



**Model Core Program Paper:
Health Emergency
Management**

This Model Core Program Paper was prepared by a working group consisting of representatives of the BC Ministry of Health and BC's health authorities.

This paper is based upon a review of evidence and best practice, and as such may include practices that are not currently implemented throughout the public health system in BC. This is to be expected, as the purpose of the Core Public Health Functions process—consistent with the quality improvement approach widely adopted in private and public sector organizations across Canada—is to put in place a performance improvement process to move the public health system in BC towards evidence-based best practice. Where warranted, health authorities will develop public performance improvement plans with feasible performance targets and will develop and implement performance improvement strategies that move them towards best practice in the program component areas identified in this Model Program Paper.

This Model Program Paper should be read in conjunction with the accompanying review of evidence and best practice.

Model Core Program Paper approved by:

Core Functions Steering Committee (April 2006)

Population Health and Wellness, BC Ministry of Health (April 2006)

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EXECUTIVE SUMMARY

This paper identifies the core elements that are provided by British Columbia health authorities in the field of health emergency management. The term “emergency management”, or “disaster management” is associated with the needs that are created from extreme harmful events that have wide-scale impact on a community, rather than the urgent or emergency health care that is referred to as “emergency medicine”.

This Model Core Program is intended, as part of the BC Core Functions in Public Health initiative, to reflect evidence-based practice and continuous performance improvement. A Working Group of representatives from the Ministry of Health and the health authorities worked together in the development of this paper. They agreed that the main components of a comprehensive emergency management program are:

- Surveillance of health risks and vulnerabilities.
- Conduct hazard, risk and vulnerability analysis.
- Minimize potential health emergencies through risk reduction/mitigation measures.
- Prepare for health emergencies/disasters (and for other emergencies/disasters that have health consequences), through coordinated emergency response plans and business continuity plans.
- Respond to, and recover from, health emergencies.

In addition, it is recognized that health authorities need to have organizational arrangements in place to ensure leadership and coordination of emergency management policies and programs. As well, for an effective health emergency management program, it is absolutely essential that a culture of emergency preparedness be imbedded into all parts of the health authority.

Best, or “promising” practices based on the literature, and exemplary practices widely recommended by experts in the field, include the following:

- Preparing a five-year strategic plan for health emergency management.
- Gathering information on all hazards and risks to the population.
- Implementing formal risk assessment and mitigation processes.
- Preparing a coordinated, comprehensive emergency response plan, considering all potential risks and scales of emergencies.
- Highlighting collaboration, coordination and communication in all activities.
- Conducting resource needs analysis and planning, including maintenance/distribution.
- Establishing an incident management system for organizing and managing multiple sector responses during disasters/emergencies.
- Implementing training and exercising programs for staff members and partner groups.

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Indicators and benchmarks for health emergency management are presented for the program components to provide a basis for ongoing performance review and evaluation.

Key success factors highlight a range of strategies that ensure the successful implementation of a high quality health emergency management program. The Working Group noted that at present, there is no health legislation that specifically references health emergency management, and that the Province should consider this in the future to strengthen the authority of health emergency management programs. Also essential to successful execution of emergency plans is a Board and senior management who are well-informed about their roles and responsibilities in an emergency situation.

Other key factors include: allocation of sufficient resources; well-trained and competent staff; a well-developed information system capable of handling required data; high quality and competent management; and clear mechanisms of reporting and accountability. As well, collaboration and coordination with local authorities, organizations and agencies with a role in emergency response, as well as related provincial and federal officials, are essential to ensure an effective health emergency response system.

1.0 OVERVIEW/SETTING THE CONTEXT

As demonstrated in recent Canadian reports, public health needs to be better structured and resourced, in order to improve the health of the population. The Framework for Core Functions in Public Health is a component of that renewal in British Columbia. It defines and describes the core public health activities of a comprehensive public health system. This policy framework was accepted in 2005 by the Ministry of Health and the health authorities.

Implementation of core functions will establish a performance improvement process for public health developed in collaboration between the Ministry of Health, the health authorities and the public health field. This process will result in greater consistency of public health services across the province, increased capacity and quality of public health services and improved health of the population. To ensure collaboration and feasibility of implementation, the oversight of the development of the performance improvement process is managed by a Provincial Steering Committee with membership representing all health authorities and the ministry.

What are core programs? They are long-term programs representing public health services that health authorities provide in a renewed and modern public health system. Core programs are organized to improve health; they can be assessed ultimately in terms of improved health and well-being and/or reductions in disease, disability and injury. In total 21 programs have been identified as “core programs”, of which health emergency management is but one. Many of the programs are interconnected and thus require collaboration and coordination between them.

In a “model core program paper”, each program will have clear goals, measurable objectives and an evidentiary base that shows it can improve people’s health and prevent disease, disability and/or injury. Programs will be supported through the identification of best practices and national and international benchmarks (where such benchmarks exist). Each paper will be informed by: an evidence paper; other key documents related to the program area; and by key expert input obtained through a working group with representatives from each health authority and the Ministry of Health.

The Provincial Steering Committee has indicated that an approved model core program paper constitutes a model of good practice, while recognizing it will need to be modified to meet local context and needs. The performance measures identified are appropriate indicators of program performance that could be used in a performance improvement plan. The model core program paper is a resource to health authorities that they can use to develop their core program through a performance improvement planning process. While health authorities must deliver all core programs, how each is provided is the responsibility of the health authority, as are the performance improvement targets they set for themselves.

It is envisioned that the performance improvement process will be implemented over several years. During that time the process will contribute to and benefit from related initiatives in public health infrastructure, health information and surveillance systems, workforce competence assessment and development and research and evaluation at the regional, provincial and national levels. Over time these improvement processes and related activities will improve the quality and

strengthen the capacity of public health programs, and this in turn will contribute to improving the health of the population.

1.1 An Introduction to This Paper

This model core program paper for health emergency management is one element in an overall public health performance improvement strategy developed by the Ministry of Health in collaboration with provincial health authorities and experts in the field of health emergency management. It builds on previous work from a number of sources.

In March 2005, the Ministry of Health released a document entitled *A Framework for Core Functions in Public Health*. This document was prepared in consultation with representatives of health authorities and experts in the field of public health. It identifies the core programs that must be provided by health authorities, including health emergency management, and the public health strategies that can be used to implement these core programs. It provides an overall framework for the development of this document.

Other documents that have informed this paper include:

- *The National Framework for Health Emergency Management: Guideline for Program Development (National Framework)*, prepared in December 2005 for the Conference of F/P/T Ministers of Health.
- *Report on Health Emergency Management, Ministry of Health (BC Report)*, prepared by the Ministry of Finance, Internal Audit and Advisory Services, Office of the Comptroller General, in June 2005.
- *NFPA Standard 1600 on Disaster/Emergency Management and Business Continuity Programs (NFPA Standard)*, by the National Fire Protection Association, 2004.
- *Canadian Standards on Emergency Management and Business Continuity (CSA Standard)*, a draft based on the *NFPA Standard*, December 2005.
- *Learning from SARS: Renewal of public health in Canada*, a report of the National Advisory Committee on SARS and Public Health, chaired by Dr. David Naylor, October 2003.
- Two evidence papers: *Evidence Paper: Health Emergency Management* (Ministry of Health 2006) and *The Health Emergency Management Best Practices Matrix* (2005).

A Working Group on Health Emergency Management, formed of experts in the field from the Ministry of Health, BC Ambulance Service, Provincial Health Services Authority, and the health authorities, met in March 2006 to provide guidance and direction in the development of the model core program.

1.2 Introduction to Health Emergency Management

The term “emergency management”, or “disaster management” is associated with the needs that are created from harmful events that have wide-scale impact on a community, rather than the

urgent or emergency health care that is referred to as “emergency medicine”. Emergency management involves ongoing efforts by an organization to prevent, mitigate, prepare for, respond to and recover from any kind of emergency (Canadian Standards Association 2005). Health emergency management encompasses both emergencies/disasters which are directly health related, as well as other emergencies/disasters which have health consequences.

Interest in emergency management has increased dramatically in the last few years as a result of a number of major events, including the terrorist attacks of September 11, 2001, the outbreak of Severe Acute Respiratory Syndrome (SARS) in Toronto in 2003, the tsunami in the Indian Ocean in 2004, the devastation caused by hurricane Katrina in New Orleans in 2005 and recent concerns about an influenza pandemic. The increased profile of health related emergencies/disasters has placed considerable attention and importance on this relatively new field.

Health authorities have a vested interest in limiting the harmful effects of emergencies on the population, and on their infrastructure, as many emergencies have major health impacts. Accordingly, they play an important role in reducing the risk of disasters/emergencies, and if they do occur, in ensuring that a coordinated and effective response is provided to minimize adverse effects. It should be noted however, that while the health care system can prevent and/or mitigate the impact of public health emergencies, and the impact of other emergencies/disasters on the health system itself, it cannot prevent/minimize most non-health-related disasters.

Professional experts note that one of the challenges with respect to effective emergency management is collaboration and coordination among all levels of government and all relevant sectors of the community. Health care is only one aspect of the services required to respond effectively to many emergencies. Consistent, integrated systems are needed to successfully mobilize all available resources. Coordination and communication among these groups is highlighted in the literature as an essential element in providing effective emergency response programs (Kort, Stuart, and Bontovics 2005; Batho, Russell, and Williams 1999).

Further, health authorities have a pivotal role in emergency management; it is recommended that emergency response services be structured at the field level of government organization in the interest of speed and simplicity (recommended by BC Emergency Response Management System, and other experts). Consequently, health authorities have significant responsibilities in planning and delivering services that will minimize the adverse health effects of emergencies/disasters on the public.

The emergency management program extends beyond a traditional public health role to the broader context of health service, as all health programs need to be involved and have a sense of “ownership” for emergency planning and preparedness. Indeed, a major role of the emergency management program is to integrate a culture of emergency preparedness throughout the organization. Also encompassed within this role is responsibility for business continuity; an ongoing process which ensures the necessary steps are taken to identify potential losses, maintain viable recovery strategies and plans and ensure the continuity of health authority services.

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It should be noted that since health emergency management is an emerging field, and because the nature of emergencies often presents methodological difficulties in evaluating programs, there is not an extensive evidence base on which to establish programs. Where there is limited evidence on effective strategies, this paper refers to the “lessons learned” in the literature, and program practices that are well accepted among academics and professionals in the field, both internationally and in Canada.

2.0 SCOPE AND AUTHORITY FOR THE HEALTH EMERGENCY MANAGEMENT PROGRAM

In order to implement emergency management programs, there must be clarity about the involvement and roles of the Ministry of Health, BC Ambulance Service (BCAS), the Provincial Health Services Authority (PHSA), the British Columbia Centre for Disease Control (BCCDC), other ministries and levels of government and the regional health authorities.

2.1 Federal Roles and Responsibilities

On the federal level, the management of health emergencies is the mandate of the Public Health Agency of Canada. It provides overall coordination of federal emergency planning and response. The federal government is responsible for national emergencies including:

- Public welfare emergencies such as severe natural disasters or major events affecting public welfare that are beyond the capacity or authority of a province to manage.
- Public order emergencies such as threats to the security of Canada that transcend the authority or capacity of a province to manage.
- International emergencies, which are actions that threaten Canada's sovereignty, security or territorial integrity, or those of its allies.
- War emergencies when real or imminent armed conflict is threatened against Canada or its allies.

2.2 Provincial Roles and Responsibilities

The BC Ministry of Health has three major roles and responsibilities:

- Providing overall stewardship of the health care system in British Columbia, including conducting strategic interventions with health authorities to ensure the continuation of the delivery of efficient, appropriate, equitable and effective health services to British Columbians.
- Working with the health authorities to provide accountability to government, the public and the recipients of health services.
- Providing resources to health authorities to enable them to deliver health-related services to British Columbians.

Specifically in the area of emergency management, the Ministry has responsibility for:

- Providing emergency-related direction and advice to the health authorities and BCAS.
- Integrating ministry resources with those of the provincial integrated response structure.
- Facilitating inter-jurisdictional cooperation in emergency-related health matters (e.g., other provinces, the federal government, and neighbouring American states).

The Health Emergency Management Council, with representatives from the Ministry of Health, the regional health authorities, PHSA and BCAS, is responsible for coordinating emergency planning across the health sector and ensuring compatibility with provincial emergency plans.

The BCAS is an initial health emergency response agency, and is responsible for the following:

- Providing and coordinating ambulance services, triage, treatment and transportation in the pre-hospital setting within the province.
- Ensuring a coordinated and organized initial response to emergency events.
- Collaborating with other agencies and organizations throughout all levels of health emergency management in support of the overall goals of the BC Emergency Response Management System (BCERMS).

The PHSA plays a role in providing emergency management advisory services to the health authorities, including: conducting disease surveillance, working with international and federal agencies to coordinate federal and provincial health emergency planning, and managing the emergency management programs for Provincial Health Referral Centres. The BCCDC houses the Radiation Protection Services, Provincial Food Safety Programs and the Poison Control Centre, all vital technical advisory and information services. BCCDC also has a role in managing the response to communicable disease emergencies, as follows:

- Surveillance and monitoring of diseases within the province and vulnerability to diseases outside the province.
- Epidemiological and routine diagnostic services in communicable disease management.
- Biohazard containment laboratory services.

The BC Ministry of Public Safety and Solicitor General coordinates and manages a standardized BC Emergency Response Management System (BCERMS) through the Provincial Emergency Program and a central coordinating group of officials (Central Coordination Group). The Provincial Emergency Program maintains a Provincial Emergency Coordinating Centre (PECC) with a 24-hour capability. Ministries and agencies are expected to establish their own central Emergency Operations Centre (EOC) to coordinate operations with the PECC, when an emergency response function, for which they are responsible, is creating significant demand. They are also expected to establish regional EOCs, which coordinate with Provincial Regional Emergency Operations Centres under similar conditions. Health authorities are expected to have site, area and corporate EOCs linked and integrated into other elements of the BCERMS structure.

2.3 Local Roles and Responsibilities

The health authorities role, overall, is to identify and assess health needs in the region, to deliver health services (excluding physician services and BC Pharmacare) to British Columbians in an efficient, appropriate, equitable and effective manner, and to monitor and evaluate the services which it provides. In the area of emergency management, health authorities are responsible for:

- Developing effective emergency response management and business continuity plans.

- Ensuring that local and regional emergency/disaster plans are integrated with those of First Nations, the Ministry of Health and other health authorities.
- Fulfilling the emergency management role set out in the BCERMS.
- Providing liaison to the provincial emergency structure during an emergency.
- Cooperating with and providing assistance to other health authorities in the event of an emergency that requires resource sharing.

As well, BC local authorities, including First Nations, are an integral component of the emergency response system as virtually all emergency response is initiated at the local level. Local authorities are responsible for providing emergency social services in the aftermath of an emergency / disaster, including food, clothing, lodging, personal services and registration/inquiry to reunite evacuated families.

2.4 Legislation and Policy Direction

The overall legislation and policy direction for health emergency management is derived from:

- The following acts and regulations: *Health Act; Emergency Program Act; Health Emergency Act; Hospital Act; Mental Health Act; Community Care and Assisted Living Act*; and Occupational Health and Safety Regulations (WorkSafe BC).
- *A Framework for Core Functions in Public Health* (March 2005).
- The Canadian Council of Health Care Accreditation.
- The Performance Agreements currently in place with each health authority.
- The strategic directions of the Ministry of Health.
- The rolling *Health Service Redesign Plans* for each health authority.

At the present time, there is no health legislation that specifically references health emergency management. This is something that the Province should consider in the future to strengthen the authority of health emergency management.

3.0 PRINCIPLES

The following principles can guide the development and direction of policies, planning and operating practices for health emergency management in British Columbia:

- Comprehensive in nature¹, using the principles espoused by BCERMS.
- Strategic approaches in planning and developing programs.
- Ethical decision-making.
- An “all hazards/common consequences” approach, ensuring systemic analysis and management of the full range of risks, threats, implications and consequences.
- Sustainability, through maintaining programs, policies and plans without transferring risk to other communities or postponing risk to future generations.
- Resiliency, through collaboration with communities so they are able to mitigate the impact and return quickly to normal
- Pan-Canadian, trans-jurisdictional systems, ensuring that programs, policies and plans link easily between local, regional and provincial levels.
- Evaluation and continuous quality improvement.

¹ Comprehensive emergency management addresses hazards and disasters through a constant balancing of the mitigation, preparedness, response and recovery components. It may encompass a larger perspective including physical health, public health, emergency social services and the maintenance of organizational activities.

4.0 GOALS AND OBJECTIVES

The overall goal of the health emergency management program is to minimize the risk to communities and individuals and, in the event of an emergency, to provide effective health care responses and services. The specific objectives are:

- To prevent and/or mitigate public health emergencies.
- To prepare for health emergencies through the development of coordinated strategies, emergency response plans and business continuity plans.
- To respond effectively to emergencies based on preparedness and recovery plans.

5.0 MAIN COMPONENTS AND SUPPORTING EVIDENCE

5.1 Introduction

The major components of comprehensive health emergency management programs are:

- Surveillance of health risks and vulnerability.
- Conduct hazard, risk and vulnerability analysis.
- Minimize potential health emergencies through risk reduction/mitigation measures.
- Prepare for emergencies/disasters through coordinated emergency response plans and business continuity plans.
- Recovery from emergencies/disasters.

In addition, it is recognized that health authorities need to have organizational arrangements in place to:

- Provide leadership and coordination of both internal and external emergency management planning.
- Integrate a culture of emergency preparedness throughout the health authority.
- Encourage continuous quality improvement through ongoing evaluation and learning.

The first step in implementing a successful health emergency management program is the development of a strategic plan. The *National Framework for Health Emergency Management*, the *Report on Health Emergency Management (BC Report)*, the *CSA* and *NFPA Standards* all stress that a strategic approach is needed to ensure a comprehensive plan that is consistent with other sectors and agencies, including:

- A five-year strategic plan, based on comprehensive risk and needs analysis, with recommended activities and resources, and a framework for measuring progress and successes in working toward the goals.
- Coordinate and cooperate with other agencies and jurisdictions, respecting the jurisdictional issues and responsibilities at the national, provincial and municipal levels, as well as the roles of non-government agencies and the private sector.
- Proactive guidance and support for health emergency management strategic planning at the community level, including health authority participation on community planning committees.

5.2 Surveillance of Health Risks and Vulnerabilities

Information gathering on potential risks and vulnerabilities is needed. This may be gathered through coordination with, and input from, all program areas within the health authority, and from information provided by the other agencies such as the PHSA. Ongoing surveillance and information gathering is necessary to examine all potential population health hazards at the same time, within the same planning process (*National Framework*). This allows for efficiency as

many of the same hazards can result in the same consequences, and also ensures that the full range of threats is considered in a balanced way.

The following hazards should be taken into account:

- Biological hazards, such as diseases that impact humans and animals such as SARS, influenza pandemic, smallpox, anthrax, West Nile virus, foot and mouth disease, as well as new and emerging diseases.
- Natural hazards, such as earthquakes, wildfires, tsunamis, floods, avalanches, landslides and weather extremes.
- Technological hazards, including socio-technical systems failures related to industrial sites, agriculture, infrastructure, and transportation (i.e., hazardous materials spills, power failure, air/water pollution).
- Civil and political hazards such as terrorism, sabotage, civil unrest, hostage situation and enemy attack.
- Organizational hazards, such as poor organization, workforce disruptions, inadequate resources and low levels of training/competence in an emergency.

At the same time, it is important to gather information on the vulnerabilities of the population and the availability of resources to respond to an emergency, including:

- Identifying the overall capabilities, the capacity and the vulnerabilities of regional resources, including health facilities, health services, emergency health services, transportation, medical and non-medical supply chain issues, the trained voluntary sector, accommodation, catering, utilities and relevant trades and professions.
- Collaborating with local emergency management officials to gather specific community-based information, including the capabilities, the capacity and vulnerabilities of local resources.
- Working with community networks to identify vulnerable groups of people and their locations, such as residents of group homes, the elderly (especially the frail elderly), physically and mentally disabled people, ethnic minorities and other vulnerable groups (disaster vulnerability has been linked to the determinants of health, in particular, income, social status, social supports and personal health [Lindsay 2003]).
- Regularly accessing reliable information sources to update information on available resources and vulnerable groups.

5.3 Hazard, Risk and Vulnerability Analysis

The process of assessing the hazards, risks and vulnerabilities is important to understanding the potential impact of hazards. This will need to be undertaken both on a regional level, and on a local level through facilitation with local authorities and networks. Several elements are necessary to this process:

- Ensuring the information gathered on each hazard is sufficiently complete and accurate to provide the basis for thorough analysis. For example, evidence-based information will increase the reliability of the analysis.
- Conducting risk analysis to determine the probability of occurrence, and potential consequences of each hazard.
- Assessing the vulnerability of community infrastructures, capabilities and capacity, as well as the vulnerability of health authority facilities, capabilities and capacity.
- Assessing factors that may increase the vulnerability of specific groups of people, such as the determinants of health.

5.4 Mitigation Measures

The following approach to mitigation is consistent with recommendations in the *National Framework*, the *CSA* and *NFPA Standards*, and the *BC Report*. It includes:

- Identifying, for each risk, what the organization has done to mitigate (reduce the consequences or likelihood of the risk) and prepare for an occurrence.
- Evaluating, for each risk, the treatment alternatives available, including their costs and impacts on the consequences and likelihood of an occurrence.
- Deciding whether to accept each risk or take specific action to mitigate or prepare for an occurrence.
- Gathering specific actions to address all risks into a risk treatment plan. This plan would feed into the health emergency management strategic plan and the health emergency management business plans and budgets for the current and upcoming years; those plans in turn would feed into the corporate strategic plans, business plans and budgets.
- Establishing a process for monitoring, reviewing and continuously improving the effectiveness of the risk management process within the organization's context.

5.5 Preparedness – Emergency Response and Business Continuity Planning

Preparedness is the process of readying response and recovery actions to increase the capability and ability for responding effectively to future disasters and emergencies, regardless of their scale. It includes coordinated emergency response planning, communication measures, resource management, training and development of business continuity plans.

A strategic planning approach is an integral part of effective emergency management planning and is necessary for coordinated and consistent development among local and regional authorities. As well, ongoing assessment of emergency management plans, review of the latest research and evaluation of programs is important for ensuring a high quality program. The overall effectiveness of preparedness is reflected by Bissell et al. (2004), who compared the survival data from earthquakes of similar size. In Armenia, which had a low rating of preparedness, an earthquake resulted in 167 deaths per 100 injuries; in Japan, a country with a

mixed preparedness rating, there were 31 deaths per 100 injuries; in California, which has a high level of preparedness, there was 1 death per 100 injuries.

5.5.1 Emergency Response Plan

There is consistent agreement in the literature and among professionals in the field that preparation of emergency response and business continuity plans is a best practice. Accordingly, health authorities should place a priority on the following:

- Developing, at corporate, sub-area and site level, emergency response and business continuity plans which address all potential risks and identify response procedures and plans, according to the level and scale of potential emergencies, including:
 - A command/management system for clear assignment of leadership and authority during an emergency/disaster. The Incident Command System (New Zealand Coordinated Incident Management System 1997; Barbera and Macintyre 2002) recommended by BCERMS coordinates the management of initial response by multiple agencies covering planning, operations, logistics and finance/administration functions.
 - Clear roles and responsibilities for health authority staff members, taking into account, and linking to, the roles and responsibilities of municipal, provincial and federal governments, and other key organizations and agencies.
 - Activation levels and alerting systems.
 - Communication systems and procedures.
 - Support arrangements, including finance, administration, logistics and other needs.
- Ensuring business continuity plans are in place, exercised and updated, to enable the continuation of pre-defined mission critical and key business priority health services at an optimal level, including:
 - Comprehensive plans and procedures for implementing and monitoring business continuity and recovery activities.
 - Specific security plans and procedures to move up to heightened security levels in the event of an emergency or increased threat condition.
 - Current lists of key resources required for the recovery and resumption of essential services, including personnel, facilities, critical infrastructure and assets information, materials and office equipment/furniture, information technology assets (hardware and software) and communications.
- Collaborating with municipal officials, and relevant sector organizations within the health authority, to coordinate decentralized planning and to ensure that all local emergency response plans and business continuity plans are consistent within the health authority.

- Developing hazard-specific Emergency Response and Business Continuity Plans where these appear to be justified, e.g., to address the threat of pandemic influenza.

A number of evaluations and studies point to key issues and considerations that can contribute to the development of effective emergency response plans, such as: the primary importance of collaboration, coordination and communication among all relevant sectors (Booth and Stewart 2005); clear roles and responsibilities (Kort et al. 2005); the need for skilled triage both in the field and within health facilities (Feeney et al. 2005; Hoey and Schwab 2004); and the need for communications strategies for those affected by the disaster and their family members (Feeney et al. 2005; Batho et al. 1999).

5.5.2 Communication and Education Measures

Health authorities will need to communicate the importance of emergency measures internally within the health authority, and externally to partner groups and organizations. This could include:

- Building a culture of awareness about health emergency management, its value and importance.
- Communicating information about the Emergency Response Plan to the Executive Committee, staff members, municipal officials, community groups and the public, as well as other health authorities and the Ministry of Health, to increase cooperation, coordination and knowledge about the Plan.
- Educating the public and health professionals about potential emergencies, the importance of preparedness and steps that will assist in preparing and responding effectively to emergencies.

5.5.3 Resource Management

The efficient and effective management of resources is essential in times of disasters. By their definition, disasters are situations when resources are overwhelmed. The availability of physical resources is as essential to the response as the Emergency Response Plan and the staff members.

The *BC Report* suggests the following as best practice:

- A resource needs analysis to determine resource requirements.
- A plan in place for obtaining additional emergency resources and distributing them on short notice.
- The use of an ongoing process to ensure that existing equipment and supplies are operational, including ongoing maintenance and systematic replacement and upgrades of equipment and supplies.

To assist in a resource needs analysis, it is suggested (*CSA* and *NFPA* Standards) that the full range of resources for emergency program administration and disaster/emergency operations be specifically identified. For example:

- The locations, quantities, accessibility, operability and maintenance of equipment.

- Supplies such as medical, hygiene, food, water, clothing, shelter, administrative needs, and so on.
- Sources of energy including electrical and fuel resources, and emergency power production (generators).
- Technical information.
- Specialized personnel (e.g., medical, religious, volunteer organizations, disaster/emergency management staff, utility workers, morticians and private contractors).
- Specialized volunteer groups (e.g., Red Cross, amateur radio, relief organizations, charitable agencies, Community Response Teams, so on).
- External federal, provincial, adjoining American states, First Nations, municipal and local agencies.

5.5.4 Training and Exercising

Training and exercising are important elements in reducing the impact of disasters and in ensuring a robust and resilient response. Common training for the wide range of emergency management organizations and community partners who will work together during a disaster, appears to be the most effective way to enhance coordination, knowledge and skill. Training also helps responders know when a situation can be dealt with using established procedures and when flexibility and innovative approaches are needed to adapt to unanticipated situations.

Best practices (*BC Report*, the *National Framework* and *CSA/NFPA Standards*) for successful training and exercising programs include:

- An overall, written training and exercising plan to ensure that all personnel who may be involved in emergency activities are trained in the implementation of the Emergency Response Plan and BCERMS, to their expected assignment levels or job functions.
- Coordinated training with other health authorities, BC Ambulance Service and other community emergency response agencies.
- Up-to-date training manuals and materials available to all staff at all sites.
- An appropriate mix of paper, tabletop and physical simulation.
- Programs tailored to cover all individual facilities, specialized tools or equipment and specific roles, jurisdictions and contingency plans.

Werner et al. (2005) found joint training among emergency first responders and public health staff in St. Louis to be successful in achieving common training objectives among law enforcement, public health, hospital staff and public and private agencies. It clarified response roles and responsibilities and strengthened personal connections and understanding among response partners. Doxtator et al. (2004) and Henning et al. (2004) identified similar results and also noted that training participants were able to identify weaknesses in emergency response

plans that required further attention. Kincaid et al. (2003) found persuasive evidence that training effectiveness is substantially improved by the use of simulation.

5.6 Recovery

The initial response to an emergency/disaster tends to be the focus of attention in emergency management planning. However, the successful implementation of business continuity plans is essential to effectively managing both the short- and long-term impacts of emergencies on individuals and communities. A variety of health issues may arise after a primary hazard has receded. For example, psychosocial trauma may become more evident with time, and damaged infrastructure, displaced staff and disruptions to external services could hamper a return to normal services.

Emergencies, especially those that overwhelm a community, have a complex set of causes and consequences that are impossible to plan for ahead of the event in accurate detail. Consequently, health authorities must be prepared to plan for recovery from an emergency, including:

- Using business continuity principles, restore normal operating and decision-making processes as quickly as possible.
- Planning for the availability of priority equipment and services required for recovery and reconstruction.
- Identifying effective recovery and reconstruction alternatives to restore services and facilities.
- Developing, implementing and maintaining mutual aid agreements for recovery.
- Joining with other government agencies and the private sector to return health services and facilities to pre-event levels or better.
- Providing advice and assistance to local authorities on recovery and reconstruction initiatives.
- Conducting post-event debriefing and assessment to ensure lessons learned are integrated into the emergency response and business continuity plans.

It is extremely important that there be a full debriefing and “after-action” review after an event has occurred and after exercises, to evaluate and improve plans and response capabilities. This is an essential part of the continuous improvement cycle.

6.0 BEST PRACTICES

Often there are no “best practices” which are agreed on, especially in a relatively new field, such as health emergency management. Rather, there are practices that have emerged through professional consensus in multiple settings, which should be considered by health authorities. The terms “better practices” or “promising practices” are often preferred to reflect the evolving and developmental nature of performance improvement. As part of this review “promising practices” from other provinces were considered.

Some of the practices that are widely supported and considered to be “best practices” by leading professionals have been identified. Those proposed earlier in this paper include:

- Leading the preparation of a system-wide five-year strategic plan for emergency management.
- Monitoring and gathering information on all hazards and risks to population and to the health authority, as well as members of the population that would be particularly vulnerable during a disaster.
- Implementing a formal risk assessment process to determine the risk level of all potential hazards.
- Linking a mitigation plan to ongoing health authority business planning and budgeting processes.
- Preparing a coordinated, comprehensive emergency management plan.
- Highlighting collaboration, coordination and communication in all activities.
- Conducting resource needs analysis and planning, including resource maintenance and distribution.
- Maintaining an emergency management system, consistent with BCERMS, for organizing and managing multiple sector responses during disasters/emergencies.
- Implementing training and exercising programs for internal and external groups who will work together during a disaster.
- Debriefing and assessment of lessons learned following all incidents and training/exercising events.

Additional “promising practices”, not previously mentioned, include “lessons learned” from other organizations, and practices widely accepted by academics and professionals in the field. These may be equally effective and should be considered for implementation by health authorities:

- Promoting involvement of neighbourhoods and community groups in partnership with local authorities, in the preparation of “a community vulnerability inventory”, which identifies where at-risk groups and individuals are located.

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- Using a wide variety of professional experts to advise on potential health hazards/threats and related strategic measures.
- Contributing information and risk management advice on health hazards to other sectors, organizations and agencies.
- Incorporating mitigation strategies which include both structural measures (e.g., fire breaks to prevent forest fires from spreading) and non-structural or social measures (e.g., limiting forest access during high danger periods).
- Providing one-day workshops for communities, in partnership with local authorities, to come together and customize their local emergency response plans at the same time, to ensure consistency.
- Clarifying and incorporating the role of primary care and other community-based practitioners during a health emergency.
- Liaison with other partner agencies with respect to surveillance, resource assessment and response planning.
- Informing staff, partners and the public about the emergency management plan by posting it on an Intranet or Internet site to facilitate accessibility and monitoring.
- Designating ongoing emergency management training as a core learning expectation for appropriate staff members.
- Including evaluation as a component of all emergency management, business continuity plans and training programs.
- Preparing for the provision of psychosocial counseling and support during the recovery period following a disaster.

7.0 INDICATORS, BENCHMARKS AND PERFORMANCE TARGETS

7.1 Introduction

This section presents a range of indicators, benchmarks and performance targets to provide a basis for the assessment of the core program on health emergency management.

It is recognized that emergency management programs are a relatively new health area, and that the development of benchmarks and standards is in the early stages. It is expected that additional health-related standards and risk-management systems will be developed over time and along with increased research evidence, will provide a more substantive basis for measuring effective program performance in the future. In the meantime, the indicators of necessity will need to focus on inputs, activities and outputs, rather than on specific outcomes.

However, the indicators taken together can provide a broad context for understanding the overall functioning of the program. Therefore, it is not necessary to have only outcome-related indicators. In general, it is best to consider a number of indicators together in forming a view about a given health emergency management program. It is recognized that programs in this field are difficult to evaluate because of the nature of emergencies/disasters, particularly as programs involve multiple factors and multiple sectors, which all play a role in determining outcomes.

Some of the suggested indicators may apply across the province, while others may need to be modified to account for key variables such as the geographic size and/or the population density of the health authority. Once there is a set of agreed-upon benchmarks, health authorities can use the indicators, benchmarks and their own performance targets, to monitor their performance and to address any gaps that may exist between the indicators for their regions and the agreed-upon benchmarks. It is anticipated that the Ministry of Health will work with health authorities to, over time, develop a greater consensus on key indicators and benchmarks for the health emergency management programs. As well, one or two key performance indicators may be selected to represent overall functioning of the health emergency management program in the Performance Agreements between the Ministry of Health and the health authorities.

When no provincial benchmarks are available for a certain program indicator, it would be reasonable for a health authority to determine its own performance target. A health authority could do so by assessing its current (and perhaps historical) level of performance and then, based on a consideration of local factors (e.g., capacity, resources, staff training and so on), could establish realistic performance targets. Initially, health authorities will set performance targets for a number of indicators. However, over time, and particularly if consistent data collection methods and definitions are applied, it would be realistic for health authorities to share information related to their performance targets and then develop a consensus to determine provincial benchmarks for these indicators. In other words, locally developed performance targets, over time, could lead to the development of additional provincial benchmarks.

7.2 Surveillance of Risks and Vulnerabilities

The following table presents some potential indicators, and the definitions of these indicators. In some cases, benchmarks are currently not available but may be determined over time between the Ministry of Health and the health authorities. In many cases, the baseline data will need to be established in the first year to provide a basis for comparative analysis in future years. In other instances, it may be more appropriate to establish local or regional performance targets.

Table 1: Surveillance and Mitigation of Public Health Emergencies

Indicator	Definition/Description	Benchmark
1.1 Formal organizational initiatives.	a) All-hazards risk assessment process completed (yes/no). b) Risk treatment/mitigation plan completed (yes/no). c) Do high-risk threats have a related mitigation plan that has been implemented? (yes/no). d) Health emergency management strategies/business plans/budgets are reviewed annually by health authority executive (yes/no).	Yes Yes Yes Yes
1.2 Community-level surveillance initiatives.	a) A collaborative approach is used in working with communities, analysis of local capabilities and capacity (yes/no). b) Percentage of communities (over 5,000) that have identified vulnerable populations at high risk during an emergency.	Yes Benchmark not available*

* Health authorities will need to gather the information in the first year to establish the percentage, and in the future, to measure and compare changes over time.

7.3 Health Emergency Preparedness

Table 2: Health Emergency Preparedness

Indicator	Definition/Description	Benchmark
2.1 Formal emergency management planning.	a) A five-year health emergency management strategic plan in place (yes/no). b) A comprehensive all-hazard emergency response plan in place (yes/no). c) Business continuity plan in place (yes/no).	Yes Yes Yes
2.2 Resource requirements to support emergency.	a) An emergency resource needs analysis completed (yes/no). b) An emergency resource needs plan in place (yes/no). c) Long-term resource acquisition strategy in place (yes/no).	Yes Yes Yes
2.3 Level of knowledge about emergency preparedness among health authority staff.	a) Percentage of health authority staff who have: <ul style="list-style-type: none"> - attended a health emergency management course; - participated in site-specific training. b) Public education materials on emergency preparedness on the health authority website (yes/no).	No benchmark available*

* Health authorities will need to identify the data in the first year to establish baseline data, and in subsequent years, use the data for comparative purposes. Where appropriate, health authorities will also need to determine performance targets to establish desired goals for the short- and long-term.

7.4 Indicators for Overall Health Emergency Management

Table 3: Indicators for Overall Health Emergency Management

Indicator	Definition	Benchmark
3.4 Total number of best practices implemented (by level of implementation).	Total number of best practices in each of the following categories (based on the best practices listed in Section 6 of this paper): <ul style="list-style-type: none"> • Fully implemented/in place. • Partially implemented. • Not implemented or in planning. 	No benchmark available* (Monitor the trends in the number of “fully implemented” best practices)

* Health authorities will need to identify the data in the first year to establish baseline data, and in subsequent years, use the data for comparative purposes. It is anticipated that this indicator will provide a “self-assessment guideline that will assist health authorities in their planning process.

8.0 EXTERNAL CAPACITY AND SUPPORT REQUIREMENTS

8.1 Key Success Factors/System Strategies

The previous sections of this report outlined the main components and best practices that health authorities could include in their health emergency management programs. However, it must be emphasized that successful implementation of an effective emergency management program will also depend on having in place overall system strategies/key success factors. These are:

- Knowledge and understanding by the Board and senior management of their roles and responsibilities in successfully executing emergency management plans. It is also important for them to highlight on an ongoing basis the importance of health emergency management across the organization.
- Allocation, by the health authorities, of sufficient resources to deliver high-quality programs.
- Well-trained and competent staff with the necessary policies and equipment to carry out their work efficiently.
- An information system that provides staff with appropriate support and management of the information needed to drive good policies and decisions.
- High-quality and competent management of the health emergency management program, including monitoring of performance measures.
- Clear mechanisms of reporting and accountability to the health authority and external bodies.

In addition, a strengthened legislative authority for health emergency management would further support the commitment to health emergency management programs at the highest level. This would validate and confirm the importance of these programs at provincial, regional and local levels.

8.2 Intersectoral Collaboration and Coordination

A health system emergency management program does not exist in isolation and will not achieve optimum efficiency or effectiveness unless it works collaboratively with other key partners involved with emergency management. Intersectoral collaboration and coordination on the local, regional and provincial levels is essential to ensuring the active participation of those who can contribute to a rapid and effective emergency response that will minimize the risk to individuals and communities.

On the provincial level, the key linkages are the Ministry of Health, BC Ambulance Service, Provincial Emergency Program (in the Ministry of Public Safety and Solicitor General), and the British Columbia Centre for Disease Control. As well, during an emergency, linkages will be required with the Provincial Emergency Coordinating Centre, and the provincial Ministry of Health Emergency Operations Centre. At the regional and local level, it is essential to link with municipal councils, regional and local first responders (i.e., police, fire and ambulance), health-

related organizations and networks, and voluntary and relief agencies that can contribute to the planning, preparation and response to local and regional emergencies/disasters.

8.3 Assessment and Evaluation of the Health Emergency Management Program

It will be important for health authorities to review their existing information, monitoring and evaluation processes with respect to their ability to measure and assess program performance. As health emergency management is a relatively new area, it may be necessary to:

- Establish procedures and guidelines to gather necessary program data.
- Acquire additional software to facilitate the process of recording and monitoring data (consistency and compatibility among the health authorities with respect to reporting systems is desirable).
- Plan regular survey or sampling projects, either individually or in partnership with other health authorities, and/or with the Ministry of Health, to assess performance on certain indicators. For example, the level of knowledge about health emergency management among the public will likely only be available by conducting a survey to gather baseline data, and repeating the survey at a later date to determine any differences over time. Such surveys may be conducted by each region or be developed as joint projects.
- Consider the staffing resources required for program monitoring and evaluation. Expertise will be needed in the fields of program monitoring, program analysis and program evaluation to ensure effective implementation and assessment of the Core Functions improvement process.

9.0 CONCLUSION

As a relatively new field, the studies of health system emergency management focus generally on expert opinion and “lessons learned”, rather than examples of unequivocal success. In evaluations of large-scale disasters, the emergency response was overwhelmed for the most part. For smaller scale disasters, varying degrees of success were demonstrated. As well, it is evident that the range and types of emergencies can vary so greatly, that organizations have difficulty in planning for all potential challenges.

However, there are some common elements that appear to be critical in supporting effective responses; in particular, the development of comprehensive emergency response plans, and well-articulated business continuity plans. Collaboration, coordination and open communication between all levels of government, relevant organizations and community agencies, are consistently cited as important, as are education and training initiatives. As well, for an effective health emergency management program, it is absolutely essential that a culture of emergency preparedness be imbedded into all parts of the organization.

REFERENCES

- Barbera, J.A., and Macintyre, A.G. 2002. *Medical and health incident management system: A comprehensive functional system description for mass casualty medical and health incident management*. Institute for Crisis, Disaster, and Risk Management. Washington, DC: George Washington University.
- Batho, S., Russell, L., and Williams, G. 1999. Crisis management to controlled recovery: The emergency planning response to the bombing of Manchester City Centre. *Disasters* 23 (3):217-233.
- Bissell, R.A., Pinet, L., Nelson, M., and Levy, M. 2004. Evidence of the effectiveness of health sector preparedness in disaster response: The example of four earthquakes. *Family & Community Health*, 27 (3):193-203.
- Booth, C.M., and Stewart, T.E. 2005. Severe Acute Respiratory Syndrome and critical care medicine: The Toronto experience. *Critical Care Medicine* 33 (1) Suppl.:S53-S60.
- Canadian Standards Association. 2005. *Canadian Standard on Emergency Management and Business Continuity Programs* [Working Draft 2].
- Doxtator, L.S., Gardner, D.E., and Medves, J.M. 2004. Responding to pandemic influenza: A local perspective. *Canadian Journal of Public Health* 95 (1):27-31.
- Federal/Provincial/Territorial Framework on Emergency Preparedness and Response. 2005. *National framework for health emergency management: Guideline for program development*. Ottawa, ON: Author.
- Feeney, J.M., Goldberg, R., Blumenthal, J.A. and Wallack, M.K. 2005. September 11, 2001, revisited. *Archives of Surgery* 140 (11):1068-1073.
- Health Canada. 2003. *Learning from SARS: Renewal of public health in Canada*. Ottawa, ON: Author.
- Henning, K.J., Brennan, P.J., Hoegg, C., O'Rourke, E., Dyer, B.D., and Grace T.L. 2004. Health system preparedness for bioterrorism: Bringing the tabletop to the hospital. *Infection Control and Hospital Epidemiology* 25 (2):146-155.
- Hoey, B.S., and Schwab, C.W. 2004. Level 1 center triage and mass casualties. *Clinical Orthopaedics and Related Research* 422 (May):23-29.
- Info-Lynk Consulting. 2005. *The health emergency management best practices matrix*. Prepared for the Ministry of Health.
- Kincaid, P., Donovan, J. and Pettitt, B. 2003. Simulation techniques for training emergency response. *International Journal of Emergency Management* 1 (3):238-246.

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- Kort, R., Stuart, A. J., and Bontovics, E. 2005. Ensuring a broad and inclusive approach: A provincial perspective on pandemic preparedness. *Canadian Journal of Public Health* 96 (6): 409-411.
- Lindsay, J. R. 2003. The determinants of disaster vulnerability: Achieving sustainable mitigation through population health. *Natural Hazards: Journal of the International Society for the Prevention and Mitigation of Natural Hazards* 28 (2-3):291-304.
- Ministry of Finance, Internal Audit and Advisory Services, Office of the Comptroller General. 2005. *Report on health emergency management, Ministry of Health*. Victoria, BC: Author.
- Ministry of Health, Population Health and Wellness. 2006. *Evidence paper: Health emergency management*. Victoria, BC: Author.
- National Fire Protection Association. 2004. *NFPA standard 1600 on disaster/emergency management and business continuity programs*. Quincy, MA: Author.
- New Zealand Coordinated Incident Management System. 1997. *Presentation pack*.
- Werner, D., Wright, K., Thomas, M., and Edgar, M. 2005. An innovation in partnership among first responders and public health: Bridging the gap. *Public Health Reports*, 120 Suppl.:64-68.

APPENDIX 1: THE EVIDENCE BASE FOR A MODEL CORE PROGRAM FOR HEALTH EMERGENCY MANAGEMENT

This document was prepared to support the development of the evidence-based core program in health emergency management by health authorities in BC. Health emergency management is one component of the BC Core Functions in Public Health initiative.

An overview is presented, of exemplary health emergency management practices recommended by professional experts in the field, as well as research evidence documenting effective measures and “lessons learned” in responding to a range of actual disasters and emergencies. An extensive literature search was conducted to identify evidence of effective program strategies.

Exemplary practices and related research evidence, where available, are described using a conceptual framework encompassing the following stages and steps in preparing for, and responding to, an emergency:

- Strategic planning approach, focusing on development of a five-year plan prepared in collaboration with other sectors and with all levels of government.
- Hazard, risk and vulnerability assessment, involving the identification of all potential hazards and an assessment of the relative levels of risk for each hazard.
- Mitigation/prevention measures to reduce the level of risk where possible.
- Preparedness, with a focus on establishing an emergency response plan.
- Initial response.
- Incident management systems to facilitate coordinated interagency approaches.
- Consequence management and recovery.
- Consistent quality improvement.

A number of reference documents are consistent in their recommendations supporting the above framework, and the research evidence supports and supplements these measures. However, it is also clear that the majority of evaluation studies focus on “lessons learned”, rather than on strategies that resulted in unequivocal success. It appears that the process of developing effective health emergency management requires more work. As an emerging field it is understandable that effective strategies are not yet established, and that the evidence is somewhat limited.

The scale of a disaster appears to be a major factor in predicting effective responses, with larger disasters often overwhelming response capacity. As well, it is evident that the range and types of emergencies can vary greatly, and that organizations have difficulty in planning for all potential challenges. However, there are some common elements that appear to be critical in supporting effective responses; in particular, the development of comprehensive emergency response plans, and well-articulated incident management systems. Collaboration, coordination and open communication among community agencies, and all levels of government, are consistently cited as important, as are education and training initiatives.

APPENDIX 2: PROGRAM SCHEMATIC - MODEL CORE PROGRAM FOR HEALTH EMERGENCY MANAGEMENT

Objective: To minimize the risk to communities and individuals an, in the event of an emergency, to provide effective health care responses and services.

Main Components	Implementation Objectives (Best Practices)	Outputs	Linking Constructs	Short-term Outcomes	Long-term Outcomes
Surveillance of Health Risks and Vulnerabilities	<ul style="list-style-type: none"> • Gather information on biological hazards, natural hazards, technological hazards, civil and political hazards and organizational hazards. • Identify the overall capabilities, the capacity and the vulnerabilities of regional and local health-related resources. • Identify, with communities, vulnerable groups of people and their locations. 	<ul style="list-style-type: none"> • Inventory of regional and local resources. 	<ul style="list-style-type: none"> • Access to comprehensive information on health risks, regional/local capacity and vulnerable groups. 	<ul style="list-style-type: none"> • Clear information on which to base decisions. 	<p>Increased knowledge, coordination and resources to respond to health emergencies/ disasters.</p> <p>Improved population health.</p>
Conduct Hazard, Risk and Vulnerability Analysis	<ul style="list-style-type: none"> • Ensure information is complete, accurate and thorough. • Conduct risk analysis to determine the probability of occurrence and potential consequences of each hazard. • Assess the vulnerability of community infrastructure, capabilities and capacity. • Assess the factors that may increase the vulnerability of specific groups of people. 	<ul style="list-style-type: none"> • Analysis of the risk level for all potential hazards. 	<ul style="list-style-type: none"> • Full understanding of the risk level of potential threats and their consequences. 	<ul style="list-style-type: none"> • Increased effectiveness of planning. 	
Minimize Potential Emergencies Through Mitigation	<ul style="list-style-type: none"> • Evaluate each risk, considering the treatment alternatives, including their costs, consequences and likelihood of an occurrence. • Decide on whether to accept the risk or take specific action to mitigate. • Prepare a risk treatment plan and include in the health emergency management strategic plan, and the health authority corporate plan and budget. 	<ul style="list-style-type: none"> • Risk treatment plan integrated into health authority plan and budget. 	<ul style="list-style-type: none"> • Mitigation of health hazards. 	<ul style="list-style-type: none"> • Reduced likelihood of health emergencies. 	
Preparedness for Health Emergencies	<ul style="list-style-type: none"> • Implement a strategic approach to planning. • Develop/coordinate emergency response plans, at corporate, sub-area and site levels, which address all potential risks and identify response plans and procedures, including: <ul style="list-style-type: none"> ○ Communication and education measures. ○ Resource management. ○ Training and exercising. • Collaborate with municipal/community partners to coordinate planning. • Develop hazard-specific emergency response plans where appropriate. • Integrate ongoing evaluation of all programs and plans. 	<ul style="list-style-type: none"> • Number of communities that have emergency response plans in place. • Number of necessary resources/equipment in place. • Number of health authority staff that have been trained. 	<ul style="list-style-type: none"> • Increased knowledge, skill and resources to respond to an emergency. 	<ul style="list-style-type: none"> • Reduced impact of health emergencies. 	