Australian Disaster Resilience Handbook Collection

2019

Health and Disaster Management

Australian Institute for Disaster Resilience

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AUSTRALIAN DISASTER RESILIENCE HANDBOOK COLLECTION

Health and Disaster Management

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Australian Disaster Resilience Handbook Collection

The Australian Disaster Resilience Handbook Collection provides guidance on national principles and practices for disaster resilience.

The Handbook Collection:

- provides an authoritative, trusted and freely available source of knowledge about disaster resilience principles in Australia
- aligns national disaster resilience strategy and policy with practice, by guiding and supporting jurisdictions, agencies and other organisations and individuals in their implementation and adoption
- highlights and promotes the adoption of good practice in building disaster resilience in Australia
- builds interoperability between jurisdictions, agencies, the private sector, local businesses and community groups by promoting use of a common language and coordinated, nationally agreed principles.

The Handbook Collection is developed and reviewed by national consultative committees representing a range of state and territory agencies, governments, organisations and individuals involved in disaster resilience.
The collection is sponsored by the Australian Government Department of Home Affairs.

Access to the Handbook Collection and further details are available on the Australian Disaster Resilience Knowledge Hub: **www.knowledge.aidr.org.au/handbooks**

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Executive summary

Disasters pose great challenges for the health system because of their physical, psychosocial and economic impacts on communities, and in disrupting a system that already has significant demands on its resources.

The health system is large and complex and is comprised of a range of disciplines that all act to ensure community wellbeing across Australia. It ranges from single general practices and remote rural clinics to large tertiary hospitals employing thousands of people. A significant and growing number of people are employed in the Australian health and social assistance sector. People require the assistance of the health system when disasters occur, and many existing conditions are exacerbated directly by the effects of the disaster or through problems caused by disruption to the health system caused by the disaster.

This handbook outlines the core principles and concepts that underpin how the health system can develop plans to reduce the effects and level of disruption to communities in Australia before, during and after disasters. Concepts such as risk, resilience, mitigation, preparedness, response and recovery are considered. The challenges of areas such as law, ethics, communications and inclusion are also considered.

The handbook outlines the *Australian Health Emergency Response Arrangements* (Department of Health and Ageing 2011) to assist in planning and preparedness at all levels in the health system.

The range of situations that may trigger a disaster is large and varied and the consequences can be complex and difficult to predict. A shared challenge in every disaster is to minimise the disruption to the health system and provide continuity of health services to support community health and wellbeing.

Finally, the handbook explores how parts of the health system contribute to the management of disasters, specifically in disasters where the health sector will be the lead, such as a pandemic or thunderstorm asthma event.

This handbook is intended to guide and assist individuals and organisations working in the health system to understand their capability and capacity to support communities before, during and after disasters. These include Commonwealth, state, territory and local governments, emergency management agencies, non-government organisations, the private sector and community groups.

Importantly, the handbook will assist people working in the emergency management sector by providing insight to facilitate collaboration and cooperation to get the best health outcomes for communities impacted by disasters.

Within these organisations, the handbook is most likely to be used by individuals who develop policies, capabilities, emergency management plans and other documents that incorporate disaster health within their own jurisdictions, agencies, organisations, and communities.

The handbook may also be of value to educators, planners, businesses and the private sector that are involved in, or interact with, the health system.

This handbook is available on the Australian Disaster Resilience Knowledge Hub:
www.knowledge.aidr.org.au/resources/health-and-disaster-management-handbook

For feedback and updates to this handbook, please contact AIDR: **enquiries@aidr.org.au**

Chapter 1: Concepts and principles of health disaster management

Disaster or emergency

Various terms are used to describe events that impact the health system. These include 'disaster', 'emergency', 'hazard', 'event' and 'incident'. The terms 'disaster' and 'disaster management' are used in this handbook to differentiate between emergencies experienced regularly in the health sector from those experienced in a 'disaster context'. For more information refer to the Australian Disaster Resilience Glossary on the Australian Disaster Resilience Knowledge Hub: **www.knowledge.aidr.org.au/glossary**

Purpose

The *Health and Disaster Management Handbook* represents the ongoing evolution in thinking and practice regarding disasters and the health system. The first edition of this handbook, *Disaster Health*, was developed in 2011 and had its roots in the *Disaster Medicine Manual*. This edition represents our evolving understanding of how community wellbeing is affected and can be maintained when confronted with the effects of disaster on the health system and communities. Disaster and disaster management is a dynamic field. Learnings and changes in thinking, practice and policy are reflected in this revised edition of the handbook.

The goals of this handbook are to:

- Explore key concepts, theories and frameworks in health disaster management.
- Contribute towards a common language and conceptual framework to enhance collaboration between health and other organisations contributing to disaster management.
- Provide concepts, knowledge and practical advice for people working in the health sector to enhance reflection and evaluation of practice for those assisting communities.

Context

The *Health and Disaster Management Handbook* is part of the Australian Disaster Resilience Handbook Collection and should be read in conjunction with other handbooks including *Australian Emergency Management Arrangements* (AIDR 2019) and *Community Recovery* (AIDR 2018). The *National Strategy for Disaster Resilience* (COAG 2011), *National Disaster Risk Reduction Framework* (Australian Government Department of Home Affairs 2018) and *Profiling Australia's Vulnerability* (Australian Government Department of Home Affairs 2018) are also key reference documents.

This 2019 revision of the *Health and Disaster Management Handbook*, managed by AIDR, has drawn upon expertise across jurisdictions, the health sector, government and non-government organisations, universities and research centres. This revision recognises the complexity of disaster management and the change in focus from hazard management to disaster risk reduction and resilience.

Scope

This handbook covers the health disciplines needed to support community wellbeing in the face of disaster.

It outlines nationally agreed principles and guidance about health disaster management. It does not attempt to provide an exhaustive coverage of all the health aspects of disasters. The handbook reflects national and international expertise, strategies, policies, guidelines, standards and research.

The handbook is divided into three parts:

- **Chapter 1** covers the core concepts to build an understanding of disasters and how community wellbeing can be maintained through health disaster management. It includes considerations such as risk, communication, continuity of service, legal issues, ethics and community inclusion.
- **Chapter 2** covers the source of risk to the health system in the disaster context.
- **Chapter 3** covers the key areas of the health system such as pre-hospital, public health, primary care, hospitals, mental health and other parts of the health system.

Key considerations

- Disasters are part of a continuum ranging from incidents through to catastrophic situations.
- Whilst disasters may be a relatively rare phenomenon for an individual, from a national perspective they occur reasonably frequently.
- Health is a critical element of disaster management.
- Disasters can impact the health and wellbeing of people and require a response from the health system.
- A resilient health system is a part of society's critical infrastructure.
- Simulations and exercises build capability and assist in evaluating plans and developing expertise.

1.1 Introduction and background

Research has produced the following insights about disasters:

- Disasters can be large complex situations that can challenge all levels of government including the health sector.
- Disasters will, to varying degrees, disrupt the physical, environmental, psychological, social and economic functioning of communities. This can have significant health effects.
- The effects of a disaster can last many years and our understanding should not be limited to acute medical or loss of tangible assets.
- Our understanding of the health aspects of disasters mirrors the changes in our understanding of what constitutes health and how to maintain community wellbeing in general.
- Disasters can disrupt communities to a point where normal functioning is not possible and this has associated implications for the health system.
- A more comprehensive and in-depth understanding of how disasters affect community wellbeing and what is needed to address those effects is needed.

References and further reading are available in the references section and on the Australian Disaster Resilience Knowledge Hub**:**
www.knowledge.aidr.org.au/resources/health-and-disaster-management-handbook/

Disasters are part of a continuum ranging from local incidents and emergencies through to catastrophic situations. In a disaster, systems are affected to a point where they are forced into non-routine operation or functioning such as activating emergency and business continuity plans. The degree of change an organisation or community experiences determines the type of support needed.

For further information, refer to *Australian Emergency Management Arrangements* (AIDR 2019) for features of emergencies of increasing impact.

Disasters are not experienced regularly enough to be considered routine for the vast majority of people in the health sector. It can be challenging to get people who operate daily in high pressure environments to invest resources in planning and preparing for disasters. Plans can act as roadmaps of how to manage during a disaster when normal work processes are not sufficient. Simulations and exercises build capability and assist in evaluating plans and developing expertise. An organisation or a community could be exposed to a large number of possible disaster scenarios. However, there is a relatively limited spread of consequences and associated measures to deal with the risk. This has shifted the focus from disaster management to managing the effects of disasters and building individual, organisational and community resilience.

1.1.1 Disasters and health

Disasters can create situations where the health system is stretched to a point where 'business as usual' is no longer adequate in providing services to the community. All disasters can have an impact on the health system, not only by direct effects such as injuries and the exacerbation of existing medical conditions but by disrupting the community's access to health services.

The main goal is to ensure that disruption to the services that underpin good health is minimised and the sense of wellbeing in communities is restored.

The health sector is also the lead organisation in some disasters, including heatwave, pandemic and thunderstorm asthma, depending on local jurisdictional arrangements.

1.1.2 Disaster resilience

Resilience is the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management (UNDRR 2017).

In Australia, the *National Disaster Risk Reduction Framework* (Australian Government Department of Home Affairs 2018) outlines a coordinated approach to reducing disaster risk to enable resilience. It guides national, whole-of-society efforts to proactively reduce disaster risk in order to minimise the loss and suffering caused by disasters.

'In Australia, we are all too familiar with the devastation and disruption that natural hazards such as bushfires, cyclones and flooding can cause. Over the last decade we have made great progress towards being more resilient to natural hazards and in reducing disaster risk. However, with the driver of a changing climate there is growing potential for some natural hazards to occur at unimagined scales, in unprecedented combinations and in unexpected locations. Many natural hazards are becoming more frequent and intense. More people and assets are exposed and vulnerable to these hazards. The essential services we rely on – power, water, telecommunications, the internet and finance – are also exposed to these impacts.'

National Disaster Risk Reduction Framework, Australian Government Department of Home Affairs 2018

Profiling Australia's Vulnerability: The interconnected causes and cascading effects of systemic disaster risk (Australian Government Department of Home Affairs 2018) outlines a new way of looking at disaster risk, focussing on systemic vulnerability and an understanding of disaster risk in the context of vulnerability, capacity, exposure of persons and assets, hazards characteristics and the environment.

It recognises the interconnectedness of systems delivering essential services including the health system, and the lack of tolerance for loss and disruption to a reliable and consistent supply of services from these systems.

'Disasters and disruptions provide an opportunity to learn. Distilling the causes and sharing experiences of what contributed to each disaster, providing evidence or unpicking what happened, all provide important opportunities to learn so that measures can be taken to reduce the chance of the same thing happening again.'

Profiling Australia's Vulnerability, Australian Government Department of Home Affairs 2018

The *National Strategy for Disaster Resilience* (COAG 2011) provides the basis for governments to shift from the traditional emphasis of disaster response and recovery, to a greater focus on prevention, mitigation, preparedness and building capability. The strategy is guided by the principle of shared responsibility.

1.1.3 Disaster risk reduction

Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development (UNDRR 2017).

In 2015, the *Sendai Framework for Disaster Risk Reduction 2015-2030* was adopted by Australia and other members of the United Nations. It states that to strengthen resilience, countries should prevent new and reduce existing disaster risk. It outlines four priorities for action: understanding disaster risk; strengthening disaster risk governance to manage disaster risk; investing in disaster risk reduction for resilience; enhancing disaster preparedness for effective response and to 'Build Back Better' in recovery, rehabilitation and reconstruction.

1.1.4 Complexity and disaster management

Our society and economy are becoming increasingly dependent on complex, global webs of infrastructure, technologies and supply chains. Despite the benefits of these technologies, they can result in unpredictable, complex and cascading failures, including in the health sector.

Community reliance on, and expectations about, the provision of products and services can be high and tolerance of system failures low. The health system is not immune from these challenges.

The shift in focus from the hazard to the impact on communities has been a key development in disaster risk management and risk reduction.

Frameworks underpinning disaster risk reduction

National Disaster Risk Reduction Framework, Australian Government Department of Home Affairs 2018
www.homeaffairs.gov.au/emergency/files/national-disaster-risk-reduction-framework.pdf

Profiling Australia's Vulnerability: the interconnected causes and cascading effects of systemic disaster risk, Australian Government Department of Home Affairs 2018
www.knowledge.aidr.org.au/resources/profiling-australias-vulnerability

Sendai Framework for Disaster Risk Reduction 2015-2030, UNDRR 2015
www.knowledge.aidr.org.au/resources/sendai-framework

1.1.5 Integrated disaster management

A whole of community approach is essential to ensuring good health outcomes are achieved. Most community-based health care is not under the direct control of state governments, with a significant proportion of hospital capacity in Australia in the private sector.

Coordination and cooperation between the three levels of government and across agencies and departments at each level is therefore required in managing health risks and achieving sustained community wellbeing in disasters. This applies across all activities and is particularly important during the disaster response phase where time and resources are limited and when agency and sector plans should be integrated.

Non-government organisations (NGOs) are often heavily involved in disaster management activities and therefore should also be integrated into health disaster arrangements. A multi-disciplinary, all-agency approach recognises that governments, healthcare services, healthcare workers and communities should all be coordinated in their contribution to disaster management and building disaster resilience.

1.1.6 All hazards approach

Disasters are often grouped into categories such as natural hazards, technological, biological and social disasters. The major focus of disaster health management is the primacy of life and the protection and recovery of community wellbeing. While some hazards require specific measures, the adoption of an all hazards approach to disaster health arrangements provides the foundation to manage any disaster that may eventuate, including those catastrophic and unforeseen and unimagined disasters.

1.1.7 Risk management

Risk management is the coordination of activities to direct and control an organisation with regard to risk (ISO31000) and has been widely adopted by organisations across Australia.

Emergency risk management is a systematic process that produces a range of measures which contribute to the wellbeing of communities and the environment (AIDR Glossary). It emphasises the management of risk rather than the management of hazards.

Most health risks can be managed by routine operations and practices (business as usual) such as screening high risk people, general immunisation programs, and health professionals attending crowded places and mass gatherings. Other risks may require many organisations to work together in a different way to ensure the best outcomes for communities. The consequences of these risks may require non-routine management or activities for example an extended power failure, thunderstorm asthma or a pandemic.

The emergency risk management process is described in detail in the *National Emergency Risk Assessment Guidelines* (NERAG) (AIDR 2014), *ISO31000* (2018) and *AS 5050* (2010).

1.1.8 Roles and responsibilities of governments

Each level of government in Australia has established legislative and organisational emergency management arrangements that outline the various roles, responsibilities and reporting lines for Commonwealth, state, territory and local government.

An effective national framework for emergency management requires a high level of collaboration and coordination within and across all levels of government, and with non-government stakeholders, including communities and the private sector.

Detailed information on roles and responsibilities in emergency management can be found in *Australian Emergency Management Arrangements* (AIDR 2019).

1.2. Comprehensive approach to disaster management

The comprehensive approach to disaster management has been used in Australia and overseas for many years to group disaster management activities under four main headings: prevention, preparedness, response and recovery (PPRR). Some jurisdictions use three phases 'before', 'during' and 'after' the disaster.

1.2.1 Prevention

Prevention implies that a hazard may be completely controlled or eliminated. Disaster prevention strategies are rare, though there are some good examples in the health sector. In 1953, Australia had its worst polio epidemic; which peaked at about 10,000 people for the year, but with prevention activities, such as vaccinations, the disease is no longer present in Australia.

What constitutes disaster prevention in health is often contained in other policy fields such as transport safety, hazardous material storage or building standards. Activities in these areas reduce the likelihood of major health related adverse events and thus prevent disasters.

The impacts of hazards, in particular natural hazards, cannot always be fully prevented, but their scale or severity can be substantially lessened through mitigation strategies. Mitigation strategies include those activities taken by individuals, organisations or communities to reduce disaster related risk and include early warning systems, disease surveillance and the design of facilities such as clinics, hospitals and nursing homes.

Protective security is also a key element of prevention in the health sector and includes safe working environments and security risk management such as biological and radiological controls.

1.2.2 Preparedness

Preparedness involves a range of strategies to ensure resources and services are available and capable of taking appropriate actions for response and recovery and includes:

- Development of health structures and systems that build community and organisational capability and resilience, including identifying interdependencies and support arrangements.
- Surveillance, which requires systems and structures that monitor communities and identify potential health problems.
- Preparedness of health workers and managers including education, training and building capability through regular exercises.
- Identification, evaluation of appropriateness and prepositioning, either on a standing arrangement or during a time of heightened risk, of equipment required by the health system in a disaster.
- Security of the supply chain of consumables, such as syringes, sutures, staples etc., to ensure the health system can continue to provide services that are needed by communities.
- Immediate preparedness includes standing up operation centres, activating Memorandums of Understanding (MOUs), forward positioning of resources and alerting appropriate staff.

1.2.3 Disaster health planning

Why plan?

Planning is an integral part of the preparedness process and is essential to ensure an effective response and optimal recovery. At its most basic, a disaster health plan is a roadmap to run an organisation or part of an organisation in a non-routine way when business as usual is not a viable option.

Effective planning will enhance resilience as part of preparedness. Planning must be fit for purpose. A clinic in a country town will have a different plan to a major tertiary hospital, but the planning principles are the same.

The planning process

Using a generic approach to health disaster planning means health plans are compatible with other emergency and disaster plans. For a list of Australian, state and local government health plans, refer to the references section.

The emergency planning process, outlined in Figure 1, includes the following activities:

- Identify and establish a planning committee.
- Conduct emergency risk assessment – a tool to identify risks and establish ways to reduce those risks.
- Identify responsibilities – sometimes determined by legislation, government direction, inter-agency agreement or the planning committee.
- Identify resources and services needed – including availability and shortfalls.
- Develop disaster management arrangements and systems. For example: communications; public education; disaster operations centre management; liaison; information management; public information and warnings; resource and financial management.
- Document the plan, including:
  - assumptions made in producing the plan
  - results of a risk assessment
  - the main plan

  - broad overview of roles and responsibilities
  - functional areas such as food services or radiology and imaging
  - threat-specific plans e.g. flood or disruption to utilities.
- Monitor and review.

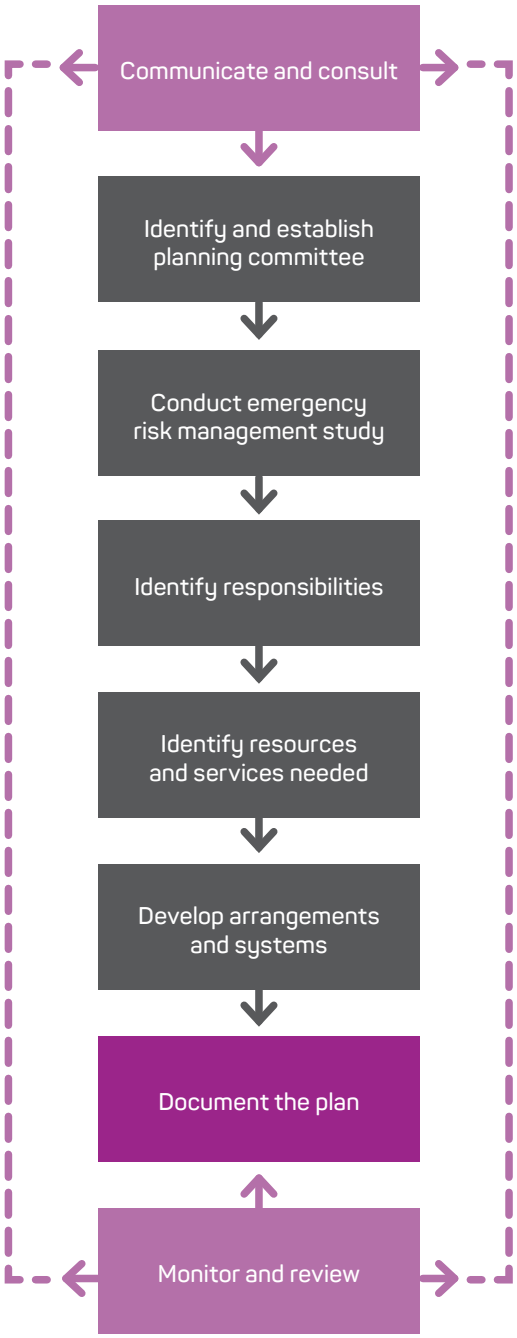

Figure 1: The emergency planning process

For further information about planning, refer to Emergency Planning (AIDR under review 2020)

Exercises are essential to ensure that plans are workable, effective and reflect the experience of real or simulated disasters. Exercises also ensure all appropriate personnel are aware of the plan and receive the necessary training in preparation for when it is activated.

Planning structures

To achieve the best outcomes plans should be developed to work with other plans that already exist. Plans at lower levels of governance should dovetail into plans at higher levels. Roles and responsibilities should be consistent between different plans to ensure they function smoothly.

Disaster epidemiology and rapid needs assessment

Disaster epidemiology is the medical discipline that studies the influence of factors such as lifestyle, biological constitution and other social determinants on the incidence and distribution of disease as it concerns disasters. This field provides health planners with information on health problems associated with specific disasters and to identify those groups that may be at risk.

Due to the unpredictable nature of hazards and their impacts, forward planning of epidemiological studies is nearly impossible. Most studies on the longer-term health impacts of disasters are therefore retrospective, sourcing data from populations or agencies such as emergency departments, hospitals, ambulance or medical response teams. Limited data is available from primary care services such as general practitioners (GPs) and pharmacists.

As well as providing useful epidemiological evidence to help plan for future disasters, surveillance methods can be used in the immediate aftermath of a disaster to facilitate the process of rapid needs assessment. This rapid epidemiological evaluation is used to identify the extent of the health impact and the resources required in providing a response. Teams involved in rapid needs assessment should have undertaken appropriate training such as that offered by the Australia Government's National Critical Care and Trauma Response Centre (**www.nationaltraumacentre.nt.gov.au**).

Collaboration amongst teams involved in rapid needs assessment avoids wasting resources by duplicating work. Many organisations have produced tools to aid the rapid needs assessment process.

1.2.4 Response

Response involves actions taken during a disaster to ensure that its health effects are minimised. Disaster response extends beyond traditional emergency response agencies. Bystanders, local community members and health services often provide the initial

response. The wider community, local governments, health providers, community organisations, businesses and industry are also responders and should surge their capacity to respond effectively to disasters and minimise impacts on themselves.

Response activities may include:

- Providing warning messages and public information, including health related material.
- Limiting the threat from a hazard or source of risk. For example, imposing quarantine areas or hazardous materials containment.
- Evacuating people and communities.
- Providing health services including psychosocial support to displaced persons in evacuation and relief centres.
- Assessing health needs and damage to the health system.
- Situation awareness and reporting.

For more on warning messages and public information, refer to *Public Information and Warnings* (AIDR).

For more on evacuations, refer to *Evacuation Planning* (AIDR).

Incident management

Managing the health response to a disaster is often complex and challenging.

In Australia, health, police, fire and emergency services, and biosecurity agencies have all adopted incident management systems. These systems include common terminology, a scalable incident action planning process and organisational structures to match the size, impact and complexity of the incident. As an incident grows in size, complexity and consequence there is a need to adopt a common and comprehensive system for incident management.

The principles that underpin these incident management systems include:

- flexibility
- management by objectives
- functional management
- unity of command
- span of control.

In the health sector the most commonly used system is *Major Incident Medical Management and Support* (MIMMS) (**www.mimms.org.au**). The *Australasian Inter-service Incident Management System* (AIIMS) is the main incident management system used in the emergency services sector (**www.afac.com.au/initiative/aiims**).

1.2.5 Disaster surge

Disaster surge is the health system's ability to rapidly expand normal services to meet the increased demand for health care. For example, in public health this would include increased capacity for epidemiological investigations, risk communication, mass prophylaxis and other measures. There are two broad categories of surge in health:

- Facility based surge – increasing the capacity of hospitals by decanting patients and using available flat space, i.e. corridors, unused wards, outpatient clinic areas, and prioritising more acute exacerbations.
- Community based surge – incorporating the wider community and primary health care and related health providers. This may include preventative care such as tetanus vaccinations.

Surge planning in general should be coordinated at a state or territory health department level, because actions taken by one hospital can have important flow on effects to other hospitals in the area.

Surge has implications for many aspects of health disaster management including the rationing of resources and the standard of care that can be provided.

1.2.6 Standards of care during disasters

It is neither possible nor appropriate to define or prescribe the clinical care offered to individuals in disasters. This is the responsibility of those involved in the care of those affected and will mostly accord with standard clinical practice outside of the disaster context.

However, the potentially chaotic and overwhelming nature of disasters and catastrophic events requires attention to a number of issues of clinical care policy that need to be taken into consideration during the planning and response phases in particular.

During disasters, standards of clinical care may need to vary from normal as the system moves from a routine to a non-routine operational environment. In recent years, the concept of 'crisis standards of care' has been explored as a means of describing altered clinical standards that should be applied in disasters considering the overall community needs and resources available. Crisis standards of care have legal and ethical implications, as it assumes that individuals will receive care which is less than would have applied in everyday situations.

Immediate care may need to be restricted to ensure that priority will be given to protection of life and attention is focussed on those with the best chance of survival. While allocating finite resources is always challenging, a utilitarian approach should be taken i.e. achieving the greatest good for the greatest number. Key to these

changes is consideration of the most effective use of available resources, consistency and medico-legal protection for staff.

1.2.7 Recovery

Recovery is a vital part of the comprehensive approach to disaster management. The health sector has an important role in supporting community recovery. The early and ongoing involvement of healthcare services is essential to ensure that health needs are effectively incorporated into the recovery activities.

The chronobiology of disease and the social determinants of health can change in a community post disaster. There are significant longitudinal, as well as lateral effects on longer term health in individuals affected by disasters. Ongoing surveillance after a disaster is essential, for example chronic conditions such as diabetes need to be assessed at three to six to nine month intervals to ensure early intervention and minimise the health effects.

The recovery process and consequent health effects will often continue long after the immediate disaster event. Therefore, understanding the community context, the complexity of the evolving situation and using community-led approaches is fundamental to the best outcomes in community recovery.

The purpose of providing recovery services is to assist affected communities towards management of their own recovery. It is recognised that, where a community experiences a significant emergency or disaster, there is a need to supplement personal, family and community structures that have been disrupted. Critical to this is providing support through local level services wherever possible by boosting those services, rather than bringing in completely new agencies and actors.

The *National Principles for Disaster Recovery* (Social Recovery Reference Group 2018) comprise six key principles considered to be central to successful recovery:

- understand the context
- recognise complexity
- use community-led approaches
- coordinate all activities
- communicate effectively
- recognise and build capacity.

> *Community Recovery* (AIDR 2018) contains further information and guidance on community recovery and the *National Principles for Disaster Recovery*.

An important part of post disaster health activities is providing general practice and other primary care services, including ongoing management of existing physical and mental health conditions. Surveillance for new conditions, such as mental health, need to be considered, as well as the reinstitution of preventative health care like cervical screening tests and vaccinations that may have been missed because of the disaster.

A high proportion of presentations to general practices post disaster are about mental health, the majority of which are managed in general practices. Those who require more care can be referred to mental health professionals such as psychologists and supported through government programs like *Better Access* and other psychological support services (**www.health.gov.au/mentalhealth-betteraccess**).

Events such as the release of carcinogenic material into the environment, hostile acts, mass shootings and terrorist incidents generate higher levels of individual and collective stress and trauma, which will place increased demand on the health system. The *Collective Trauma Guidelines* (Australia Red Cross 2018) recognise that different psychosocial support may be needed following these collective trauma events.

1.3 Australian health emergency response arrangements

Key considerations

- The primary responsibility for managing the response to emergencies in Australia lies with state and territory governments.
- Cooperation and collaboration between the Australian Government and the state and territory governments is key to Australia's health disaster preparedness and response arrangements.
- Health protection in Australia is part of national security.
- Functional plans support the national health disaster response arrangements.
- State and territory governments can request assistance from the Australian Government through appropriate mechanisms.

1.3.1 National health committees

The relationships between national committees involved in health emergency response in Australia is outlined in Figure 2.

The COAG Health Council (CHC)
All ministers from the Australian Government, state and territory governments and the New Zealand Government with direct responsibility for health matters, including the Australian Government Minister for Veterans' Affairs, are members of CHC.

The CHC provides a forum for continued cooperation on health issues, especially primary and secondary care, and consider increasing cost pressures.

The Australian Health Ministers' Advisory Council (AHMAC)
The AHMAC is the advisory and support body to the COAG Health Council. It operates to deliver health services more efficiently through a coordinated or joint approach on matters of mutual interest. AHMAC membership comprises the heads of the Australian Government Health Department, each state and territory health department, the New Zealand health authorities, and the Australian Government Department of Veterans' Affairs.

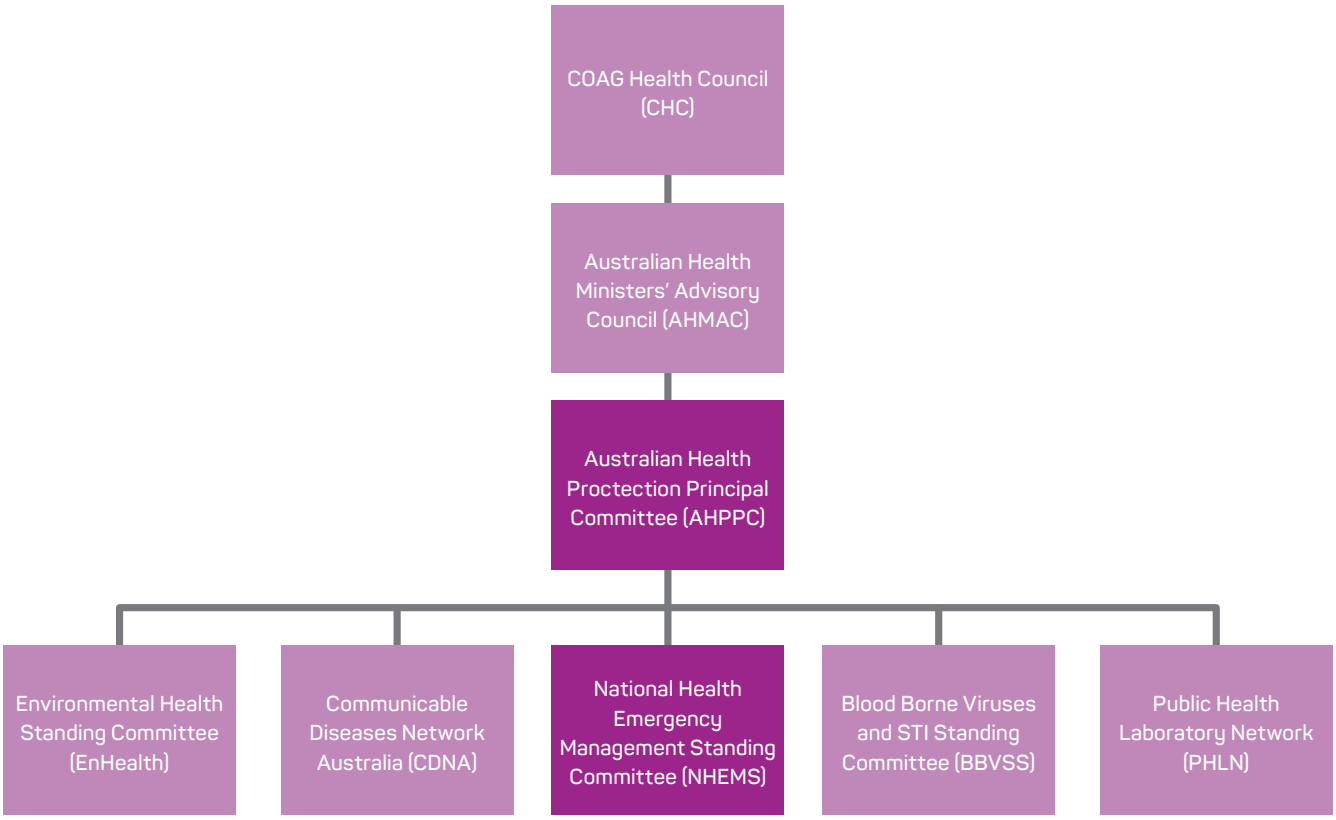

Figure 2: The relationships between national committees involved in health emergency

The Australian Health Protection Principal Committee (AHPPC)
The AHPPC is the peak national health emergency management committee, with the authority to plan, prepare for and coordinate the national health response to significant incidents. The AHPPC has senior representatives from the Australian Government and state and territory governments, Defence, Emergency Management Australia and the New Zealand Ministry of Health. The AHPPC is responsible for high-level, cross-jurisdictional collaboration in the planning, preparedness and response in significant health emergencies including trauma, chemical, biological, radiological and nuclear (CBRN), and public health.

The AHPPC is supported by a number of standing committees.

- National Health Emergency Management Standing Committee (NHEMS) addresses the operational aspects of disaster medicine and health emergency management, with a focus on prevention, preparedness, response and recovery.
- Communicable Diseases Network Australia (CDNA) comprises the heads of communicable disease control units in every state and territory, including representatives from:
  - the Australian Government Department of Health (DoH)
  - national centres:
    - National Centre for Immunisation, Research and Surveillance (**www.ncirs.org.au**)
    - Kirby Institute for Infection and Immunity in Society (**www.kirby.unsw.edu.au**)
    - National Centre for Epidemiology and Population Health (**www.rsph.anu.edu.au/research/centres-departments/national-centre-epidemiology-population-health**)
  - other key stakeholders including:
    - Australian Government Department of Agriculture and Water Resources (DAWR) (**www.agriculture.gov.au**)
    - OzFoodNet, Australia's enhanced foodborne disease surveillance network (**www.health.gov.au/internet/main/publishing.nsf/Content/cdna-ozfoodnet.htm**)
    - Food Standards Australia New Zealand (**www.foodstandards.gov.au/Pages/default.aspx**)
    - Public Health Laboratory Network (**www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdna-phln-phln.htm**).
- Public Health Laboratory Network (PHLN) comprises state and territory public laboratory experts, private, animal and reference laboratory experts, provides leadership and consultation in public health microbiology and communicable disease control.
- Environmental Health Standing Committee (enHealth) advises on environmental health risks and supports environmental health officers in local government and Aboriginal and Torres Strait Islander communities.
- Blood Borne Viruses and Sexually Transmissible Infections Standing Committee (BBVSS) advises on strategic policy, programs, social issues and activities related to HIV, viral hepatitis and sexually transmissible infections.

1.3.2 National health sector plans

National emergency and crisis management plans set out the responsibilities of ministers and officials managing domestic and international crises — including health crises — that require Australian Government assistance or coordination.

The *National Health Emergency Response Arrangements* (NatHealth Arrangements) (**www.health.gov.au/internet/main/publishing.nsf/Content/ohp-response-arrangement-nov11**) are Australia's highest level health sector emergency plan. They outline the strategic arrangements and mechanisms for the coordination of the Australian health sector in response to emergencies of national consequence. They facilitate the DoH meeting its obligations under the *Australian Government Crisis Management Framework* (AGCMF) and sets out how the Australian Government and state and territory governments work together to manage health emergencies. The AHPPC, the decision making body for the *NatHealth Arrangements*, meets quarterly, or otherwise as required, to consider emerging issues and to monitor and develop capacity.

Within the DoH, the Office of Health Protection (OHP) leads the prevention and preparedness policy agenda at a national level and maintains the DoH National Incident Room (NIR), which coordinates the operational response to national health emergencies. The NIR is also Australia's national focal point for communications with the World Health Organization under the *International Health Regulations* (WHO 2005).

The *NatHealth Arrangements* establish the following key health sector plans:

- The *Domestic Response Plan for Mass Casualty Incidents of National Consequence* (DoH 2011) (AUSTRAUMAPLAN) is an agreed framework for the coordination and response arrangements for national health sector operations in response to mass casualty incidents of national significance resulting from trauma.
- The *Health Chemical, Biological, Radiological, Nuclear Incidents of National Significance Plan* (Health CBRN Plan 2018) details the coordination of a national health response within the context of a deliberate threat or incident, and the special considerations required for national incidents involving CBRN agents.
- The *Emergency Response Plan for Communicable Disease Incidents of National Significance* (CDPLAN

2016) is Australia's primary national plan for coordinating the response to a communicable disease incident of national significance.

- The *Australian Health Management Plan for Pandemic Influenza* (AHMPPI 2014) is Australia's national health sector plan for the management of an influenza pandemic and is often used as a model for communicable diseases. It is aimed at Australian Government and state and territory governments, but also includes links to industry. The AHMPPI is a sub-plan to the CDPLAN.

National plans are supported by plans at state and territory government level. In addition to having the primary responsibility for health emergencies, state and territory governments are also responsible for working with local governments.

The AHPPC and its subcommittees may develop further health sector plans.

The Australian Government Department of Home Affairs Emergency Management Australia (EMA) has produced additional plans for the overall management of emergencies in Australia.

1.4 Community inclusion and disasters

Key considerations

- Disaster management activities and arrangements must reflect the diversity of Australian society.
- Planning should be 'with' communities and not 'for' them.
- Children, women, men, the elderly, Aboriginal and Torres Strait Islander people, LGBTIQA+, and culturally and linguistically diverse groups' needs should be reflected in preparedness and planning.

1.4.1 Diversity

Disaster management should reflect and embrace the diversity of Australian society. Some considerations include:

- Planning needs to be holistic and all community members should be encouraged to take part.
- The PPRR approach should be understood by all community members.
- Roles and responsibilities should be clearly laid out and understood by communities, local government, government agencies and disaster management providers.
- Many community members involved in disaster management are volunteers who may not feel empowered to contribute to the safety of their community.
- Communities need awareness and education programs for disasters.

1.4.2 Gender

Gender has a critical impact on every person's experience of disaster. Research and experience shows that disaster risks are gendered (*Gender and Emergency Management Guidelines*, Gender & Disaster Pod 2016). Women experience heightened risk of death due to compromised disaster planning through limited autonomy; increased violence, including domestic and family violence and sexual assault; greater care burdens which hamper escape or evacuation; relatively lower capacity through fewer opportunities to learn survival skills; and greater financial hardship following disasters. Men experience heightened health risks through expected and rewarded risk taking, drug and alcohol abuse, mental health issues, reluctance to seek help, career penalties for seeking help and suicidal ideation.

Gender issues are exacerbated by underrepresentation of diverse groups in the emergency management sector. This compromises the capacity of the sector to plan for, or respond to, the needs of many groups including women, people of diverse sexual and gender identity, and other groups.

Gendered disaster risks include direct and indirect impacts. Direct impacts include:

- A spouse or partner purposefully endangering life. For example, by compromising a family evacuation plan.
- Increased exposure to perpetrators in evacuation processes and during recovery.
- New experience of domestic violence from a partner who was not violent before the disaster.
- Services supporting people affected by domestic violence may be reduced or non-existent in a post-disaster context, and women are less likely to report due to the fear of repercussions or the belief that their needs are less important.

Indirect impacts include the push back on gender roles that places the care of children with women and creates barriers to re-engaging in employment with consequent social and economic impacts.

Pregnant and breastfeeding women have particular needs and risks that should be considered. Changes in immune, heart and lung physiology of pregnant women make them more at risk of infectious diseases including influenza and whooping cough, and of reduction of milk supply.

The challenges accessing medications for trans and gender diverse people who are undergoing gender affirmation is a significant issue when the health system is disrupted, for example during an evacuation.

The national *Gender and Emergency Management Guidelines* contain strategies for addressing direct and indirect impacts.

1.4.3 Children

Children, from infants to young adults, can all be affected by disasters and are potentially more vulnerable to disasters because of their physiology, immune system and developmental stage. Medical assistance teams and emergency departments often lack paediatric equipment and skills. Children rely on others to listen to and respond to their needs. In a disaster situation, they are often subject to the decision making of adults around them. For this reason, it is essential to support care givers and facilitate their understanding of their children in the changed circumstances.

Children are, however, quite capable of participating in these processes. Evidence suggests that while disasters have profound impacts, children are resilient and often contribute critically to their own and their families' survival. Families should be kept together where possible after a disaster and children should not be separated from their care giver. Adults and children should be asked to identify what they need, what they would like to happen, who to talk to and be with. Ensuring that education and other socialising activities are maintained in recovery is critical, particularly as recent research exposes bullying of school aged children following bushfires. Child-centred opportunities to contribute, illustrate, talk about and reflect upon disaster experiences have also shown positive outcomes for child wellbeing.

> The AIDR education network, DRANZSEN, provides links to experts on children's health and wellbeing in the disaster context: **www.schools.aidr.org.au/disaster-resilience-education/disaster-resilient-australia-new-zealand-school-education-network/**

1.4.4 Infant and young child feeding

Experience from disasters and emergencies around the world demonstrates the importance of strengthening policies on, and planning for, infant and young child feeding, including breastfeeding, formula feeding and complementary feeding in emergencies. There is currently no standard practice in emergency management planning for the unique needs of children in Australia. In 2010, the World Health Assembly resolved that member states should develop and implement emergency planning for infants and young children in line with the *Operational Guidance on Infant and Young Child Feeding in Emergencies*.

In 2019, the COAG Health Council endorsed the *Australian National Breastfeeding Strategy: 2019 and Beyond* which commits to the development of a national policy on infant and young child feeding in emergencies. The WHO and UNICEF *Global Strategy for Infant and Young Child Feeding* identifies the importance of policies and strategies to address breastfeeding protection, support and promotion in exceptionally difficult circumstances, such as emergencies (IFE Core group 2017). In order to protect the health and wellbeing of infants, emergency planning must protect, promote and support breastfeeding and provide for the needs of formula-fed infants. Support for formula feeding must include consideration of access to infant formula, feeding and preparation implements, water, washing facilities and health care. It must be ensured that interventions to support formula fed infants do not undermine breastfeeding.

1.4.5 Older people

Older people face particular risks during disaster. It is not necessarily being elderly that makes people vulnerable, and some elderly are more resilient than others. Rather it is decreased sensory awareness, chronic medical conditions, decreased mobility and socioeconomic disadvantage associated with being old. These are compounded by such things as misplaced stoicism, lack of ability to deal with bureaucracy and unfamiliarity with online processes. With an ageing population, larger numbers of older people are likely to need support during disasters, with many isolated in their own homes. Many have multiple comorbidities.

Where older people live alone, social isolation and the digital divide require particular attention to ensure information about disasters and medical support gets through early.

1.4.6 Aboriginal and Torres Strait Islander people

Aboriginal and Torres Strait Islander people have unique capacities and needs in a disaster including:

- Indigenous communities are each unique and require variations to generic disaster management plans.
- The definition of a disaster changes from community to community. Long-term issues like substance abuse or family violence are perceived as disasters in some communities.
- Communities have their own cultural traditions which need to be understood in the first response to disaster. For example, evacuating or moving people to culturally appropriate places.
- Local and traditional knowledge must be appreciated and recognised by non-Indigenous people.
- Communities need culturally safe and appropriate long-term healing services for people experiencing ongoing distress due to a disaster.
- Senior members of Indigenous communities understand relationships in their communities and the local environment. It is essential they are involved

in guiding, coordinating, and organising disaster management in their communities.

- Disaster and health workers should work with and listen carefully to local community practitioners and, as appropriate, take part in cultural awareness training to gain an understanding of a community's cultural traditions and taboos.
- Planning should include Indigenous community members and emergency management agencies.

1.4.7 People with disabilities

Disability is not always obvious, however people with disabilities face particular (often gendered) risks and experiences in disaster. A broad range of health issues impact on people with disabilities in disaster. This includes, but is not limited to, people with obesity, mental illness, dementia, age-related physical impairment and drug dependency. Evacuation planning needs to consider mobility, stress and capacity, and access to medical and home based care essential to health in recovery.

For people with disabilities, developing plans can be affected by a number of factors including lack of accessible information, social isolation, increased risk related to the built environment and decreased access to essential medical care.

At the same time, people with disabilities have unique knowledge of the service system, including available services and navigation. This knowledge may include previous trauma and can be a vital resource for others in the community unaware of the personal impact of trauma and possibilities for support.

1.4.8 People with obesity

Australia has comparatively high rates of obesity. People with a body mass index over 40 face particular risks in disasters. Direct risks include barriers to evacuation, the particular impact of extreme weather events and access to essential health services.

1.4.9 People with chronic illness

There is a high prevalence of chronic disease in any community in Australia and so a community affected by disaster is likely to have a high prevalence of chronic conditions to be managed by a network of community-based services, local specialists, and local hospitals. A disaster may interrupt the care they receive due to a breakdown in carer services. Interruption to power supplies can adversely affect their ability to use medical equipment, affect refrigeration of medication and supplies of essential medications may run out with little opportunity to obtain repeat prescriptions. There is a temptation for these people to converge on hospitals at a time of disaster when their needs can often be addressed early in general practice and primary care.

Unfortunately, this approach only serves to impede the hospital's ability to manage acutely unwell patients from the disaster itself. Similar strategies to those described above for elderly populations can be employed to help plan the care of people with chronic illnesses during a disaster. Early medical support can allay distress and prevent and treat exacerbations of their conditions.

1.4.10 People with substance dependencies

People with dependencies, for example substance use disorder and dependence on drugs, like alcohol and opiates, face particular challenges at times of disaster. Lack of access to their drug of dependence has health impacts, including potentially life-threatening withdrawal and the return of underlying conditions like chronic pain. In addition, because of the relationship between legal and illegal drug provision, the acquisition of these drugs during disasters carries risk. Planning for the consequences of opiate scarcity, for example, and the provision of services to people in transition from opiates is of concern during disasters and recovery.

1.4.11 Cultural inclusion

Migrants are integral to, and a significant part of, communities and can bring a broad range of capabilities that may include strong, resourceful community networks, bicultural practice, language skills, and prior experiences of emergencies and disaster.

Engaging with local immigrants is essential for ensuring their needs and capabilities are reflected in health disaster management. Information about emergencies and disasters should be made available in relevant languages, on relevant platforms, and in relevant styles – including content that meets literacy levels and reduces barriers. Consultation and collaboration are needed to ensure safe spaces in evacuation centres and in the provision of housing and social services during recovery.

While some community groups may find the Australian emergency, justice and service systems frustrating at times of disaster, migrants are more likely to have experienced these systems as adversarial and punitive. As a result, barriers to accessing services during disaster are likely to include stress, confusion and fear.

Contact details for interpreters, religious leaders and healthcare workers from culturally diverse groups should be maintained so they can assist when a disaster occurs. It is usually not appropriate to use children as translators in such distressing situations.

1.5 Ethics and resource allocation

The overwhelming nature of disasters can place strain on health resources that inevitably leads to ethical conflicts not encountered in everyday health care provision. Planning for surge capacity can help to prepare for a scarcity of resources, but when the system reaches its limits, the question of resource allocation remains.

One strategy builds on three key practices to develop principles for allocating resources at a time of disaster:

- Obligations to community – a transparent decision making process and public health education to ensure community participation in planned allocation decisions.
- Balancing personal autonomy and community wellbeing – maximising public health benefits while respecting individual rights and ignoring such characteristics as race, nationality, religious beliefs, sexual orientation and gender identity.
- Good preparedness practice – develop and adhere to standard-of-care guidelines; identify evidence-based public health priorities; implement initiatives in a prioritised manner; assess public health outcomes and adapt to them; and ensure accountability through documentation of duties and liabilities.

During a disaster it may be necessary to shift from the usual practice of doing the best for an individual patient to doing the best for the whole population – this may include infringements on an individual's rights, such as enforced quarantine. As mentioned above, rationing should be based on prognosis alone using appropriate tools to help determine the prognostic outcome. The influenza pandemic (H1N1) in 2009 placed enormous strain on the use of a very limited supply of extracorporeal membrane oxygenation devices, requiring difficult decisions about how and when to use them. For those deemed unsuitable for aggressive treatment, appropriate palliative care should be offered, with regular reassessment to determine if their condition has changed.

Staff to patient ratios may need to change during a disaster but there remains a duty to provide care to all, even if it is non-standard care due to limited resources. This might include telephone counselling for those deemed not suitable for hospital care. This duty of care can be particularly tested in infectious diseases outbreaks. When healthcare workers witness cases such as that of Carlo Urbani, the World Health Organization physician who alerted the world to SARS and then subsequently died from the disease, it places enormous strain on their moral duty to continue to provide care.

Reverse triage may be employed to treat as many people as possible with limited resources. A transition in effort towards doing the greatest good for the greatest number contrasts with typical emergency department triage where the most unwell patients have all possible resources available to them regardless of cost. Altered standards of care should be pre-planned, documented in writing and have the input of relevant ethics committees.

1.6 Legal aspects of health disaster management

Disaster managers should have a detailed knowledge and understanding of the legal and legislative environment in which they work.

Every state and territory has specific legislation relating to disasters and emergencies. Emergency service or community safety legislation can require people to undergo decontamination where there is a risk to public health, for example, Queensland's *Public Safety Preservation Act 1986*. States and territories also have public health legislation that may come into effect depending on the type of disaster. Public health legislation may be used to require people to undergo treatment or remain in, or out of, an area that poses a risk to health, for example, NSW's *Public Health Act 2010*. Declaring a state of emergency or disaster (the terms used varies across states and territories) will usually provide the relevant parts of government with additional powers, for example, Victoria's *Emergency Management Act 2013*.

International and national legislation focuses on the control of infectious disease outbreaks and the risk of disease entering or leaving Australia. International regulation is found in the World Health Organization's *International Health Regulations 2005* (WHO 2007). Australia's obligations under those regulations are given effect by, amongst others, the *National Health Security Act 2007* and the *Biosecurity Act 2015*.

Australian health professionals are registered under the *Health Practitioner Regulation National Law.* There are 15 registered health professions including medical practitioners (doctors), nurses and paramedics. An Australian registered health professional can practice in every state and territory without the need to seek state-based certification, registration or permission. National registration will facilitate the provision of inter-state health practitioner assistance, if that is required. Practitioners registered in other countries do not have automatic rights to practice in Australia, so care must be taken if seeking international assistance to ensure incoming health practitioners can practice in Australia, either generally or during specific counter-disaster operations.

All jurisdictions have legislation to protect volunteers, including spontaneous volunteers. These are people who without expectation of payment or reward offer to provide medical assistance or first aid.

For further information see Eburn M 2013 in the reference section. All Australian federal, state and territory legislation is at **www.austlii.edu.au**

Table 1: Commonwealth legislation and international documents related to health disaster management

	Title	Aim	Link
Australia	*Biosecurity Act 2015*	To reduce the risk of introducing significant communicable human diseases into Australia	**www.legislation.gov.au/Details/C2019C00097**
	National Health Security Act 2007	Provides for the exchange of public health surveillance information between the Australian Government, states and territories	**www.legislation.gov.au/Details/C2016C00847** National Health Security Act Amendment Act 2012 **www.legislation.gov.au/Details/C2012A00182**
International	*International Health Regulations 2005* (IHR)	Aims to strengthen prevention, detection, protection and control of public health events of international significance. The *National Health Security Act 2007* was developed in part to implement IHR in Australia.	**www.who.int/ihr/publications/9789241580496/en/**
	WHO Health Emergency and Disaster Management Framework	Reducing health risks and consequences of emergencies for community and country resilience and health security, universal health coverage and sustainable development.	**www.who.int/hac/techguidance/preparedness/en/**

1.7 Communications in disasters

Major public health emergencies and disasters are comparatively rare in Australia so individuals, communities and organisations have limited experience in preparing for and responding to them. However, health related impacts from disasters, such as infections following floods and storm surge and burns and heat-related deaths following fire and heatwave events, are regular occurrences.

Most exposure to health disaster management is either through cataclysmic movie plots or media coverage of countries with different climate, cultural and economic realities. This reduces the ability of much of the Australian public to meaningfully plan and think through what should be done when facing health disasters – a process known as vicarious rehearsal. Un- and ill-informed understandings of health risks present many challenges for disaster health practitioners and particularly their communicators.

In the face of health and emergency management agencies failing in their readiness and response capability, communicating with the public before, during and after a health emergency is one of the most crucial and challenging aspects of disaster management.

Research shows that panic is rare in disaster, but when it does occur, it is often as a result of contradictory messages from authorities. In a health emergency, the importance of clearly and precisely explaining the hazard and risks and ensuring all agencies communicate as one, is even more important than usual.

1.7.1 Risk communication

Risk communication is central to the work of communicating before, during and after disasters. Risk communication gives communities information about:

- the severity of a situation
- how likely it is to impact them
- what they can and/or should do to lessen the negative impacts.

Risk communication should be more than sharing information or telling people what to do, but should empower effective decision making. It is essential to assess and understand the community and the specific audiences you seek to reach.

Messages will likely need to be constructed or conveyed by someone with appropriate expertise. Messages should be interesting enough to be listened to, and simple enough to be clearly understood.

Ebola in Australia

In September 2014, a 27-year-old man who had recently returned from West Africa presented with symptoms not inconsistent with Ebola. While the chances of it being Ebola and any possible spread were 'vanishingly small', social media lit up with concerns and fears that Ebola was in Australia; 'that hospital is just down the road from me', 'pretty scary stuff'.

Consistent and calming messaging from health agencies settled fears until the diagnosis was announced that the man was not infected with Ebola.

Communicating about health risks prior to a disaster requires long-term, two-way communication with the community to ensure they understand the big picture of possible health risk and how they can ready themselves as individuals and groups. Importantly this also builds the ongoing awareness, relationship and credibility that is crucial in the response phase.

Communicating effectively during a disaster requires communication to be:

- timely
- accurate
- clear
- consistent.

Communication must also be targeted and relevant to the intended audience and display the commitment and openness that are necessary to build credibility. Community members must be able to access and understand the messages and, just as importantly, to believe and see the relevance and how to apply them to their circumstances.

The messages need to do more than give accurate data; they should acknowledge the needs and perspectives of communities, let people into the response process with clarity and openness and provide a call to action. They should answer the burning questions: What is happening? What are you doing about it? What should we do?

Communicating with empathy is key. This is especially important during the recovery phase. To achieve this requires processes to assess the context of a community's experience so that both compassion and assistance are credible and useful.

For further information please refer to *Public Information and Warnings* (AIDR 2018).

1.7.2 Crisis communication

Another characteristic sometimes present in a disaster is outrage from those impacted. Management of these situations is often known as crisis communications where the focus is on eliminating or reducing the outrage.

Outrage can be usefully seen as an important sign that something needs to change in the management of the situation, or the communication being undertaken. Direct communication with community members, as well as social media and media monitoring, can give organisations the necessary insights to respond and resolve the issues that communities are focussed on.

1.7.3 Media relations

Positive media relations should be established long before a disaster. Agencies should monitor coverage of stories and engage journalists who show interest and experience. These journalists can be extremely valuable when complicated science needs to be communicated simply.

Fact sheets on known health hazards are an invaluable tool during a high pressure event and can be developed long before an activation. They are particularly useful to explain complex science to journalists covering an incident.

In complex or emotive situations, it is likely the media may turn to social media comment to enhance their coverage. Unfortunately, this may not be helpful in building and maintaining effective public information. In some serious circumstances, it may be that an experienced media liaison practitioner needs to communicate directly to a journalist who might be spreading inaccurate risk information or poor advice.

1.7.4 Social media

As in many areas of disaster management, social media can be a valuable means to communicate directly with specific audiences, bypassing the media and rapidly sharing tailored messages. It can also lead to the spreading of rumours and misunderstandings.

For further information please refer to *Public Information and Warnings* (AIDR 2018).

1.8 Education, training and exercises

Everyone involved in health disaster management should have the opportunity to undertake education and training to ensure up-to-date knowledge and to maintain their skills at an appropriate level. The opportunity to learn and experience the unique challenges that disasters create for the health system and how they are managed is vitally important. Apart from standard education activities, the use of exercises and simulations is essential for workers to experience the environment that disasters create. This might involve the analysis of a simulated or real event against which plans and other preparedness activities.

Community based preparedness can be enhanced by encouraging the general public to undertake first aid and disaster survival skills. Doing this will lead to increased community resilience and form an important component of disaster health education.

The National Critical Care and Trauma Response Centre in Darwin was established after the 2002 Bali bombings. It provides clinical and academic leadership for disasters and trauma care and runs courses and exercises for those involved in all aspects of disaster health.

Most states and territories also run activities such as the MIMMS course, EMERGO Train System (ETS) simulation exercises (**www.emergotrain.com**) and regular field exercises.

National standards for disaster management for higher education providers have been developed in Australia with a view to standardising the content and scope of university programs. Standards for vocational education level programs have also been developed.

Junior healthcare workers and medical students should have access to education in disaster management to supplement capacity during a disaster. Finally, it is the responsibility of all healthcare workers who may be involved in disaster management to maintain their clinical skills at a level appropriate for their specialty.

Chapter 2: Health, disasters and risk

Key considerations

- All disasters disrupt the health system.
- Health takes the lead on a number of disaster types.
- Work in all phases of disasters needs to be based on best available information and analysis.
- There has been a shift nationally and internationally from a hazard focus to risk, exposure and vulnerability.

2.1 Introduction

All disasters will disrupt the health system and its capacity to provide services upon which the community depends. The increase in demand for services during a disaster, such as a pandemic or heatwave, will also stress the health system. Disaster management, preparedness and planning must be based on risk. An understanding and assessment of how various sources of risk impact on the health system is important. The consequences and level of disruption will vary depending on factors such as:

- scale and type of damage
- size of the area affected, for example localised or Australia wide
- number and duration of evacuations
- the experience that community has with the hazard
- damage to health system infrastructure.

The pattern and scale of health effects will vary widely with what triggered the disaster and this should be considered during preparedness and planning. This section explores some of the important sources of risk to communities and the health system. It is not an exhaustive list, and a planning committee will need much more detailed information and analysis of disaster impacts for their context.

> For further information refer to NERAG (AIDR 2014).

2.2 Climate change

The United Nations Office for Disaster Risk Reduction recognises climate change is an underlying driver of disaster risk. Climate change can increase disaster risk in a variety of ways, such as altering the frequency and intensity of natural hazards, affecting vulnerability to natural hazards, and changing exposure patterns.

A significant challenge to the health and wellbeing of people is rising temperatures associated with climate change. Rising temperature has both direct and indirect effects on health and wellbeing.

The direct health impacts of heat include:

- heat stress resulting in vascular problems, heart attacks and strokes, respiratory distress and aggravated renal failure
- heat stroke and very high fever
- aggravation of chronic diseases
- mental health consequences of heat stress
- changing pathogens and their spread, such as food poisoning, changed malaria and dengue fever distribution
- allergic diseases, as warm moist environments breed allergens.

The indirect effects of heat include:

- increase in major weather events like heatwaves storms, cyclones, drought and floods
- changes to vector distributions
- changes to allergens (pollens) distribution
- changing distributions of venomous animals
- infectious diseases
- food and water borne diseases.

2.3 Heatwave

A heatwave is a period of abnormally hot weather lasting several days (BOM 2013). It has been defined in Australia by three or more days of unusually high maximum and minimum temperatures in any area. The absolute temperature values constituting 'unusual' obviously vary substantially by geographical region, for example, between Darwin and Hobart.

Fatalities from heatwaves are higher than all other hazards combined (BNHCRC & Risk Frontiers 2017). Vulnerable people are dispersed throughout communities and supporting them during heatwaves provides significant challenges. Heatwaves can result in hyperthermia but also have an aggravating impact on a range of medical conditions through dehydration and physical exhaustion.

Heatwaves increase all-cause mortality and also increase surrogate markers of morbidity such as the use of emergency health services. The extent of adverse health effects is thought to be related to the degree of preparation of communities and the difference between the normal climate and what is experienced during the event. Humidity and air pollution can also exacerbate the situation.

Many jurisdictions have implemented heatwave action plans such as the City of Yarra's *Keep Cool in Yarra* campaign (2016) which focuses on public awareness and encouragement to maintain hydration, optimising use of community resources, including neighbourhood support, and increased attention to higher risk groups such as the elderly, children, and those with chronic illnesses.

The Bureau of Meteorology provides observations, forecasts and warnings on weather patterns and climate that can lead to impacts on health and the health system. This information can be used to assist with health response plans and communication.

> See **www.bom.gov.au/australia/warnings** and **www.bom.gov.au**

2.4 Pandemic

Throughout history, infectious disease pandemics have had a devastating effect on the world's population. With the emergence of novel and particularly virulent strains of respiratory viruses in recent decades including avian influenza, Middle East respiratory syndrome (MERS) coronavirus and severe acute respiratory syndrome (SARS), many global health organisations developed plans to prepare for future pandemics.

The first step in managing an outbreak is a detailed assessment. This will examine the nature, extent and impact of an outbreak. The outbreak needs to be diagnosed accurately. This can be challenging if it is a novel disease. Knowledge and understanding of the causative organism is critical to determine the mode of transmission and the containment strategies. Recognition of the causative organism helps understand the mode of transmission and the span of diseases that may be expected. These determine the management strategies required.

The second stage is to evaluate the impact. Pandemics not only cause disease but also result in a significant impact on social and economic aspects of society, such as through absenteeism, loss of productivity and failure of supply chains. These impacts are exacerbated by strategies designed to limit the spread of the disease such as a school closures, quarantine and restriction of movements. Integrated planning and communication is required to ensure consistency between various levels of government and agencies.

Stockpiles of relevant equipment are available not only within hospitals and health services but also within dedicated stores held nationally or distributed from a national pool. Countries are moving to create stockpiles of equipment and consumables. This is particularly important considering that Australia is not a manufacturer.

Vaccines are the cornerstone of pandemic control. Maintenance of vaccination rates is critical to disease prevention and control. However, a new organism will require production of a new vaccine. Production needs to be ramped up to produce sufficient quantities of the vaccine to address the communities' needs. There are potential legal and ethical issues associated with the fast tracking of new vaccines to market in the absence of widespread clinical trials.

The other consideration is how to distribute the vaccine. Accumulation of large numbers of people at a vaccination centre is unwise in the environment of an infectious disease outbreak. Vaccinations can be done in two ways – blanket or selective. Mass (blanket) vaccinations are designed to protect the vulnerable. Targeted vaccinations or ring vaccinations are designed to isolate those affected and create a barrier of resistance between those affected and the general population at risk.

The Department of Health has produced five iterations of pandemic influenza response guidance since 1999, with the most recent edition, the *Australian Health Management Plan for Pandemic Influenza* (AHMPPI) published in 2014 with regular online updates. This document describes the stages in the health sector response to a pandemic, outlined in Table 2.

The 2008 revision of the AHMPPI was used to guide Australia's response to the Influenza A (H1N1) pandemic in 2009. The latest version of the AHMPPI draws on lessons learned in 2009 and developments in the approach to pandemic response within the international community. A key learning identified the need for the plan (like all disaster health plans) to be flexible, allowing strategies to be scaled and varied to meet the needs at the time.

Table 2: Disaster management exercise verbs

PREPAREDNESS		• Establish pre-agreed arrangements by developing and maintaining plans. • Research pandemic specific influenza management strategies. • Ensure resources are available and ready for rapid response. • Monitor the emergence of diseases with pandemic potential and investigate outbreaks if they occur.
RESPONSE	**Standby**	• Prepare to commence enhanced arrangements . • Identify and characterise the nature of the disease (commenced in preparedness). • Communicate to raise awareness and confirm governance arrangements.
	Action – initial	When information about the disease is scarce: • Prepare and support health system needs. • Manage initial cases. • Identify and characterise the nature of the disease within the Australian context. • Provide information to support best practice health care and to empower the community and responders to manage their own risk of exposure. • Support effective governance.
	Action - targeted	When enough is known about the disease to tailor measures to specific needs: • Support and maintain quality care. • Ensure a proportionate response. • Communicate to engage, empower and build confidence in the community. • Provide a coordinated and consistent approach.
	Stand down	• Support and maintain quality care. • Ensure a proportionate response. • Communicate to engage, empower and build confidence in the community. • Provide a coordinated and consistent approach.

2.5 H1N1 2009

An influenza pandemic is a global outbreak of a new influenza A virus that differs significantly from current and recently circulating human seasonal influenza A viruses. Influenza pandemics are unpredictable and recurring events that can cause sustained person-to-person transmission throughout the global population due to lack of immunity. It is impossible to predict the population groups that will be most affected by pandemics before they occur, as past experience has shown that different pandemic influenza strains have significantly affected certain population groups over others. For example, pandemic H1N1 2009 manifested as a mild infection in most people, but was severe in pregnant women, people with underlying chronic conditions, Aboriginal and Torres Strait Islander people, and young children.

The Review Committee on the Functioning of the International Health Regulations 2005 found several common areas for improvement in pandemic preparedness for all countries. Firstly, most countries had prepared for a pandemic of high severity and were unable to scale down the initial response when it became clear the pandemic was a more moderate event. Secondly, communications, particularly between decision makers and first responders, and to the public, required significant improvement.

Australia has considered these findings in the development of the AHMPPI 2014. The AHMPPI 2014 takes a significantly different approach to the previous plan and outlines the measures that the health sector as a whole would consider taking in response to an influenza pandemic. Key aspects of the approach include:

- wherever possible, using existing systems and governance mechanisms, leveraging seasonal influenza response mechanisms to respond to a pandemic
- applying a flexible approach, which can be scaled and varied to meet the needs at the time
- making decisions based on available evidence
- linking with disaster response arrangements
- emphasising communication activities as a key tool in managing the response
- providing detailed guidance on collecting national surveillance data.

In addition, the AHMPPI is now a living document that will be updated as new clinical evidence emerges or is developed.

On a jurisdictional level, each state and territory maintains a plan for the response to pandemics that has been informed by and is consistent with the AHMPPI. In addition, WHO has since released a series of pandemic preparedness plan development guidance and implemented or improved response mechanisms for pandemic influenza, including the *Pandemic Influenza Preparedness (PIP) Framework* (**www.who.int/influenza/pip/en/**) and the *Global Influenza Surveillance and Response System* (GISRS) (**www.who.int/influenza/gisrs_laboratory/en/**).

2.6 Crowded places and mass gatherings

Crowded places and mass gatherings pose health risks to the community when large crowds gather and move about. Crowded places may occur because of usual, planned or spontaneous events. The nature of presentations to health care will depend on the nature of the situation or event and the profile of the crowd. While presentations are often for relatively minor complaints, potential for significant injury and death makes sound planning, preparation and management essential.

Alcohol and drugs may catalyse or exacerbate unruly and antisocial crowd behaviour. The presence or sale of alcohol within a venue may significantly increase the number of patients presenting to on-site medical and first aid services.

For more information refer to *Safe and Healthy Crowded Places* (AIDR 2018).

2.7 Chemical, biological, radiological and nuclear events (CBRN)

CBRN incidents pose three main issues for health services:

- potential for large numbers of casualties
- long-term effects for communities and health services to address
- risks to health and emergency workers and others assisting, particularly in the early stages when the agent may not be known and appropriate precautions specific to the agent may not be implemented.

Biological agents have been identified as potential biological warfare or terrorism agents. Diagnosis will be difficult because of the lack of specific diagnostic clues, potential delays in identification of the specific agent, and the likely involvement of health service responders will result in significant weakening of the health system's capacity to manage those affected. The key defences to biological attack, therefore, remain effective public health systems based on risk reduction and mitigation, planning and preparedness, surveillance and laboratory capacity, vaccination of key personnel where possible, standard infection control and biosecurity.

Chemical, biological, radiological, incendiary and explosive (CBRIE) is also used to cover these types of risk.

2.8 Industrial events

Industrial incidents may be categorised as:

- explosions due to chemical mixtures, exposed gas
- fires in buildings, storage facilities and chemical plants
- building or infrastructure collapse
- loss of containment of hazardous material
- industrial incidents may require the extensive evacuations and the decontamination of people and sites.

2.9 Transport disasters (marine, rail, road and air)

Advances in transportation safety have resulted in fewer major incidents in comparison with the rapid expansion in the pace and frequency of mass transportation. While the relative safety has improved, the absolute increase in mass transport provides the opportunity for major events such as rail disasters seen in Granville in 1977, Violet Town in 1969 and more recently, Kerang in 2007. Transport accidents may also occur in isolated areas which are difficult to access.

2.10 Mass burns event

Mass burns require a whole of system approach. Mass burns can result from explosions, transport accidents and fires. Most patients suffer relatively minor burns which can be treated locally by non-specific burns management services. However, in a major burns event, including those involving severe respiratory burns, will best be treated where possible by specialised burns units, for example following the Bali bombings and Black Saturday events.

This presents the challenge of matching the burns patients to the resources available, even if those resources are relatively distributed. In Australia, the *National Burns Plan* envisages the need to distribute patients across the national burns capability in the event of mass burns.

2.11 Floods and tsunamis

Floods range from flash flooding with virtually no warning to riverine floods where the warning time may be months. Floods impact communities either directly through contact with the water or indirectly through damage and disruption the water creates on infrastructure, supply chains and the health system.

Floodwaters may contaminate the local water and food supply and damage waste systems, resulting in the potential for communicable diseases and exposure to toxic materials. Respiratory problems account for a significant proportion of morbidity associated with floods. Mould is especially hazardous for persons with impaired host defences or mould allergies.

2.12 Storms

Storms can occur anywhere and at any time of year although there are clear seasonal trends with different types of storms. Storms can cause injury to people or damage to infrastructure as either a direct or indirect effect. For example, a lightning strike can directly kill or injure people in the immediate vicinity or it can damage power supplies leading to a loss of infrastructure to support people with health issues. Storms often generate flash flooding which damage facilities including health infrastructure with little warning.

2.13 Cyclones

Australia experiences about 13 cyclones each year, mainly in northern Australia. Tropical cyclones produce destructive winds and are often associated with torrential rainfall and damaging storm surges that can cause major flooding of low-lying coastal areas. Cyclones can damage huge areas, leading to significant disruption to the health system.

2.14 Bushfires

Bushfires are a problem especially in rural areas and where rural areas meet urban settlements. Major bushfires can result in severe injury and loss of life, such as following Ash Wednesday in 1983 and Black Saturday in 2009. Smoke can exacerbate people with respiratory problems. They do not have clear geographic definition compared to a floodplain, so this provides particular challenges for planning and health system operation.

2.15 Earthquakes

Many small-scale events are recorded annually in Australia with the occasional significant impact such as Newcastle 1989, Meckering 1968 and Adelaide in 1954. There have been few fatalities, and injuries recorded are mainly through structural collapse. The distribution of earthquakes is not well understood, but large earthquakes have occurred in the past and it is possible for a significant earthquake to occur anywhere within the Australian continent.

2.16 Terrorism and hostile acts

There have been a number of high-profile events in Australia with deaths and multiple injuries. The nature of these events has generated heightened anxiety in people who were involved, including first responders, those directly impacted and the people who supported them, and the wider society. The effects of these events may also compound or exacerbate existing conditions.

See *Collective Trauma Guidelines* (Australian Red Cross 2018) and *Safe and Healthy Crowded Places* (AIDR 2018).

Chapter 3: Disasters and the health system

Key considerations

- Continuity in providing service is a core responsibility of the health system.
- The health system is massive and underpins the quality of life in Australia.
- First responders in a disaster are often locals.
- The components and facilities of the health system should prepare and plan for disasters.
- Primary health care will play a critical role in the short and long term.
- Mental health is fundamental to effective disaster management.

3.1 Introduction

Australia depends on the health system, which employs about 13 per cent of the Australian workforce, to deliver services to communities. The health system depends on a large number of health and allied health professionals including general practitioners, pharmacists and paramedics. This workforce is supported by a large and complex network of infrastructure ranging from large hospitals with thousands of employees to single person clinics in remote areas. Health facilities include over 1,000 public and private hospitals and a host of other facilities such as forensic and pathology laboratories, imaging centres, fertility clinics, day procedure centres, rehabilitation, aged care, nursing home and psychiatric care. The health system is dependent on infrastructure including power, water, gas, waste disposal, communications, transportation, logistics and supply chains.

Disasters disrupt the health system by increasing the demand for services or reducing the capacity of the system to provide services or both. This section of the handbook explores disaster from the perspective of parts of the health system and the importance of continuity of service to community health and wellbeing.

3.2 Pre-hospital and ambulance

Key considerations

- First responders to a disaster scene are often from the local community, health and emergency services.
- Safety of first responders and the community is paramount in a pre-hospital response.
- Situational awareness is key to understanding the pre-hospital requirements.
- A pre-hospital response involves the key activities of triage, treatment and transport.
- Establishment of casualty clearing points can provide a focus for the pre-hospital response.

First responders in most disasters are from in and around the disaster impact area, and may or may not have formal training. Their immediate actions can make the difference between life and death before the arrival of health and emergency services. In most instances, the local ambulance service will be the first health organisation to arrive at the disaster impact area.

The first action for any responder must be to ensure the safety of the responders and communities. This may require the first responders to have specialist training and personal protective equipment in order to operate safely in the disaster scene.

Good situational awareness will assist in identifying safety issues, immediate actions and the scale of the response required.

One system used in some Australian states and territories and the UK for CBRN response is the STEP 1-2-3 system:

Step 1 – One casualty

- Approach patient using normal precautions, unless history includes potential hazardous materials exposure

Step 2 – Two casualties with similar symptoms – contamination possible

- Approach with caution and high suspicion for contamination
- If chemical contamination possible or suspected, go to Step 3

Step 3 – Three or more casualties with similar symptoms – contamination likely

- Do not approach; avoid contact
- Isolate the patient
- Isolate and decontaminate staff if contaminated

Once a formal response has been established, the priorities for pre-hospital responders are:

- triage
- treatment
- transport.

Establishing casualty clearing points, where patients are moved to at a disaster scene can assist in focussing the health response.

Ideally patients should be triaged, moved to a casualty clearing point in priority order, treated by available health and emergency services while those who require it, await transport to ongoing care.

3.3 Pre-hospital triage

The aim of disaster triage is to achieve the greatest good for the greatest number of people.

The process of 'sorting' large numbers of casualties has now been adapted to many settings in health care. Triage in the context of day-to-day delivery of healthcare services where resources are abundant is different to the triage necessary at a time of a disaster when the number of casualties may overwhelm the health system.

3.3.1 Triage protocols

A number of triage tools have been developed to help first responders categorise patients into those that will need immediate attention and those that can wait. Most protocols include an initial 'primary triage' that quickly categorises patients. Then a slightly more detailed assessment as part of the 'secondary triage' process is undertaken once sufficient resources are available.

Many triage tools are designed for use with adults. Using these tools may lead to over triaging of children and unnecessarily draw resources away from other priority needs. Modified triage processes and paediatric triage tape have been specifically designed for use with children. Healthcare workers who respond to disasters should be trained in paediatric triage.

Triage is a dynamic process in all cases, as any patient's condition may change rapidly. Patients should be continually reassessed and recategorised as appropriate.

3.3.2 Disaster triage in Australia

Disaster health responders should be familiar with a range of triage protocols and categorising conventions because they may find themselves working with colleagues from other regions who are familiar with different triage tools. In Australia, all ambulance and health services use the triage sieve and sort protocol.

It should be noted that the triage sieve is used to rapidly prioritise casualties for evacuation from the site of immediate danger, while the aim of the triage sort is to prioritise casualties for treatment and transportation. These triage protocols are different to systems that would ordinarily be used in hospital emergency departments and appropriate training is necessary for those healthcare workers who are not familiar with pre-hospital triage.

Only simple, immediate, life-saving treatments should be undertaken during the triage process such as simple airway opening and haemorrhage control. This treatment should not interfere with completing the triage process on other patients.

3.3.3 Critical mortality

Both undertriage (the failure to recognise important injuries) and overtriage (overestimating the degree of injury) can be problematic. While undertriage may cause harm by missing some patients with significant injury, overtriage can place additional strains on already stretched resources. It has been recognised that most deaths following a disaster come from those patients who are most critically injured. When determining the effectiveness of triage, it is therefore more appropriate to consider deaths as a proportion of those who are critically injured rather than as a proportion of all those affected. This is termed critical mortality. Data from a number of mass casualty incidents in recent decades shows that critical mortality is often proportional to the overtriage rate. This is probably due to the increased strain placed on already stretched healthcare services. While extreme overtriage can be detrimental, many organisations recommend that some overtriage is acceptable to avoid missing those patients who require immediate treatment.

3.4 Treatment on site

Key considerations

- Stabilising treatment may be undertaken in a disaster scene where safe.
- Available skill sets should be matched to patient need and priority.

Simple, immediate, life-saving treatment may be undertaken as part of the triage process. Depending on the immediate risk, treatment may also be undertaken within the disaster scene to stabilise patients prior to being moved to a casualty clearing point.

Once at a casualty clearing point or treatment area, patients should be organised into defined geographic areas by triage priority groups and remain subject to regular, ongoing re-triage. The social and mental health of patients should also be considered, and action taken where possible to keep low acuity patients from witnessing traumatic scenes.

A range of health disciplines and organisations may provide pre-hospital treatment. The skill sets provided should match patient needs and treatment priority.

Priority 1 – patients generally require the highest level of skill available to manage their condition prior to urgent transport.

Priority 2 – patients are usually delayed at scene and require on-going care.

Priority 3 – patients may only require basic care and ideally receive definitive care on scene and are discharged to disaster relief and recovery services.

Health care disciplines that may attend disaster scenes include:

- first aiders
- registered paramedics
- medical retrieval teams (usually a critical care physician and paramedic)
- general practitioners
- hospital sourced medical teams (including medical practitioners and registered nurses)
- Australian Medical Assistance Teams (AusMAT)
- spontaneous volunteers.

3.5 Transport

Key considerations

- Transport should deliver the right patient, to the right place, at the right time, by the right means, as safely as possible.
- Distribute patients as widely as possible to prevent single institutions from becoming overwhelmed while others are underutilised.
- Where possible, patients should be transported by those services that usually provide transport services.
- All forms of patient transport need to be regulated as to where and when patients are transferred.

3.5.1 Transport considerations

Prompt transportation of all patients is an essential part of the health response to disasters. The type of disaster, its location and the available resources will all affect the transport process. Usual medical transport services may themselves be affected by the disaster, which will impact on their normal capacity to distribute patients.

Patients are initially moved to casualty clearing areas and treatment posts based on triage categorisation. Once further triage and basic management has occurred, patients can be transported to ongoing treatment locations such as regional or major hospitals.

The main reasons for patient transport are to remove them from danger and environmental exposure, and to allow diagnosis and treatment. While it is possible to discharge some uninjured patients directly from the disaster site, care must be taken to ensure injuries are not missed while operating in less-than-optimal conditions. Records must be kept if any discharges occur so that these patients can be followed-up, both medically and by police if required. Likewise, care must be taken with the rapid dispatch of patients with minimal injuries so local facilities are not flooded with low-priority cases. Many of these patients will self-present, having travelled by private car, and local hospitals may quickly become overwhelmed.

Priority for ambulance transport is usually based on triage category, with those patients with serious but treatable injuries being transported first. The appropriate medical officer and ambulance commander or transport officer make these decisions jointly.

Effective patient distribution includes:

- transferring patients to appropriate treatment facilities
- distributing patients evenly between facilities when possible
- preventing one facility from becoming overwhelmed by regular communications with the Incident Control Centre (ICC) and keeping logs of patient destinations
- decreasing the number of times a patient is handled between time of injury and place of definitive care
- preventing unnecessary transfer of patients between hospitals
- preventing unnecessary delay in ambulance turnaround time.

To achieve the best outcomes, lesser priority patients can be transported to appropriate institutions further away so the impact on local hospitals is minimised. However, all transport must be appropriate for the clinical condition of the patients. Members of the medical and ambulance teams on site should make decisions about patient destination in consultation with the clinical lead at the ICC or proposed receiving hospitals.

The ambulance service should usually be in overall control of the total medical transport effort. This would include the coordination of any seconded forms of transport. Where possible, patients should be transported by those services that would normally provide patient transport to ensure optimal patient care and to maintain the overall control and coordination of transportation.

Documentation should accompany all patients to assist the receiving institution. This information should include:

- time of injury
- triage category
- how the injury occurred
- clinical assessment
- treatment given
- personal details.

This information is usually available on the triage tag.

3.5.2 Modes of transport

An important geographical consideration for Australian disasters is the potential need to transport patients over large distances. This might affect which mode of transport is chosen. General considerations in choosing the mode of transport include:

- the ability of the vehicle to traverse the necessary terrain
- the number of patients that each vehicle can transport
- the distance and time to proposed receiving hospital or hospitals
- whether the vehicle is equipped with at least basic resuscitation equipment including oxygen, suction and airway aids
- adequate lighting and temperature control
- suitable stretchers and restraint systems
- reasonable comfort for passengers and attendants
- an appropriate means of communication.

At times it may be appropriate to improvise. For example, buses can be used to move large numbers of patients with minor injuries. It is not usually appropriate to take untrained staff out of hospital, instead designated trained retrieval teams should be used whenever possible.

Appropriate precautions should be taken in situations that may involve infectious diseases or hazardous materials. Expert advice may be required on the type of protection and decontamination that is necessary.

Remote and rural areas pose a particular challenge in the logistics of the pre-hospital response and recovery of patients and this is more significant in resource scarce remote and rural regions. Both government and non-government rotary and fixed wing transport services are generally available, and are usually coordinated at a state level by a single Aeromedical Control Centre within that state or territory's ambulance service. When national level coordination is necessary, there is a defined and exercised process to activate and coordinate a national response.

For more information on the clinical aspects of patient transport, see the College of Intensive Care Medicine and the Australia and New Zealand College of Anaesthetists and the Australasian College of Emergency Medicine joint policy paper: Minimum standards for transport of critically ill patients (**www.anzca.edu.au/documents/ps52-2015-guidelines-for-transport-of-critically-i**) (ANZCA 2015).

3.6 Specialist training and equipment

Due to risks and hazards that may exist at disaster scenes, the health responders may require specialist training and personal protective equipment. This may be as simple as having general awareness of disaster scenes and rugged clothing and footwear, or as complex as having current skills and accreditation in areas such as Urban Search and Rescue (USAR) and breathing apparatus.

First responders should understand their limitations, gain good situational awareness, undertake a dynamic risk assessment and determine whether specialist responders are required.

3.7 Hospital-based care in disasters

Key considerations

- Hospitals must prepare and plan for both internal and external disasters.
- Effective planning is essential for an optimal response by hospitals to disasters.
- An incident command system will integrate activities and resources to guide healthcare facilities' response to disasters.
- All hospitals should have an emergency coordinator to oversee hospital disaster response, training and implementation.

Hospitals are generally resourced and equipped to deal with emergencies. Most hospitals will have mechanisms in place for responding to a range of emergencies including internal emergencies such as fire. They will also have in place standing arrangements for dealing with external emergencies that may impact on the functioning of the hospital. Hospitals will generally have a range of emergency alert levels and different codes that enable the system to respond to different threats in different ways. For example, hospital emergency codes like code black and code brown.

During or after a disaster event, particularly if it involves a rush to evacuate, patients' medications and records can be left behind or misplaced. In an area which has been significantly impacted, pharmacies may be closed because of lack of staff or damage. That can lead to an exacerbation of chronic diseases such as diabetes and asthma. Others might lose power to operate home medical devices such as ventilators. As a result, this can lead to an increase in people going to hospitals to seek medical support and potentially increased hospitalisations.

Evacuation planning should include the evacuation of difficult patients with limited personnel and services. Alternatives for complex machinery needed for life support must be identified and prepared. Robust communication trees need to account for the possibility of the total absence of communication networks and power. Mutual aid and state and federal aid resources should be understood, and the logistics of deployment developed well in advance of a disaster. The local hospital is particularly important to rural and regional communities. These hospitals are often isolated by geography, have limited capacity and reserve of resources. There is also little or no opportunity to substitute services as the next hospital may be a significant distance away. Building relationships with primary care and community pharmacies is an important part for building resilience.

See *Evacuation Planning* (AIDR 2017).

3.7.1 Surge and hospitals

The surge response is most commonly associated with hospital care. While surge does focus on patient care there may also be heavy demands placed on non-medical staff in the hospital. For example, the increased number of enquiries can be overwhelming for administrative staff.

The Australian Surge Strategy Working Group of the Australasian College for Emergency Medicine Disaster Subcommittee highlights the following key issues in responding to surge in Australian emergency departments:

- Recognising surge – this includes recognition that basic surge may require modification for all hazards including CBRN.
- Initiating action – emergency department must initiate surge, although it will involve the whole institution.
- Maintaining patient flow – divert, decant and discharge as necessary.
- Setting clinical goals – reorient to a policy of 'do the most for the most' instead of individual patient satisfaction. Priorities are ranked as: lifesaving, limb saving, urgent bedside procedures (analgesia, splints), disposition decision, diagnosis decision, patient comfort, privacy.
- Develop surge team for advance triage – triage is essential to manage flow and senior clinicians (medical and nursing) are needed for this to be most effective. Security is an important issue.
- Providing clinical care – diagnosis is not essential. Making decisions is key. Senior clinicians should review patients to ensure decisions are made. Limit unnecessary investigations and radiology. Junior doctors can care for stable patients.
- Using external and ancillary staff – medical and nursing students and allied health staff may be used.

The components of an effective surge effort in hospitals can be described as:

- Secure the external environment – secure hospital, direct staff, control media.
- Activate hospital command structures – establish chain of command, use common language.
- Logistics and supplies – coordinate supplies and maintain inventory.
- Alternative care sites – designate areas and build relationships with schools, hotels.
- Credentialing and regulations – consider the credentials volunteers may require.
- Patient tracking and identification – keep records and develop a patient reunification process.
- Community support and relationships – maintain relationships and develop communication strategies.
- Exercise – regular drills, educate and identify gaps.

- It is also necessary to identify the decision point; that is, the time at which surge arrangements will come into play.

There is ongoing discussion as to the relevance of daily surge. Daily surge can be considered as the response to regular strain placed on healthcare facilities in attempting to meet the routine management of patients. Many believe the predictable nature of this strain on services and its almost daily occurrence means it cannot truly be considered as surge. In the context of this handbook, the surge response will refer only to the unpredictable pressures placed on healthcare that are seen in times of emergency.

3.7.2 Planning and capability building

Health facilities need to plan for both internal and external emergencies. For an internal emergency the colour code 'yellow' should be used. This would include any event, either internal or external, that adversely affects the delivery of services. External emergencies, code colour 'brown', are declared when the resources of the facility are required in response to an emergency that has occurred outside the facility. This response may include receiving patients directly from the disaster, receiving patients from other facilities or sending medical teams into the field.

An external emergency should be declared in the following situations:

- on request of the relevant state or territory health department
- when a large number of patients present to the facility unannounced
- on receipt of information from a credible source.

There are a range of alternative management systems for disasters and emergencies. Incident command systems, including MIMMS and the Gold, Silver and Bronze command structure from the United Kingdom, are in use in Australia. Several Australian jurisdictions have adopted a hospital MIMMS course which extends MIMMS into hospitals.

All these systems share a similar three-level approach that considers the strategic, tactical and operational aspects of a disaster

Incident command systems are covered in detail in *Australasian Disaster Management: An Operational Guide Incorporating MIMMS (Advanced Life Support Group)*.

When planning for emergencies each of the following phases should be given consideration:

Alert: emergency possible – increase preparedness

Standby: emergency imminent – prepare for implementation of the response

Response: emergency exists – implement response in accordance to plans and in collaboration with other agencies if necessary

Stand down: emergency abated – return to normal business.

Each facility should establish a planning committee with the appropriate authority to develop emergency plans. In addition, an emergency coordinator should be responsible for the documentation, distribution and exercising of plans. When an emergency is declared the emergency coordinator should also activate the Emergency Operations Centre (EOC) and manage the emergency response. Designated emergency officers with defined responsibilities will function under the emergency coordinator.

Other important components of healthcare facility planning include surge capacity, communication strategies, documentation, decontamination, personal protective equipment, pharmaceutical supplies and rostering.

Hospital emergency plans should be exercised at least once every two years. Exercise tools such as the Emergo Train System are appropriate for this purpose and are often used by state and territory health departments.

For more information on hospital disaster planning see *Australian Standards (2010) AS 4083, AS/NZS 5050 Emergency control organisation and procedures for buildings, structures and workplaces (AS 3745)*, and the relevant state and territory health emergency response plans.

Lessons about hospitals and disaster

- Even the best-laid communication plans among internal and community partners can be improved, and it often takes a real life emergency to pinpoint weak spots in plans.
- All area resources that can be utilised in an emergency should be identified. This includes mapping out all supply chain logistics for ensuring that wireless communication, water, food, bedding, linens, fuel for generators and other items can be brought on site quickly.
- Emergency exercises should be coordinated carefully with local authorities, including public health systems, if an organisation is to perform optimally during an emergency situation.
- Surge capacity contingency plans should cover sleeping accommodations and other needs of staff when they must remain in place.
- Five common shortfalls in hospital disaster preparedness:
  - insufficient coordination between hospitals and civil and governmental agencies
  - insufficient on site critical care capacity
  - lack of 'portability' for acute care processes and patient transport
  - education, training and exercising
  - competing hospital priorities preventing adequate preparation.

Farmer et al (2006)

3.8 Public health in disasters

Key considerations

- Undertaking risk assessments of disaster affected areas is an important activity.
- Many strategies are employed to improve public health and safety, particularly in preventing the spread of communicable diseases following a disaster.
- Water quality; food safety and security; waste management; sanitation; hygiene promotion; safety of built environment; insect, vector and vermin control; and communicable disease control are essential requirements in a disaster response.
- Pandemic planning is an important public health measure to help minimise newly emerging infections.

All disasters will have some impact on public health. This may range from authorities initially providing basic public health messaging and maintaining minimum public and environmental health standards in low impact incidents to managing a comprehensive public health response in the wake of a major disaster.

Community resilience and public health outcomes are greatly increased when authorities develop disaster management plans and ensure the community is well informed and aware of actions to take prior to an event.

Public and environmental health includes the provision of comprehensive public health messaging to the community stocking adequate supplies and specific information on how to prepare for events, including potential evacuation procedures.

3.8.1 Public health response

The public and environmental health response actions can be characterised by the SAWFISH acronym:

S	Safety of first responders
A	Air quality
W	Water quality considerations
F	Food safety
I	Insect, vectors and vermin control
S	Sanitation issues
H	Hygiene and health promotion

The dissemination of public health messages is an important part of implementing these response actions.

3.8.2 Safety of first responders

Public health responders should have appropriate personal protective equipment (PPE), including clothing and footwear prior to entering a disaster area to undertake activities, including rapid public health assessments. Authorities should ensure responders have received a primary course of vaccines and are frequently assessed for fatigue, including heat stress and other physical and mental health considerations.

3.8.3 Air quality

Disaster events such as bushfires, cyclones, floods, chemical releases and some thunderstorms can release chemical and biological contaminants into the atmosphere or inside buildings. This may include particulate matter; pollen; microorganisms; noxious gases, fumes and volatile substances; and asbestos fibres. These contaminants have the potential to affect personnel and the community.

Public health responders should only enter disaster-affected areas where these contaminants have been identified by the controlling authorities and where adequate PPE is worn to protect individuals.

Public health messaging is crucial at this point and should be included in initial community safety advisories provided by the controlling authority.

3.8.4 Water quality considerations

The availability of clean water is essential in any emergency. Contamination, both microbial and chemical, should be assessed and managed. Decisions may need to be made about balancing the short- and long-term risks, particularly in the case of chemical contamination. The *Sphere Project* (2018) has published guidelines on both the quantity and quality of water required after a disaster (Table 3). The provision of appropriate advice on drinking water safety by health authorities and water suppliers is an essential task.

Community resilience can be enhanced by providing disaster warnings to residents and tourists in the affected area about storing bottled or packaged water prior to the event.

Table 3: Simplified table of basic minimum water requirements per person

Survival needs (drinking)	3 L/day
Basic hygiene	6 L/day
Basic cooking needs	6 L/day
Total basic water needs	15 L/day

Note: In hot and humid climates increase the drinking water need per person to at least 5L/day. (Sphere 2018).

3.8.5 Food safety and security

In Australia, disruption to food distribution will be a short-term interruption to transportation, storage and retail systems.

Food safety and security advice to communities and individuals in a disaster is essential for minimising the incidence of food borne illness. Ideally, communities should be self sufficient for three days and ideally for up to seven days. Public health messaging to householders on storing food and dealing with frozen, chilled and packaged food in the event of an extended power outage is essential. Strategies should ensure that those who have become isolated or have special needs are catered for. Emergency food distribution strategies should consider alternative food storage and preparation processes to avoid contamination.

Businesses may be significantly affected by a disaster and authorities should establish that they do not pose a public health risk to the community. This is particularly the case for businesses that provide food and shelter.

Donated food is a significant challenge because community groups and individuals are often keen to donate food after a disaster for first responders and affected people. There is a genuine desire to help others in need and this should be recognised. However, if food is not fit for distribution, its disposal should be handled sensitively. Donated food is only acceptable if it is fully fit for human consumption.

Establishing a central collection point will assist with evaluation and distribution of donated foods. Authorities should clearly state what food will be accepted at the collection point and convey appropriate messages to people prior to arrival. Such conditions might include not being able to accept any food that requires refrigeration or alcoholic beverages.

3.8.6 Insect, vectors and vermin control

Flies

Flies may be a major issue in the aftermath of a disaster. Authorities should advise affected residents on actions that may minimise their proliferation and impacts on people, and to prevent food contamination. Local government authorities should consider increasing the frequency of bin collection by waste contractors immediately after a disaster to prevent major fly breeding.

Where a disaster is widespread and resources are limited, commercial and residential premises that are considered high-risk fly breeding sites should be targeted first by authorities, particularly commercial centres that store large amounts of perishable matter such as shopping centres and butcher shops.

Mosquitoes

In Australia, there are several mosquito-borne diseases that could impact on populations, including Ross River virus, Barmah Forest virus, Murray Valley encephalitis and Japanese encephalitis. Occasional outbreaks of dengue fever may also occur. Surveillance should be carried out in endemic areas. Personal protection measures should be recommended but vector eradication is a better prevention strategy.

Vermin

Rats and mice can spread disease, contaminate food and destroy property. Rodent urine and waste also contain allergens that may cause allergic reactions or trigger asthma symptoms in sensitive persons. Precautions should be taken when cleaning homes and buildings after a disaster to minimise public health risks. Removing vermin food sources, water and shelter is an important control. Surfaces should be disinfected in homes and buildings prior to cleaning.

3.8.7 Sanitation and waste issues

Solid waste collection and disposal

Local landfills may be under extreme pressure from dumping huge amounts of building debris, household perishable rubbish and green waste. Waste segregation following a disaster may be essential to ensure these sites do not become inundated. Removal of perishable matter should be prioritised given the public health risks.

A modified existing landfill or a contingency plan to utilise an alternative landfill will be part of the controlling authority's risk management process for disasters that may produce a large quantity of debris or green waste. Relevant local environmental agencies may also regulate the opening of a transfer site and impose operating restrictions.

Human waste disposal

Safe disposal of human waste is essential to preventing the spread of communicable enteric diseases. If community wastewater systems are disrupted by a disaster then short-term onsite waste disposal will be required. This may include households using a bucket and spade to bury human waste in the immediate aftermath and medium term provision of portable toilets, latrines or traditional septic tanks before the affected community's sewerage infrastructure can be reinstated.

Disposal of dead stock

In Australia, large numbers of livestock are often lost during floods or bushfires. The most common disposal method is burial; however, incineration may be considered appropriate. Dead livestock in rural areas can present a public health risk if they are in a drinking water catchment or near a populated area.

Disposal of animal carcases is generally the responsibility of local government or the animal owners however in the event of an emergency animal disease response, the relevant *Australian Veterinary Emergency Plan* (AUSVETPLAN) should be consulted.

Hazardous waste

Public health authorities may be required to provide input into the handling, storage and disposal procedures for hazardous waste.

The development of a risk management strategy for handling and disposing of regulated wastes during a disaster response may be appropriate. Referral to the relevant environment protection authority or a hazardous waste management specialist may be required depending on the location, quantity and nature of the waste. Some jurisdictions have provision for special powers in the aftermath of disasters for disposal of hazardous waste.

3.8.8 Hygiene and health promotion

Public health information may be disseminated to the public through appropriate channels, including brochures, posters, print media, television, radio, websites and social media, as well as liaising with relevant community groups.

Each local and state government body will have their own media release policies to which local authorities should adhere.

For more information on communications in disasters, see Section 1.7 in Chapter 1 of this handbook.

3.9 Other public health considerations

3.9.1 Emergency shelters, relief and evacuation centres

It may be necessary for people to be evacuated either when a disaster is imminent, during the disaster or in the aftermath. Emergency shelters are intended for short-term use and provide information, water supply, sanitation, waste management, shelter and food. Evacuation or relief centres are a longer-term facility and provide for greater needs of a community. Such needs will include nappies and formula for babies, medication for people with chronic diseases, provisions for women, LGBTQIA+ and cultural necessities.

> For more information refer to *Evacuation Planning* (AIDR 2017).

3.9.2 Re-establishment of housing and communities

Areas should be considered safe before communities return and start cleaning and re-establishing their houses. This may include water supply, sewerage and landfill. Potential health hazards such as exposed asbestos or damaged septic tanks should be dealt with as a priority.

3.9.3 Control of communicable disease

The spread of communicable diseases after a disaster depends on:

- the type of disaster
- the background prevalence of diseases
- what population health measures are in place (such as the level of immunisations)
- access to sanitation and sound hygiene practices
- the level of contamination in food and water supplies.

3.9.4 One Health

The WHO's One Health approach (**www.who.int/features/qa/one-health/en/**) emphasises the relatedness of human, animal, and environmental health and the importance of working across disciplines. This approach involves designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes.

A One Health approach is particularly relevant to food safety and the control of zoonosis (diseases that can spread between animals and humans, such as flu). Many of the same microbes infect animals and humans as they share the same ecosystems. Efforts by just one sector cannot prevent or eliminate the problem.

Information on influenza viruses circulating in animals is crucial to the selection of human vaccines for potential influenza pandemics. Drug-resistant microbes can be transmitted between animals and humans through direct contact or contaminated food, so to effectively contain it, a well coordinated approach in humans and in animals is required.

To effectively detect, respond to, and prevent outbreaks of zoonosis and food safety problems, epidemiological data and laboratory information should be shared across sectors. Government officials, researchers and workers across sectors at the local, national, regional and global levels should implement joint responses to health threats.

3.10 General practice and community healthcare in disasters

Key considerations

- There is a high level of primary care need in disasters.
- Supporting early management of physical and mental health conditions can reduce the short-term and long-term impact.
- GPs strengthen healthcare provision through coordination and continuity of care across all domains of biopsychosocial health.
- Continuity of medications, Psychological First Aid (PFA), early reassessment of health needs for those with chronic conditions and ongoing surveillance for emerging effects are a vital role for general practice.
- GPs provide preventative care in disaster, such as tetanus and influenza vaccinations, and provide health education and information.
- GPs have strong connections with the local community and understand the local context and patient experience.
- GPs remain as local health care providers when disaster workers have left.

Disasters have affected more than nine million Australians in the past 30 years and regularly cause health effects that endure long after the disaster is over, including issues of physical health, mental health, chronic disease and lifestyle effects. All these effects interact to affect a person's future health trajectory.

In the days, months and years that follow a disaster, GPs provide holistic and comprehensive primary healthcare at the community level. They are a core part of the disaster response and recovery.

In a disaster-affected community there are people whose pre-existing health deteriorates or who have developed new health conditions related to the trauma and stress.

As the main healthcare provider in communities throughout Australia, often working onsite when disasters occur, general practices and their staff members provide vital services to people affected by such disasters. GPs are the eyes and the ears of the community when disasters happen and provide other responders with a crucial link to the experiences and needs of the local population.

GPs need to be represented in preparedness planning and during the response. Emergency services have an important role in assisting primary care providers to deliver the best care they can under the changed circumstances.

Protocols allow primary health providers the opportunity to be flexible and adaptive in the way they provide health care during and after a major disruption to a community. These might include:

- access to Medicare benefits while practising in temporary premises
- access to services for people who have lost documents like Medicare and Department of Veterans Affairs cards
- rapid access to mental health items for claiming interim medical benefits and mental health items
- providing essential medicines and filling scripts outside the standard pharmaceutical benefits scheme.

Business continuity planning is an essential part of preparedness in primary health care. An example of a planning tool for general practices is the Emergency Response Planning Tool (ERPT), a cloud-based online tool designed to assist general practices to better prepare for, respond to and recover from the impacts of disasters.

The RACGP Pandemic Flu Kit provides planning and preparedness advice for general practices that aligns with the national response and supports provision of ongoing essential health services to patients while supporting public health strategies for patient management to help control the disease.

3.11 Mental health

Key considerations

- There is a psychological response to disasters.
- Supporting strengths and responding to vulnerabilities through a comprehensive approach helps to reduce the psychological impact of disasters.
- Life experiences pre-disaster, concurrently and in the long-term post-disaster, can positively or negatively influence psychological functioning, general wellbeing and mental health.
- Cultural nuances and imperatives are relevant and important considerations in mental health across preparedness, response and recovery.
- Psychological First Aid is the most appropriate initial management tool in the immediate aftermath of a disaster.
- Mental health triage is important at an early stage.
- Acute stress disorder, post-traumatic stress disorder, depression, traumatic bereavement, attachment disorders and anxiety are all potential mental health consequences of disasters across all ages.
- High levels of emotion that are sustained are an indicator of risk for people's wellbeing.
- Recovery can take many years.

The experience of being in a disaster, along with the resulting destruction, personal and family challenges, post-incident environment and the long-term demands, can have a dramatic effect on the mental health of all those involved. People who are directly impacted, along with their community and associated organisations, and the wider society may be affected by the disaster.

Those involved in the response, including mental health providers, emergency services and support people will also be likely to have a range of reactions. Many may experience extreme degrees of stress that can have a profound psychological impact.

With appropriate and timely support, most people will recover from the psychosocial impacts of disasters. However, whilst some people may appear to be resilient, they may experience a delayed development of a range of challenging reactions. Some people may develop clinical mental health problems. The nature of the disaster, experience of fear, dread, threat to life, exposure to a range of associated stressors and pre-existing vulnerabilities can all heighten risk.

By recognising and supporting individual, family and community resilience at all stages of the comprehensive approach to disasters (PPRR), it is possible to make plans to minimise the mental health impacts of a disaster.

Some of the most commonly researched mental health and psychosocial consequences of disasters are trauma syndromes such as acute stress disorder (ASD) and post-traumatic stress disorder (PTSD). These conditions are associated with heightened distress and ongoing arousal associated with memories or reminders of the events. Other common mental health conditions that may result from, or be enhanced by, disasters include major depression, anxiety conditions and traumatic bereavement which can arouse or engage previous life experiences.

Children may experience these in a way that reflects their age and development. Behaviour, relationship, physical, developmental and academic problems may be indicators of mental health issues in infants, children and adolescents.

Furthermore, stressor effects may impact on physical health with evidence showing increased physiological consequences such as myocardial infarctions after some disasters (Jiao et al 2012 & Steptoe 2009).

Typical responses of people affected by a disaster might include:

- seeking help or offering help to others (coming together)
- talking about experiences
- trying to stay safe
- seeking information about loved ones
- children needing to be close to parents and primary care givers
- shock, bewilderment, fear, confusion.

Management strategies in the immediate aftermath of a disaster have traditionally included prescriptive strategies such as critical incident stress debriefing (CISD). There is evidence to suggest CISD is not beneficial and some evidence to suggest it may even be detrimental.

It is now considered appropriate to adopt a three-level approach to psychological support following a disaster.

Table 4: Three-level approach to psychological support following a disaster.

	CORE PRINCIPLES	ACTIONS
LEVEL 1	Safety Support Connectedness Calming Hopefulness Being able to take restorative action and monitoring	Psychological First Aid (PFA) (immediate aftermath) Peer support
LEVEL 2	Connectedness Communication and information Problem solving Self and collective efficacy	Skills for Psychological Recovery (SPR) (weeks to months)
LEVEL 3	Mental health assessment Intervention or treatment Family, individuals and couples' interventions	Specialised mental health interventions (from about four weeks onwards or as appropriate)

3.11.1 Psychological First Aid (PFA)

Early interventions and ongoing psychological support are important factors in ensuring that people have the psychological resources to prevent mental health problems and mental disorders whenever possible.

Psychological First Aid (PFA) is a common sense approach that draws on human compassion and kindness. It is about practical strategies for survival and provides a calm, caring and supportive environment to promote psychological recovery. PFA is consistent with research evidence on risk and resilience. It is applicable and practical in field settings, appropriate for all ages, and is culturally sensitive and flexible. It can also be delivered by any appropriately trained disaster responder and does not necessarily require mental health personnel to be involved. It has been recognised internationally as the appropriate strategy for mass violence. For further information refer to *Collective Trauma Guidelines* (Australia Red Cross 2018) and *Community Recovery* (AIDR 2018).

Some of the psychological principles that apply to mental health responses generally, and to PFA specifically, include promoting:

- a sense of safety
- calm
- the sense of self and collective or community efficacy
- connectedness
- hope.

It is necessary to determine when more assistance is required and how to offer that assistance.

Pre-event risk factors or within-event stressors may suggest those who are at high risk of psychological complications. A simple ABC triage process can be used to help identify those who require further assistance and offer initial care:

A	Arousal – assist to calm, relax, regulate breathing or provide emergency care and sedation if necessary.
B	Behaviours – monitor, calm, contain for safety, mental health assessment when required.
C	Cognitions –clarify reality, provide protection when confused or agitated, assist, where possible, with accurate information the person needs, provide relevant advice, monitor for decreased mental function due to a medical or physical disease.

When there are issues within the ABC, the individual or others may be categorised as at risk. The triage tool would then suggest that further assessment and management would be required.

In describing key action principles for PFA, WHO has identified the following acronym as a guide (WHO 2011):

A	Assess – for urgent physical needs and for persons with serious reactions.
B	Be – attentive, respectful and aware.
C	Comfort – through your presence and good communication, helping people to cope.
D	Do – address practical needs, help problem solve and link people with loved ones.
E	End – your assistance and for yourself. Refer when necessary.

While PFA is appropriate for all ages and is flexible enough for all audiences, cultural sensitivities should be taken into account. In some settings, it may be appropriate to comfort someone by touching their hand. For some cultures this may be offensive. It may also be necessary that PFA is provided by women for women in certain situations. Clear and simple principles of PFA for children have been developed by the National Child Traumatic Stress Network (NCTSN) in the United States and include the concept of *Listen, Protect and Connect*.

3.11.2 People working in response and recovery

It is always important to consider the mental health of people who are working in disaster-affected areas. This include response and recovery workers from emergency management agencies and the health sector, as well as trades people, transport drivers, utility and waste disposal workers. Many of the stressful components in a disaster can have adverse psychological consequences for all those involved in the response and recovery phases. A number of strategies are available to prepare for this role. Facilitating a good knowledge base about disasters and improving responder preparedness will help to eliminate some of the uncertainties associated with disaster response. Overall stress management, including decreased exposure to secondary stressors at work and teaching physical stress management techniques such as breathing exercises, are also beneficial.

Psychological approaches, such as positive thinking, and family and social supports are also key in avoiding some of the negative mental health impacts of disasters for responders. Individual responders, and entire teams, can adopt SAFE strategies to maintain optimal psychological wellbeing:

S	Survival strengths - strong commitment to self-survival through resilience strategies and coping styles.
A	Arousal, hype - manage hype and use the energy constructively.
F	Fear, excitement - dampen the dread and use this energy to drive response.
E	Experience - use previous experiences to assist in achieving successful outcomes.

Concluding notes

Health system protection and continuity

1. In Australia, the health system is a vitally important part of the nation's infrastructure and is highly dependent on other elements of infrastructure such as power, water and wastewater to operate effectively.
2. Components of the health system range from large tertiary hospitals employing thousands of people, to a single GP or a nurse clinic in an isolated rural area. The system comprises a network of multiple providers, both organisations and individuals who may be publicly or privately owned and operated.
3. All organisations, including those in the health sector, have to deal with situations where significant disruptions to their operations occur. This applies as much to a local single GP or clinic as it does to a large tertiary hospital. Disruptions may be caused by change in either or both their internal and external environments. Business-as-usual can deal with small disruptions in the routine environment that are encountered daily, but major disruptions caused by disasters require an organisation to operate in a non-routine way.
4. When a disaster disrupts the functioning of the health system through a combination of damage, dislocation (including evacuations) or increased demand for services, the effects on society can be significant. A significant challenge to health and wellbeing in a disaster comes from lost access to ongoing health care.
5. Every element of the health system should actively develop the capability to deliver services when under stress to be able to continue to provide health services to people during disasters.
6. The loss of elements of health infrastructure is a matter of context. For example, a small local hospital lost to flooding is not a significant part of the health system but it will have a profound impact on the local community's wellbeing.
7. Health services are delivered mainly in facilities but there are also significant number of services delivered to people in their homes. In these cases, the challenges of an extended power failure or an evacuation during or following a disaster are even more significant.
8. A health facility or system is of little value to the community it serves if it cannot function effectively after a major incident or emergency. To maintain service continuity, which is a core obligation of good governance, organisations in the health system should build the capability to anticipate and adapt to such changes to avoid either abrupt or progressive failure. In many organisations, rapid change generated by a disaster is challenging and should be dealt with proactively rather than reactively.
9. Particular attention should be given to activities, processes, resources, and dependencies that are essential for the organisation to quickly adapt its operations to ensure it can achieve its purpose. Such strategies and capabilities enable management to quickly focus on stabilising the situation and maintaining or resuming the most important functions while still working towards eventual restoration of routine operations and full achievement of objectives.
10. Disruptions can also create opportunities, so it is important to be watching for, and being in a position to take advantage such possibilities. The wellbeing of our society depends heavily on the performance of the health sector and so managing disruption-related risk is vitally important.

State, territory and local government health plans

ACT

Australian Capital Territory Government, Department of Health, **www.health.act.gov.au**
ACT Emergency Services Agency **www.esa.act.gov.au/cbr-be-emergency-ready/emergency-arrangements**

NSW

New South Wales Government, Office of Emergency Management, **www.emergency.nsw.gov.au/Pages/publications/plans/supporting-plans/health-services-healthplan-supporting-plan.aspx**
New South Wales Government, Department of Health **www1.health.nsw.gov.au/pds/ActivePDSDocuments/GL2018_017.pdf**

NT

Northern Territory Government, Department of Health, **www.health.nt.gov.au/health-governance/department-of-health/health-disaster-management**

QLD

Queensland Government, Department of Health, **www.health.qld.gov.au**

SA

South Australian Government, Department of Health, **www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content/SA+Health+Internet**
Local Government Association of South Australia, **www.lga.sa.gov.au/publichealth**

TAS

Tasmanian Government, Department of Health and Human Services, **www.dhhs.tas.gov.au**
Local Government Association Tasmania, Local Government Community Health and Wellbeing Project, **www.lgat.tas.gov.au/page.aspx?u=864**

VIC

Victorian Government, Department of Health and Human Services, **www2.health.vic.gov.au/emergencies/shera**
Victorian Government, Municipal Public Health and Wellbeing Planning, **www2.health.vic.gov.au/public-health/population-health-systems/municipal-public-health-and-wellbeing-planning**

WA

Western Australian Government, Department of Health, **ww2.health.wa.gov.au/Articles/A_E/Emergency-management-in-WA**
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