

Preparing Health Care Facilities for Climate Change

Resource Guide



INTRODUCTION

This Resource Guide was developed to support health care facilities as they are assessing their resiliency to climate change using the Resiliency Assessment Checklist. The Guide is also intended to offer information and practice examples for facilities undertaking knowledge-gathering or seeking to improve their resiliency through new strategies or initiatives.

The resources have been divided into five major subject areas:

- General Information
- Emergency Management
- Supply Chain Management
- Health Care Services
- Facilities Management and Infrastructure

Each resource is accompanied by a document link as well as names and links for the authors or organisations who developed the resource. Additionally, each resource listing includes a document key, which contains information about the document's Type, Availability, Geographic Focus, and Year of Publication, as well as a list of subtopics to which the resource relates.

The Resource Guide is one component of *the Health Care Facility Climate Change Resiliency Toolkit*, which was co-developed by the Canadian Coalition for Green Health Care, with research and technical support from Health Canada, and funding from the Nova Scotia Climate Change Adaptation Fund. Further information about this project, the Toolkit, and climate change resiliency are available online at www.greenhealthcare.ca/climateresilienthealthcare

GENERAL INFORMATION

Healthy Hospitals, Healthy Planet, Healthy People ([Link](#))

World Health Organization ([Link](#)) & Health Care Without Harm ([Link](#))

This discussion draft is based on the World Health Organization's (WHO) mandate from member states to develop "programmes for health systems that will contribute to reducing their own greenhouse gas emissions". The paper begins to define a framework for analysing and addressing the health sector's climate footprint – including identifying seven aspects of a climate-friendly hospital. It also draws on a series of examples from around the world that demonstrate that the health sector is indeed already beginning to provide leadership in this most important area of concern to the global community.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: International • Publication: 2009

Key Topics: climate change, greenhouse gases, health

Atlas of Health and Climate ([Link](#))

World Health Organization ([Link](#))

The *Atlas of health and climate* is a product of this unique collaboration between the meteorological and public health communities. It provides sound scientific information on the connections between weather and climate and major health challenges. These range from diseases of poverty to emergencies arising from extreme weather events and disease outbreaks. They also include environmental degradation, the increasing prevalence of noncommunicable diseases and the universal trend of demographic ageing.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: International • Publication: 2012

Key Topics: climate change, disaster preparedness, greenhouse gases, health

Hospital Disaster Readiness: Why are we unprepared? ([Link](#))

The Centre for Excellence in Emergency Preparedness ([Link](#))

This paper discusses three key reasons for the discrepancy between high and middle level administration's perception of readiness and frontline caregivers' perception of a lack thereof. The three reasons are the distance between the administrator and the individuals actually delivering the care in a disaster setting; the fact that disaster preparedness is an "orphan" entity; and the absence of any formal assessment of health care facility disaster preparedness in Canada.

Type: Article • Availability: Free Online • Geographic Focus: Canada • Publication: 2009

Key Topics: disaster preparedness

Public Health and Climate Change ([Link](#))

The Resource Innovation Group ([Link](#)) & Biositu ([Link](#))

This guidebook is designed to support efforts to initiate and integrate climate planning within county, regional and tribal public health departments and agencies. It will provide you and your department with the knowledge and skills to build capacity to address climate impacts and/or develop a climate action plan for your department. The strategies and activities will enhance your efforts to both reduce greenhouse gas emissions and to prepare for impacts.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: USA • Publication: 2009

Key Topics: climate change, disaster preparedness, greenhouse gases, health

Best environmental practices in the healthcare sector ([Link](#))

University of Applied Sciences and Arts, Northwestern Switzerland ([Link](#))

This Guide is designed to be a practical tool for daily implementation. It fills the gap between commitments to sustainable development and the undertaking of concrete measures. By suggesting eco-efficiency practices and providing easy-to-implement tools, the Guide will enable hospital management to handle and benchmark the environmental aspects related to its business. Additionally, the Guide involves hospital staff as key greening actors and provides a good basis for integrated environmental management systems.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: International • Publication: 2010

Key Topics: climate change, energy, greenhouse gases

EMERGENCY MANAGEMENT

Hospital emergency response checklist ([Link](#))

World Health Organization: Regional Office for Europe ([Link](#))

The Hospital emergency response checklist was developed to assist hospital administrators and emergency managers in responding effectively to the most likely disaster scenarios. This tool comprises current hospital-based emergency management principles and best practices and integrates priority action required for rapid, effective response to a critical event based on an all-hazards approach.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: Europe • Publication: 2011

Key Topics: disaster preparedness, emergency management

Emergency preparedness: what every health care worker needs to know ([Link](#))

The Centre for Excellence in Emergency Preparedness ([Link](#))

It is essential that all health care workers, regardless of profession or position, understand at least the basic concepts of emergency preparedness because of the wide variety of roles they may be asked to fulfill in an emergency situation. This article reviews the basic concepts in emergency preparedness and management with a specific focus on IMS in health care.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: Canada • Publication: 2005

Key Topics: disaster preparedness, emergency management

Best Practices for Hospital Preparedness ([Link](#))

American College of Emergency Physicians ([Link](#))

This primer provides background on “best practices” that hospitals may wish to adopt to improve institutional preparedness. This primer is not comprehensive, and does not address mitigation planning, nor continuity of operations issues such as utilities failures and information technology failures. Though this planning is also necessary, this document will emphasize preparedness and response activities involving a “typical” external incident.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: USA • Publication: 2010

Key Topics: disaster preparedness, emergency management

Health and Safety in Emergency Management ([Link](#))

Ontario Safety Association for Community & Healthcare ([Link](#))

This guide has been designed to help organizations protect staff in an emergency. Its aim is to help health care and community care organizations build on the programs and standards they may already have in place. It does not address issues of patient or public safety. Instead, it highlights those steps and processes that employers should consider as they make sure their emergency management plan is the best it can be for the sake of their staff.

Type: Best Practices Resource • Availability: For Purchase • Geographic Focus: Ontario • Publication: 2006

Key Topics: emergency management, health

Emergency Management: Taking a Health Perspective ([Link](#))

Health Canada ([Link](#))

This issue of the *Health Policy Research Bulletin* focuses on the public health impacts of disasters and draws upon a growing body of research that is helping to strengthen emergency management’s capacity to reduce those impacts. Additionally, this issue explores the benefits and challenges of strengthening the research connections between disciplines and sectors, including disaster studies, emergency management, and health and social services, and suggests 12 areas for future research and identifies opportunities for collaboration.

Type: Journal/Publication • Availability: Free Online • Geographic Focus: Canada • Publication: 2009

Key Topics: disaster preparedness, emergency management, health

Health Care Emergency Management: Principles and Practice ([Link](#)) ([Excerpt](#))

Jones & Bartlett Learning ([Link](#))

This text specifically addresses hospital and health system preparedness in the face of a large scale disaster or other emergency. Administrators, emergency preparedness coordinators, and clinical staff who are charged with managing preparedness and emergency management functions for hospitals or healthcare systems will turn to this guide as an essential reference in planning for disasters, terrorism, and public health emergencies.

Type: Book/Manual • Availability: For Purchase • Geographic Focus: USA • Publication: 2011

Key Topics: disaster preparedness, emergency management

Developing a Sustainable Emergency Management Program for Hospitals ([Link](#))

Ontario Hospital Association ([Link](#))

The OHA Emergency Management Toolkit: Developing a Sustainable Emergency Management Program for Hospitals was released in January 2009. The goals of the Toolkit are to provide practical strategies, checklists and templates to assist hospitals with the development and implementation of an Emergency Management Program.

Type: Best Practices Resource • Availability: For Purchase • Geographic Focus: Ontario • Publication: 2009

Key Topics: emergency management

Strengthening health systems' response to crises ([Link](#))

World Health Organization, Europe ([Link](#))

This report is a result of a three-day workshop on strengthening national disaster preparedness capacity of health systems to respond to crises in the WHO European Region. The workshop was attended by representatives of 12 Member States of the European Region. Lessons learnt from previous crises clearly indicate that sound preventive efforts largely pay off in future emergencies. Preparedness programmes are more effective when they are designed and implemented as a continuous process, based on a sound analysis of hazards and vulnerabilities.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: Europe • Publication: 2004

Key Topics: disaster preparedness, emergency management

Ministry Emergency Response Plan ([Link](#))

Ontario Ministry of Health and Long-Term Care, Emergency Management Unit ([Link](#))

The Ministry Emergency Response Plan (MERP) describes how the Ontario Ministry of Health and Long-Term Care will lead or contribute to the response to an emergency. This plan addresses one of three

distinct areas of response in which different parts of the ministry may be engaged during an emergency: Emergency Response. It does not address Emergency Procedures or Continuity of Operations.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: Ontario • Publication: 2007

Key Topics: emergency management

Surge Hospitals: Providing Safe Care in Emergencies ([Link](#))

The Joint Commission ([Link](#))

It is crucial that health care organizations understand what surge hospitals are and how they can plan for and establish them, including whom they should work with to do so. Where outside of its own walls does a health care organization go to expand its surge capacity? Who should be involved in planning, establishing, and operating surge hospitals? This paper provides the answers to these questions and offers real-life examples of how surge hospitals were established on the Gulf Coast.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: USA • Publication: 2006

Key Topics: disaster preparedness, emergency management, health

SUPPLY CHAIN MANAGEMENT

Emergency Water Supply Planning Guide for Hospitals and Health Care Facilities ([Link](#))

American Water Works Association ([Link](#)) & Centers for Disease Control and Prevention ([Link](#))

The objective of this Emergency Water Supply Planning Guide for Hospitals and Health Care Facilities is to help health care facilities develop a robust Emergency Water Supply Plan as part of its overall facility Emergency Operations Plan and to meet the published standards set forth by the Joint Commission and the Center for Medicare and Medicaid Services. The guide is intended for use by any health care facility regardless of its size or patient capacity.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: USA • Publication: 2009

Key Topics: emergency management, supply chain, water

Blackout 2003: Preparedness and Lessons Learned from the Perspectives of Four Hospitals ([Link](#))

Prehospital and Disaster Medicine ([Link](#))

The blackout in North America of August 2003 was one of the worst on record. It affected eight states and parts of Canada for over 24 hours. Additionally, two large U.S. cities suffered from a loss of water pressure and a subsequent ban on the use of public supplies of potable water that lasted four days. This paper includes a review of after-action reports from four inner-city, urban hospitals supplemented by accounts from the authors' hospital's emergency operations center.

Type: Article • Availability: For Purchase • Geographic Focus: North America • Publication: 2005

Key Topics: disaster preparedness, emergency management, supply chain, water

Health care logistics: who has the ball during disaster? ([Link](#))

Emerging Health Threats Journal ([Link](#))

When disaster strikes, despite having tenable plans for routine replenishment and operations, many health care organizations find themselves ill-prepared, ill-equipped, and without effective mechanisms in place to sustain operations during the immediate aftermath of a crisis. Health care operations can be abruptly halted due to the non-availability of supply. The purpose of this work is to add to a necessary, growing body of works related specifically to health care logistics preparedness and disaster mitigation.

Type: Article • Availability: Free Online • Geographic Focus: USA • Publication: 2011

Key Topics: disaster preparedness, emergency management, facility management, supply chain

Dietary Disaster Plan ([Link](#)) ([Excerpt](#))

American Health Care Association ([Link](#))

This manual contains comprehensive and practical information for planning both before and during a disaster. It includes menus and recipes for three days, assuming no utilities, and seven days assuming some utilities, as well as special diet spread sheets, inventory/buying guides, staff training outlines, sample policies/procedures, and supply lists.

Type: Book/Manual • Availability: For Purchase • Geographic Focus: USA • Publication: 2006

Key Topics: disaster preparedness, food, supply chain

Disaster Preparedness Manual for Healthcare Materials Management Professionals ([Link](#))

Association for Healthcare Resource & Materials Management ([Link](#))

This manual provides supply chain professionals with an overview of the specific value and expanded leadership roles they can play in the planning, mitigation, response, and recovery phases of the healthcare sector's disaster preparedness. With specific suggestions and ideas for procurement and distribution to help sustain their operation's agility and redundancy during a disaster, materials managers will learn what actions to take before, during, and after a disaster to help their organizations function more effectively.

Type: Book/Manual • Availability: For Purchase • Geographic Focus: USA • Publication: 2007

Key Topics: disaster preparedness, supply chain

Healthcare Purchasing News January 2013 Issue: Products and Services ([Link](#))

Healthcare Purchasing News ([Link](#))

Healthcare Purchasing News is a business newsmagazine for purchasing decision-makers at hospitals and health systems. The Products and Services section of the January 2013 edition focuses on disaster readiness for supply chain management, with articles on topics such as disaster planning and preparedness, maintaining an active supply chain, and organizational roles during a disaster, based on insights from leading supply chain executives.

Type: Journal/Publication • Availability: Free Online • Geographic Focus: USA • Publication: 2013

Key Topics: disaster preparedness, supply chain

Conducting Food Origin Audits: a step-by-step guide ([Link](#))

Canadian Coalition for Green Health Care ([Link](#))

This document is a guide to conducting a food origin audit. The audit process is valuable as it helps organizations or institutions determine the origin of the food they purchase. Once completed, the audit provides the purchaser a baseline from which to track its progress towards purchasing more local food. The basic process of a food origin audit is that the food manufacturer responsible for bringing an audited food to market is contacted and asked to provide details on the origin of the ingredient(s) in that food.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: Ontario • Publication: 2011

Key Topics: food, supply chain

Report on Food Provision in Ontario Hospitals and Long-Term Care Facilities ([Link](#))

Canadian Coalition for Green Health Care ([Link](#))

This report is the first deliverable for the University of Guelph/OMAFRA-funded project, “Exploring the Feasibility and Benefits of Incorporating Local Foods into Ontario’s Health Care System”. The report analyzes and draws key conclusions from data gathered in Ontario on seven broad topics, including current practices being used to procure and prepare food, and making changes to current procurement, preparation and decision-making practices.

Type: Article • Availability: Free Online • Geographic Focus: Ontario • Publication: 2012

Key Topics: food, supply chain

HEALTH CARE SERVICES

Addressing Climate Change in the Health Care Setting: Opportunities for Action ([Link](#))

Health Care Without Harm ([Link](#)) & Practice Greenhealth ([Link](#))

This document proposes a multi-pronged approach for facilities operation to address climate change: transportation, energy/operations, energy/built environment, waste and food service. It provides case studies to demonstrate real-life approaches and identifies organizational assistance opportunities (see resources).

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: International • Publication: 2009

Key Topics: climate change, energy, facility management, food, infrastructure, transportation, waste, water

Health in the green economy: Co-benefits to health of climate change mitigation ([Link](#))

World Health Organization ([Link](#))

WHO's Health in the Green Economy series is reviewing the evidence about expected health impacts of greenhouse gas mitigation strategies in light of mitigation options. The aim is to propose important health co-benefits for sector and health policy-makers, and for consideration in the next round of IPCC mitigation reviews. Opportunities for potential health and environment synergies are identified here for health care facilities.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: International • Publication: 2011

Key Topics: climate change, greenhouse gases, health

Managing the health effects of climate change ([Link](#))

UCL-Lancet Commission on Managing the Health Effects of Climate Change ([Link](#))

This major report on managing the health effects of climate change says that climate change is the biggest global-health threat of the 21st century. The report outlines the major threats - both direct and indirect - to global health from climate change through changing patterns of disease, water and food insecurity, vulnerable shelter and human settlements, extreme climatic events, and population growth and migration.

Type: Article • Availability: Free Online • Geographic Focus: International • Publication: 2009

Key Topics: climate change, food, greenhouse gases, health, water

Saving Carbon, Improving Health ([Link](#))

National Health Service, Sustainable Development Unit ([Link](#))

The NHS Carbon Reduction Strategy for England sets an ambition for the National Health Service to help drive change towards a low carbon society. The strategy shows the scale of reduction in carbon required and highlights the key areas for action identified by the NHS Sustainable Development Unit, including: energy and carbon management, procurement and food, travel and transport, water, waste, building design, organisational development, partnerships, governance, and finance.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: UK • Publication: 2009

Key Topics: climate change, health, energy, design, greenhouse gases, food, infrastructure, supply chain, waste, water, transportation

The Hospital Board's Role in Disaster Readiness ([Link](#))

The Walker Company ([Link](#))

This paper discussed the role of the hospital board in preparing for natural disasters. Although the board is not responsible for the development and implementation of the hospital's disaster plan, it is the board's fiduciary responsibility to ensure that a clear plan is in place, and the funding and resources necessary to carry out the plan are available. Boards also have an opportunity to use disaster planning to improve the quality of service provided to the community, strengthen community relationships, and build lasting community trust and partnerships that benefit the hospital in many ways.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: USA • Publication: 2010

Key Topics: disaster preparedness

FACILITIES MANAGEMENT & INFRASTRUCTURE

Reducing Earthquake Risk in Hospitals ([Link](#))

GeoHazards International ([Link](#)) & Swiss Re ([Link](#))

This manual will help you to reduce one of the major sources of earthquake-related damage and losses in hospitals: medical equipment and supplies, contents, architectural elements, and building utility systems. Damage to these items in past earthquakes has caused deaths, injuries, loss of building function, and economic loss, even in cases in which the building structure itself was essentially undamaged.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: International • Publication: 2009

Key Topics: construction, design, disaster preparedness, energy, infrastructure, supply chain

How to safeguard health facilities ([Link](#))

World Health Organization ([Link](#))

Building hospitals safe from disaster or making existing ones safer by retrofitting is surprisingly cost-effective. In many new health facilities, incorporating comprehensive protection from earthquakes and extreme weather events into the design from the beginning will add no more than 4% to the cost. Here are six actions that can make hospitals safe.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: International • Publication: 2009

Key Topics: construction, design, disaster preparedness, infrastructure

Climate change risks and opportunities in hospital adaptation ([Link](#))

International Journal of Disaster Resilience in the Built Environment ([Link](#))

The purpose of this paper is to assess the vulnerabilities and opportunities of existing hospital facilities faced with climate-related extreme weather events and to identify adaptive strategies that will enable existing hospital facilities to assist rather than hinder healthcare continuity and quality during these events. Four major hospitals in Australia and New Zealand, significantly exposed to climate change-associated extreme weather event risks, were selected as case studies. A risk management workshop was conducted for each case study using the risk and opportunity management system methodology.

Type: Article • Availability: For Purchase • Geographic Focus: Oceania • Publication: 2011

Key Topics: climate change, construction, design, disaster preparedness, emergency management, infrastructure

Save lives: Make hospitals safe in emergencies ([Link](#))

World Health Organization ([Link](#))

To commemorate World Health Day in 2009, WHO published this series of best practices that can be implemented, in any resource setting, to make hospitals safe during emergencies. Apart from safe siting and resilient construction, good planning and carrying out emergency exercises in advance can help maintain critical functions. Proven measures range from early warning systems to a simple hospital safety assessment, from protecting equipment and supplies to preparing staff to manage mass casualties and infection control measures.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: International • Publication: 2009

Key Topics: construction, design, emergency management, infection control, infrastructure, supply chain

Energy Efficiency Opportunities in Ontario Hospitals ([Link](#))

Ontario Hospital Association ([Link](#))

This report was commissioned by the OHA to increase awareness within the hospital community and the Ontario government in regards to hospital energy usage and conservation opportunities. As part of this study all Ontario hospitals were surveyed. The survey used for this report asked all respondents to identify factors that hinder conservation efforts. There have been many success stories in conserving energy in Ontario hospitals, some of which are highlighted. They have demonstrated that considerable opportunities exist for hospitals to become more efficient in their use of utilities.

Type: Best Practices Resource • Availability: Free Online • Geographic Focus: Ontario • Publication: 2006

Key Topics: energy, facility management, infrastructure

Resilience Strategies of Healthcare Facilities: Present and Future ([Link](#))

Nebil Achour & Andrew D.F. Price, Loughborough University ([Link](#))

The purpose of this paper is to explore UK healthcare resilience strategies, define gaps and provide suggestions based on international best practice. The paper provides a significant contribution in terms of reducing the fragmentation of healthcare resilience-related work done previously; evidence of better practice from local and international facilities which will help in enhancing the resilience of healthcare facilities in the UK and elsewhere in the world.

Type: Article • Availability: Free Online • Geographic Focus: UK • Publication: 2010

Key Topics: disaster preparedness, infrastructure

Principles of Disaster Mitigation in Health Facilities ([Link](#))

Pan American Health Organization ([Link](#))

This book presents key principles of disaster mitigation that can be of value to health facilities throughout the Americas. By compiling this information, the Pan American Health Organization hopes to reach national and local authorities, hospital administrators, officials and staff, and other human resources connected in significant ways to health facilities. The book is aimed at health professionals, personnel responsible for health facility operations and maintenance, educators, architects and engineers, and members of the construction industry.

Type: Book/Manual • Availability: Free Online • Geographic Focus: Americas • Publication: 2000

Key Topics: construction, design, disaster preparedness, facility management, infrastructure
