, or CPX.
5	Full-Scale (Operations-based)	A full-scale exercise simulates a real event as closely as possible. It is an exercise designed to evaluate the operational capability of emergency management systems in a stressful environment that simulates actual response conditions and requires the mobilization and actual movement of emergency personnel, equipment, and resources.

Exercises have limitations: they may not, for example, predict actual performance in that real emergencies rarely follow predicted patterns. It is also difficult, in an exercise, to effectively test how an organization's response procedures are initiated, as planned or pre-announced exercises allow too much forewarning to be realistic and no-notice exercises are difficult to simulate properly.

The timing and frequency of exercises requires careful consideration. All systems and procedures need to be regularly reviewed, inspected or otherwise tested. However, how this happens often depends on the stability of staff is and whether procedures change over time.

Exercise Planning Group

An Exercise Planning Group should be designated at each level of the health sector (i.e., Ministry, Health Authority, Health Delivery Service Area). This group needs to liaise with all participating agencies in the planning stage. It needs to decide, as its first task and with regard to the agreed objectives, whether to test the whole plan or only certain components. All agencies who have a role to play, either in the whole plan or the component(s) to be tested, should be invited to take part in the exercise, including the planning stage, and subsequent reviews.

Most exercises are time consuming and cannot be undertaken frequently. Therefore every opportunity should be given to all appropriate agencies to take part when a plan is tested. The group needs to allocate sufficient time (which may mean several months prior to the event) to plan the exercise thoroughly.

Those involved in planning the exercise should not participate directly. They are better used as Umpires or Observers. If possible, and particularly for small organizations, help should be sought from neighbouring areas or organizations with similar operations.

Safety

The safety of personnel during the exercise is of paramount importance. In live exercises, all participants – including exercise directors, umpires, volunteers and observers – should be made aware of any hazards within the area and reminded of safety issues. Exercise participants may not be familiar with the location and control may be needed to ensure that players are kept within the confines of the exercise area.

Before a live exercise, a safety audit should be completed to ensure that structures are safe and no unseen dangers are present on the site (e.g. asbestos in old buildings or transport). A safety officer must attend the exercise to ensure that all participants comply with the safety requirements and do not place themselves, or others, in danger. At complex exercises, or where conditions are particularly hazardous, each participating organization may need its own safety officer. The exercise can not be seen as a reason not to comply with health and safety requirements.

First aid/ambulance cover should be provided to deal with any health problems or injuries sustained during the exercise. For safety reasons, exercise directors should adopt an agreed procedure for intervention into the exercise, including cessation where necessary. The planning group should devise a codeword for this purpose and the means of relaying it to those participants without radio communication.

Exercise Report

A major multi-agency exercise can be both costly and time consuming to arrange and undertake. It is particularly useful, therefore, to produce an exercise report after the debrief. This should be well presented and brief so that even the busiest manager has time to read it.

The report should cover the aim, objectives, scenario, the planning process and both positive and negative observations from the exercise concluding in recommendations for the future. It is also important that the recommendations are acted upon and a follow up report prepared no later than six months after the exercise noting what action has been taken and what is planned.

Public Information

The exercise planning group should agree whether there should be any prior publicity. It may be advisable to issue prior public information to members of the public in the vicinity of the exercise to prevent any undue alarm, particularly for exercises at hazardous sites. However, this may attract a crowd of uninvited spectators. "Exercise in Progress" signs may be strategically positioned. This can detract from the realism but reassures the public or uninvolved agencies, particularly in sensitive areas. The planning group should take account of a likely crowd and ensure public safety by deploying additional staff.

If public information is issued, the participants may also find out about the exercise and this could affect realism. The group may consider issuing information by letter, to the public on the day of the exercise. Details for the media could be embargoed until the day of the exercise.

Dealing with the media is a major part of responding to any incident and therefore should be practiced as often as possible. The exercise planners could deploy student journalists, the Central Office of Information or reporters from local papers to test the different agencies' response to the media. For major exercises, a representative from the national media should be invited to attend. Exercise press conferences and interviews can be used to test the knowledge of the combined response.

The media might arrive, unplanned, to cover the exercise and arrangements must be in place for this possibility. Public relations staff should be allocated to keep the media informed during the exercise.