SPECIAL REPORT

A National Framework for Disaster Health Education in Australia

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Abbreviations:
EMA = Emergency Management Australia
WADEM = World Association for Disaster and Emergency Medicine
WHO = World Health Organization

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Abstract

Introduction: Recent events have heightened awareness of disaster health issues and the need to prepare the health workforce to plan for and respond to major incidents. This has been reinforced at an international level by the World Association for Disaster and Emergency Medicine, which has proposed an international educational framework.

Objective: The aim of this paper is to outline the development of a national educational framework for disaster health in Australia.

Methods: The framework was developed on the basis of the literature and the previous experience of members of a National Collaborative for Disaster Health Education and Research. The Collaborative was brought together in a series of workshops and teleconferences, utilizing a modified Delphi technique to finalize the content at each level of the framework and to assign a value to the inclusion of that content at the various levels.

Framework: The framework identifies seven educational levels along with educational outcomes for each level. The framework also identifies the recommended contents at each level and assigns a rating of depth for each component. The framework is not intended as a detailed curriculum, but rather as a guide for educationalists to develop specific programs at each level.

Conclusions: This educational framework will provide an infrastructure around which future educational programs in Disaster Health in Australia may be designed and delivered. It will permit improved articulation for students between the various levels and greater consistency between programs so that operational responders may have a consistent language and operational approach to the management of major events.

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Introduction

Recent events, such as the terrorist attacks in the United States and Europe, and the Indian Ocean tsunami, have raised the level of community and professional awareness in regard to the health impacts of major incidents and disasters. This has produced a heightened level of investment in preparedness, both internationally and throughout Australia. However, there is a need to support this planning and preparedness with increased capability of our professional and general communities. Such enhanced capability requires appropriate research and analysis, as well as education and training.

At present, there is a relative lack of consistent and accessible education programs in health disaster management in Australia, limiting the development of capability in this field. Programs that do exist include:

1. Emergency Management Australia (EMA) has a suite of generic educational programs in Emergency Management including a short course in Disaster Medicine that it hosts on behalf of the Department of Health and Aging (DOHA). This course has not been provided for two years;

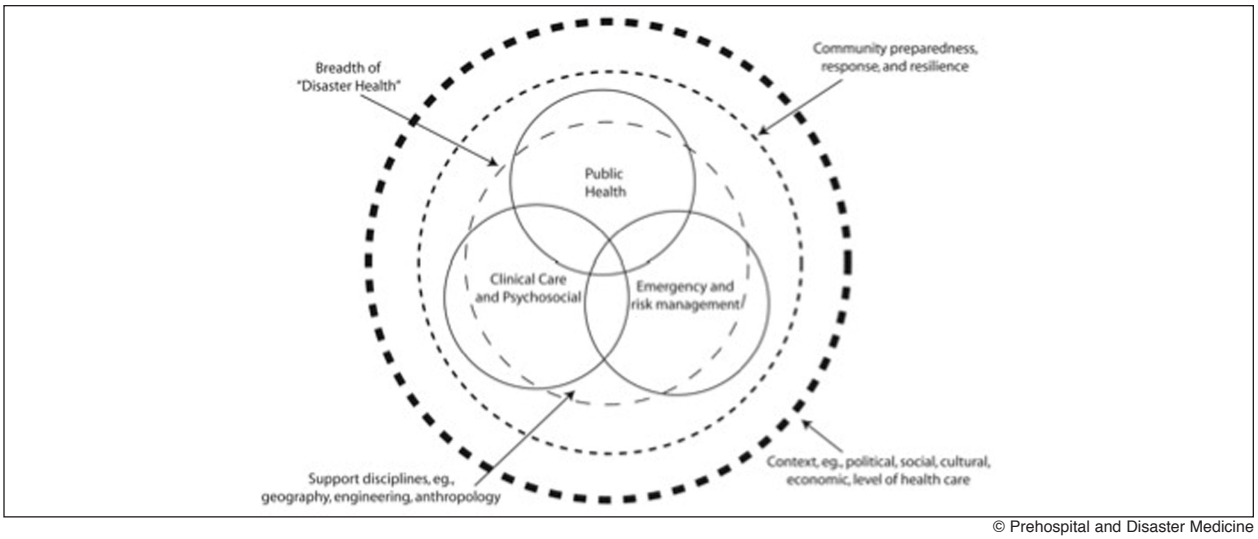

Figure 1—A complete Framework for disaster education[1]

2. Various State health departments in Australia (particularly Western Australia Health) deliver short course and in-service programs, including a state-based version of the National Disaster Medicine Course;
3. Several universities have developed and delivered short course programs for international or domestic groups as well as postgraduate, credentialed programs in disaster health management; and
4. There are several other complementary short course programs that have been developed or imported from international sources including the Major Incident Medical Management and Support (MIMMS) course and courses based on the concepts of incident command systems.

While there is some commonality between these programs and shared teaching, there is a need to take a more consistent approach and to standardize content and curriculum so that the workforce is more reliably and consistently educated and trained. This also may assist with improved communication, inter-agency cooperation, and inter-operability.

There is value in greater integration between these programs and improved capacity to articulate short courses into more extensive, postgraduate, credentialed programs. Finally, such programs should reflect international standards. It is noted that the World Association for Disaster and Emergency Medicine (WADEM) is developing a standard approach to education in disaster medicine[1] and the WADEM, the World Health Organization (WHO), and the International Council of Nurses are working to develop International Disaster Nursing Competencies. Furthermore, the WHO Health Action in Crisis Forum on Emergency Preparedness for the Health Sector and Communities[2] has argued for international efforts to strengthen disaster health knowledge, standards, and education as a priority. Similar efforts are underway in Canada and the United States, adapting WADEM standards in the context of local and national frameworks.[3,4]

Any framework for disaster health management needs to have a sound conceptual basis. Such a framework in which the intersecting domains of public health, emergency management, and clinical and psychosocial care operate within a broader community context is provided in Figure 1.[5]

The educational framework also needs to be consistent with recognized educational principles. Perhaps the most important of these, when developing tiered levels of learning within a framework, is Blooms taxonomy.[6] This is illustrated in Figure 2 and addresses the hierarchy of learning within the cognitive (knowledge) and affective (attitude) domains.

Objective

The aim of this paper is to describe a National Framework for Disaster Health Education in Australia, with a view to ensuring consistency in educational outcomes and facilitating national recognition and transferability of qualifications and course credit within Australia. The objective of this framework is to provide guidance to educators within Australia with a view to achieving a more standardized and integrated approach. This framework is not intended to form the basis of any accreditation program for such courses.

Methods

This framework was developed through the cooperative efforts of the National Collaborative for Disaster Health Education and Research.

Preliminary research included the identification of existing programs in disaster health education and research from around Australia, the WADEM education framework, and generic educational frameworks, such as Blooms taxonomy. The Collaborative that produced this document includes individuals from academic institutions and various government agencies.

The Collaborative met on several occasions, either by teleconference or in person, to develop the framework and

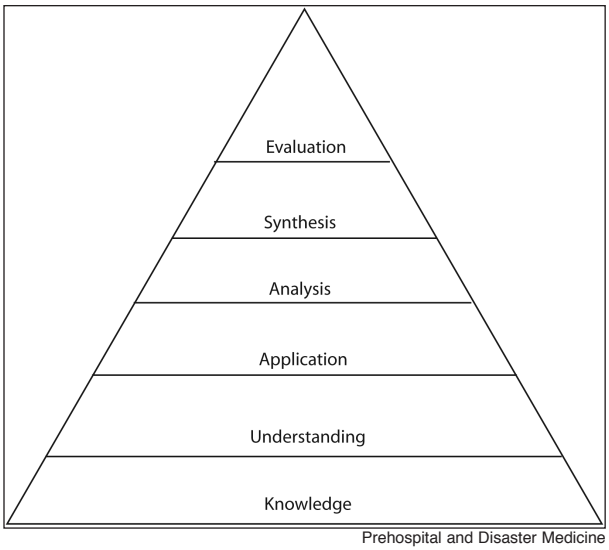

Figure 2—Blooms taxonomy[6]

the learning outcomes for each of the elements. Following initial development of the framework, a modified Delphi approach was used to identify the alignment of learning outcomes to levels. Each member of the Collaborative independently assigned a value based on a three-star rating, the ratings were compiled and levels of agreement identified and areas of disagreement re-circulated until agreement was reached. A final teleconference of members was conducted to finalize a small number of outstanding elements.

Framework

Australia's capacity to deliver disaster health education and research is limited. There are a small number of individuals who have particular interest and expertise in this field. The establishment of a National Collaborative may expedite progressing both the educational and research agenda for Disaster Health Education and Research.

There is considerable value in the maintenance of a nationally consistent approach to the development and delivery of educational programs in disaster health. The characteristics of such programs include:

1. Reflecting nationally agreed disaster management principles and practices based on both best evidence and practice; and
2. Providing flexible delivery modes to accommodate the occupational constraints of the target audience.

The Collaborative identified a number of underlying principles (or assumptions) that were utilized in the development of this framework, including:

1. The framework focuses on health and not on the more generic disaster or emergency management arrangements, although recognizing that knowledge and understanding of the national and local disaster management arrangements is an essential component of disaster health management;
2. The framework is focused on the health aspects of disasters for anyone who has a role to play and not solely health personnel;
3. The framework is integrated, comprehensive, and linked to the Australian Qualifications Framework (AQF) which defines the hierarchy of educational credentials in Australia;[7]
4. There is an emphasis on disaster health, and not disaster medicine,[8] to reinforce the multi-disciplinary nature of disaster health management. It is noted that there is a need for specialized topics that are aimed at a more limited professional and discipline group;
5. The focus of the educational framework is the integration of existing operational knowledge into tactical, operational, and strategic levels and the identification of essential core skills needing additional emphasis;
6. Educational programs are designed to reflect and reinforce the operational management of major incidents, and disasters, and operational strategies;
7. The levels of education are designed so that individuals may articulate from one level to another and amass components of any level in a modular fashion.
8. This framework seeks to articulate educational outcomes and not educational processes. It does not specify the length of courses, although suggestions are made, or the details of content materials or delivery;
9. The framework identifies educational outcomes and not competencies. It is recognized that competency is generated by a combination of education and experience along with personal characteristics of the individual;
10. The framework is designed around an educational core upon which the individual may build further specialization; and
11. The framework is designed around the agreed international approaches to disaster management that have been adopted by Australian institutions, particularly the EMA.

A National Education Framework for Disaster Health

It is proposed that there would be seven levels of education within the National Disaster Health Education Framework. All of these programs would be based on standard core content areas, knowledge and abilities, and would be capable of integration across courses providing articulation pathways. All levels would be open to individuals from any discipline or health based organization. These levels reflect the levels identified by the WADEM.[8]

Level 1: Community Information—Level 1 education programs inform the community of the health aspects of disasters and aid in the development of community resilience. This level is not described in detail.

Level 2: Health Worker Awareness—Level 2 is an introduction to the principles of health disaster management, Australia's disaster management arrangements, and the role required of health workers. This level of education is intended for all health workers and also should be included in undergraduate programs so that a common understanding emerges across disciplines and a common language is developed and used.

This level may be provided by a short lecture or seminar, although it also could be available in a Web-based format

as either a "podcast" or simple electronic resource. Universities and other educational bodies that provide health undergraduate education should undertake delivery of this level of education. Service providers, conference organizers, professional associations, and colleges also could offer this program as an orientation, "in-service", or competency development programs.

Level 3: Basic Knowledge—Level 3 is intended to create awareness and basic skills among health workers who likely will be involved in major incident responses. This level addresses the preparedness, planning, response, and recovery arrangements and the role of various individuals, organizations, and leading players in health disaster management. It could be offered as a one-day seminar or incorporated into post-graduate or in-service programs.

Level-4: Advanced Knowledge—Level 4 programs provide those who play a leading or significant role in disaster management with knowledge of the principles of disaster management, detailed preparation, planning, response (relief), and recovery arrangements, and the leading roles required to manage those arrangements. This level could be delivered as a short course (e.g., 40 hours) of instruction.

This level also includes specialist, short-course programs for particular groups who have a specific role to play in the event of a major incident. These specialist programs include, but are not limited to Health Disaster Planning, Mass Casualty Management, Chemical, Biological and Radiological (CBR), International Assistance, Pandemic Preparedness, Mental Health Care, and Disasters Program and Crisis Management and Leadership Program.

Level 5: Expert Knowledge—Level 5 programs are intended to develop expertise among a small group of health workers, who, because of their role, have a specific need for more extensive knowledge and expertise in aspects of health disaster management. Universities offer these programs. It also is possible that these levels of programs would be recognized by employers, professional colleges and operational organizations for in-service or continuing medical education (CME) points, award of post-graduate qualifications, or an articulation pathway for course recognition as a module of a formal academic qualification. A fully articulated model will ensure that the core material will be available through a variety of modes.

Level 6: Specialist Level—Level 6 programs are intended to allow specialization amongst a small group of individuals who will be responsible for leading, designing and managing the system-wide preparation and planning, and the education of personnel or a highly specialized sub-component. These programs should have the ability to reflect the operational and strategic health planning requirements of these personnel.

These programs should be designed and delivered by universities. A national standard may be developed for knowledge and skills along with standard graduate outcomes for these programs and a selection of core skills and knowledge.

Level 7: Research and Innovation—This level is aimed at individuals involved in the design and innovation of future disaster management systems and structures or the further development of the knowledge base of disaster health through research. Education at this level would involve a very small number of people, who ultimately will lead the research and development agenda. These individuals would be expected to undertake Doctorate-level qualifications.

Development and Delivery

The proposed National Disaster Health Education Framework is displayed in detail in Appendix 1. This table illustrates alignment of the framework with the Australian Qualifications Framework (AQF), the WADEM levels, and Blooms taxonomy.

There still is a need to develop a nationally agreed syllabus for each level of this framework, which may act as a guide for education providers to develop relevant programs. The Collaborative has undertaken a preliminary mapping of content for each level of the framework (Appendix 2). Implementation will be the responsibility of professional organizations, state authorities, and educational organizations including universities. This mapping identifies the topics to be included in the educational programs along with an assessment by the Collaborative of the extent of attention. This is achieved through a "star" rating described in Appendix 1. The ratings do not extend to Levels 6 and 7.

It is proposed that an underpinning framework for education across Australia will help to develop a common language, course recognition, and credit transfer, and will promote inter-operability and improved inter-agency and cross-discipline cooperation and communication.

This framework should provide flexibility in regard to educational opportunities. Short courses will form the basis of the lower levels. However, they will contribute to training at all levels. For example, delivery of any program within the framework may take a number of forms, including lectures, tutorials, and Web-based or practical exercises. These programs also may be delivered via any delivery modality including face-to-face, external, online, or any combination.

Programs may involve disaster exercises, with the opportunity for participants to receive recognition for playing an active role in exercises. These exercises could include discussions, desktop, field, and physical exercises and other more novel approaches.

Articulation

These programs could be articulated into post-graduate or in-service programs of a number of professional disciplines such as nursing and allied health. There also is an option for future professional fellowship programs in disaster health. Those with approved experience, who undertake programs in accordance with the guidance of the Framework, may be eligible for fellowship or clinical development points for some professional organizations such as medical and nursing colleges.

The expert-level core content material will include a mixture of standard disaster management elements and health-specific material. The articulation and advanced standing arrangements will need to be identified. There is scope for any university to recognize and give advanced standing or credit for units completed at other universities or for prior learning with personnel currently developing and delivering these programs.

Future Directions

The Collaborative will continue to review, revise, and improve the National Framework for Disaster Health Education. This will ensure that up-to-date guidance is provided for those who are developing or delivering education/training in the Disaster Health field.

There also is a need to develop an enhanced research capability. There is currently little research undertaken on disaster health issues in Australia. The number of individuals with any significant research experience in the field is small, and thus, any improvement in the level of activity will necessitate collaboration.

The domains of disaster health research have not been identified or categorized in the Australian environment. However, areas of research activity could include, but are not limited to case studies of major events and incidents, resource and equipment development and evaluation, development of innovative response management tools, risk analysis and evaluation, education and training effectiveness, disaster impact, including psychological impact, community resilience and preparedness, technical and management aspects of surge capacity, triage, clinical decision-making and futility, and the effectiveness of command and control systems and leadership.

Development of Australia's research effort in disaster health should involve several strategies:

1. Development of a national collaboration of researchers to build a critical mass;
2. Development of a Research Agenda for Disaster Health in Australia to guide research funding, activity, and innovation. This process is underway;
3. Identification of strategies to develop future capacity through post-graduate education programs, including funded doctoral and post-doctoral studies;
4. Identification of a funding program to encourage the development of research activity, including priority-driven and investigator-driven research and innovation; and
5. Funding of a small core of research infrastructure to provide leadership and coordinate research activities.

Conclusions

The National Disaster Health Education Framework for Australia provides guidance to the direction of education/training programs that are nationally consistent and permit ease of articulation.

A proposed educational framework for disaster health management that aligns with international disaster health frameworks and national educational frameworks and policies is provided. The National Collaborative for Disaster Health Education and Research intends this framework to provide structured guidance to operational and educational organizations in the development and delivery of their programs.

This framework can provide health services with an organized and structured approach to education for disaster health, enabling effective development, delivery, and evaluation of current and future educational programs.

Acknowledgments

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Appendix 1—A National Disaster Health Education Framework

	Level 1 Community Information	Level 2 Health-Worker Awareness	Level 3 Basic Knowledge	Level 4 Advanced Knowledge	Level 5 Expert Knowledge	Level 6 Specialist Level	Level 7 Innovation Level
Level of Learning	Inform community of health aspects of disasters and aid development of community resilience	All health workers are aware of the health aspects of a disaster, emergency management arrangements and their role.	Health workers most likely to be involved will have the basic knowledge and skills to respond appropriately to a disaster according to their role.	Health workers who may be required to play a leading or significant role in the event of a disaster.	Health workers who because of their role have a specific need for more extensive knowledge and expertise in aspects of health disaster management.	Health workers who will provide leadership in the design and development of health disaster management arrangements or to educate and develop others in the field.	Health workers required to lead research and guide future development.
AQF Level	Not applicable	Not applicable	Certificate/ Diploma	Diploma/ Undergraduate/ Postgraduate Certificate	Postgraduate Certificate/ Diploma/ Masters	Masters (specialist disaster)	Doctorates e.g., MD/ PhD/various professional doctoral programs
Outcomes	Upon completion of this program, participants would be informed of the nature of Australia's health disaster arrangements, the importance of community resilience, an awareness of the nature and value of life skills and the role of the community in preparing for and responding to a major incident and disaster.	Upon completion of this program, participants would be aware of the disaster management arrangements for health in Australia, the health aspects of disasters, the principles of health disaster management and the role of key participants in any response.	Upon completion of this program, participants would be knowledgeable of the principles of disaster management, of local and national disaster management arrangements, the risk and potential impacts and the role of key organizations and leading players and be competent in performing their role.	Upon completion of this program, participants would have advanced knowledge of the principles of disaster management, of local and national disaster management arrangements, the risk and potential impact and the role of key organizations and leading players Be competent in leading and managing aspects of the health response. This level encompassing both general and specialist courses.	Upon completion of this program, participants would have an extensive understanding of the epidemiology and impacts of disasters, the theory of disaster management and its application to health, of national and international disaster management arrangements, and of contemporary issues in disaster health Be competent in leading and managing all aspects of the health preparations and response (both general and specialist fields).	Upon completion of this program, and in addition to the expert knowledge, participants would have specialist (in-depth) knowledge, qualifications or experience in one or more aspects of health disaster management.	Upon completion of this program, participants should have contributed to the development of new knowledge and understanding in the field of disaster health management.
WADEM Level	Level 1 Community	Level 2 1st Responders (Basic)	Level 3 1st Responders (Advanced or Specialized)	Level 4 1st Responders (Diploma of Bachelor)	Level 5 Professional (Master Degree)	Level 6 Specialist (Masters + Experience)	Level 7 National Leader Research Doctoral
Blooms Taxonomy	Knowledge	Understanding	Application	Analysis		Synthesis	Evaluation

Appendix 2—Curriculum mapping
The curriculum grid maps levels of learning against specific topics and indicates the extent to which those topics should be expressed at each level.
-No contribution
+Basic awareness appropriate for level of learning
++Acquisition of knowledge to a variable level depending on particular discipline group/expertise/course focus
+++Detailed expert knowledge and understanding of the material appropriate to level of learning.
(continued on page 11)

	1	2	3	4	5
	Community	Health	Basic	Advanced	Expert
Overview					
History and background	-	+	++	+++	+++
Risk	+	+	+	++	+++
Issues in disaster management	-	+	+	+++	+++
Impact of disasters	+	+	++	+++	+++
Principles of disaster management	-	+	+	+++	+++
Incident management	-	+	++	++	+++
Disaster Management Cycle					
Prevention	-	+	+	++	+++
Preparedness	-	+	+	++	+++
Response	++	+	+	++	+++
Recovery	+	+	+	++	+++
Functional approaches (All aspects of the disaster cycle will be considered Emergency Management)					
Population Issues					
Mass communication and information distribution	-	-	+	++	+++
Prepared	+	+	++	+++	++
Structure and management					
Structure and governance	-/+	+	+	++	+++
Logistics	-	-	+	++	+++
Volunteers and donations management	+	-	+	++	++
Planning	-	-	++	++	+++
Response	-	+	++	+++	+++
Command, control, and coordination	-	+	++	+++	+++
Scene management	-	+	+	++	+++
Search and rescue	-	-	+	+	++
Team selection	-	-	-	+	+++
Media	-	+	+	++	+++
Information technology and communication flow	-	-	+	++	+++
Evaluation and future planning					
Surge planning	-	-	+	++	+++
Safety and security	-	-	+	++	+++
Quality cycle	-	-	-	+	++
Incident Evaluation	-	-	+	++	+++
Population Health					
Surveillance	-	+	+	++	+++
Environmental	+	+	+	++	+++
Community	+	+	+	++	+++
Displaced persons	-	-	+	++	+++
Nutrition	-	--	+	+	++
Disease control	-	+	+	++	+++
Health assessment	-	-	+	++	+++

Appendix 2—*(continued from page 10)* Curriculum mapping
The curriculum grid maps levels of learning against specific topics and indicates the extent to which those topics should be expressed at each level.
-No contribution
+Basic awareness appropriate for level of learning
++Acquisition of knowledge to a variable level depending on particular discipline group/expertise/course focus
+++Detailed expert knowledge and understanding of the material appropriate to level of learning.

	1	2	3	4	5
	Community	Health	Basic	Advanced	Expert
Population Health					
Surveillance	-	+	+	++	+++
Environment	+	+	+	++	+++
Community	+	+	+	++	+++
Displaced persons	-	-	+	++	+++
Nutrition	-	-	+	+	++
Disease control	-	+	+	++	+++
Health assessment	-	-	+	++	+++
Clinical					
Principles of clinical care in a disaster	-	+	+	++	+++
Triage	-	+	+	++	+++
Prehospital care	-	+	+	++	+++
Retrieval and transport	-	-	+	++	+++
Medical assistance	-	-	+	++	+++
Hospital care	-	-	+	++	+++
Mental health	-	+	+	++	+++
Infectious disease and control	-	+	+	++	+++
Rehabilitation	-	-	+	++	+++
PPE and decontamination	-	+	+	++	+++
Disaster Types (this is based upon Table 3.1 "Classification of known hazards)[5]					
Natural disasters	-	+	+	++	+++
Mixed and man-made	+	+	+	++/+++	++/+/+++
Man-made	+	+	+	++	+++
Education and Training					
Exercises	-	-	+	++	++
Program delivery and design	-	-	-	++	++
Managing field experience as part of training	-	-	-	+	+++
Teamwork and team training	-	-	-	++	+++
Research					
Research methods in disasters	-	+	-	+	++
Develop a research base	-	-	-	-	++
Evidence based practice	-	-	+	+	++
Future Directions (the following are examples of possible inclusions in this topic which will continually evolve)					
Health security	-	-	-	++	+++