



# Training of disaster managers at a masters degree level: From emergency care to managerial control

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## Abstract

The world has faced huge disasters over the last few decades and concerns have been expressed by nearly all international agencies involved that there is a scarcity of managerial skills to deal with the mitigation and management of disasters. Disaster risks are also on the increase throughout Africa and Southern Africa because of changes in the development process, settlement patterns and conflicts in the region. Emergency physicians are but one important resource in dealing with disasters. The need for a comprehensive multisectoral approach to disasters and more importantly to deal with its mitigation is becoming increasingly evident, especially in developing countries. Hence, the need for specially trained professionals in disaster management. In an effort to improve national, regional and continental capacity, and in support of the South African Disaster Management Act, the University of the Witwatersrand, Johannesburg, South Africa, has developed a Master of Public Health degree in Disaster Management. The MPH is aimed at preparing professionals from health and allied fields to play leadership roles in the management, improvement and evaluation of health and the health-care system. Emergency physicians have an important role to play in the development of disaster medicine and disaster management programmes and it is important that they engage in this activity, collaborating with colleagues of various other disciplines as appropriate. The following paper outlines the background to the programme and the current programme.

**Key words:** *disaster management, emergency medicine, Master of Public Health.*

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<sup>†</sup>Editor's note: Professor Campbell MacFarlane died suddenly on 7 June 2006, travelling back to South Africa from the 11<sup>th</sup> International Conference on Emergency Medicine (ICEM) in Halifax, Nova Scotia.

## Background

Recent disasters worldwide, the Tsunami in the Far East<sup>1</sup> and the hurricanes and floods in New Orleans,<sup>2</sup> have emphasized the importance of disaster management and disaster medicine in attempting to cope with these difficult situations. Africa has its own share of disasters, natural and made, the Tsunami in Somalia,<sup>3</sup> the floods in Mozambique<sup>4</sup> and displaced persons from political problems in DRC and Zimbabwe.<sup>5</sup> What has been evident in all the disasters mentioned above is the overall initial mismanagement of these situations.<sup>1-5</sup>

Disaster management implies the utilization of a whole spectrum of disciplines, including, *inter alia*, public health, medical, engineering, social development, planning, project management, environmental and health impact assessments whereas disaster medicine implies the utilization of the health sciences disciplines in disasters and major incidents.

A major incident may be considered to be an emergency situation, often with multiple casualties, in which the existing resources, sometimes with augmentation, can cope with the situation reasonably well. A disaster is considered to be present when the requirements exceed the prevailing resources.<sup>6</sup> The word 'catastrophe' is sometimes used to describe a greater degree of destruction, in which existing infrastructure, including medical assets such as hospitals and emergency services, is devastated also.<sup>7</sup>

## Introduction

Emergency physicians worldwide have, naturally, taken a great interest in disaster medicine and, to a lesser degree, disaster management. The reality, as many emergency physicians have discovered, is that, in many cases, by the time they reach a disaster site, the need for their acute skills is not the priority. Commonly, those victims who are acute have died and the priority medical requirements are in the areas of public health, water and food supplies, shelter and primary health care.

There is a significant role for emergency physicians, however. If the disaster is close at hand, emergency physicians can practice their traditional role and could be key players in the initial triage and management of acute cases. There might be a need for subacute care, such as the management of neglected fractures and contaminated wounds. Furthermore, emergency physicians may play a significant role in the care of displaced

populations and in the reestablishment of basic health care as well as the training of the populace in basic health and emergency care.

Emergency physicians are but one important resource in dealing with disasters. The need for a comprehensive multisectoral approach to disasters and more importantly to deal with its mitigation is becoming increasingly evident, especially in developing countries. Hence, the need for specially trained professionals in disaster management.

## African perspective

In Africa, with its large and vulnerable population groups and scarce resources, the need for disaster management is of great importance. Africa does not experience a great deal in the way of earthquakes and hurricanes, but they do occur. There have, recently, been earthquakes in Tunisia<sup>8</sup> and floods in Mozambique,<sup>4</sup> for example. The continent is susceptible to the effects of tsunamis, as was experienced by the Maldives<sup>9</sup> and Somalia in December 2004.<sup>10</sup> Africa has prevalent disasters on a continuous basis, for example, famine, disease, including HIV/AIDS, floods, drought, conflict, civil war and many others.<sup>11</sup>

More than 30 million people across East, West and Southern Africa are facing a serious food crisis. Water remains scarce and food prices are rising in the face of people's worsening poverty, lack of social welfare, economic decline and HIV/AIDS have made families and communities more vulnerable. These factors, together with poor and erratic rainfall, have led to the current situation. Animals have died in huge numbers, and people are becoming destitute. Both emergency aid and longer-term solutions are urgently needed. Over the last 2 years, two million people have been forced to flee their homes in Darfur, Western Sudan. They are now living in makeshift shelters in camps or on the edge of villages in Darfur and across the border in eastern Chad.<sup>12</sup> Many more have been affected by the conflict. Over 25 years, brutal civil war forced many Angolans to flee their homes and seek shelter in temporary camps.<sup>12</sup>

In an effort to improve national, regional and continental capacity, and in support of the South African Disaster Management Act, the University of the Witwatersrand (Wits), Johannesburg, South Africa, has developed a Master of Public Health (MPH) degree in disaster management. This is a collaborative effort between the School of Public Health, The Chair and Division of Emergency Medicine and the Office of Disaster

Preparedness for Africa, as well as other schools and departments within the University.

## Wits School of Public Health programmes

The reputation of the University of the Witwatersrand School of Public Health (Wits SPH), to a large extent, rests on the postgraduate teaching programmes that are offered. All of the work of the School is concerned with the major issues that face the public health-care system and the major public health challenges of developing countries. Each course tries to understand, mitigate the effects of, or challenge, inequity. All have some aspect of community engagement, a theme that the School has followed for many years and is also more recently part of the University's strategic plan. The Wits SPH runs a comprehensive series of postgraduate programmes (Table 1). The teaching programmes of the School are well-evaluated, oversubscribed and internationally recognized and reflect the values of the School. The programmes continue to attract students from South Africa, the African continent and abroad.

## Wits SPH MPH programme

The University of the Witwatersrand Faculty of Health Sciences launched its MPH in 1998. The MPH was designed to meet the needs of training health service managers at middle and senior levels. This was seen to meet a dire need in the public health system in

particular. Many universities have followed suite in South Africa and Sub-Saharan Africa.

The MPH is aimed at preparing professionals from health and allied fields to play leadership roles in the management, improvement and evaluation of health and the health-care system. The objectives of this programme are to promote equity in health, play a leadership role in public health, attain a broad understanding of the core disciplines of public health, and develop skills of critical and analytical thinking. The MPH is offered as a full-time degree over 2 years or part-time degree over three or more years.

The course comprises the following parts:

- Part I (six courses),
- Part II (six courses),
- Part III (Research report).

The 12 one week courses are made up of seminars, lectures, small group exercises and case studies. Each course module comprises 40 contact hours, followed by 60 h of independent study. In all courses learning outcomes and assessment criteria have been formulated in accordance with modern educational principles at the level of a masters degree as laid down by the South African Qualifications Authority in the National Qualifications Framework.<sup>14</sup>

Qualifications and standards registered on the National Qualifications Framework are described in terms of the learning outcomes that the qualifying learner is expected to have demonstrated.<sup>14</sup> Hence, on this masters programme, there is an underlying commitment to a system of education and training that is organized around the notion of learning outcomes.

## Wits SPH MPH in the field of disaster management

The world has faced huge disasters over the last few decades and concerns have been expressed by nearly all international agencies involved that there is a scarcity of managerial skills to deal with the mitigation and management of disasters. Disaster risks are also on the increase throughout Africa and Southern Africa because of changes in the development process, settlement patterns and conflicts in the region. Floods, droughts, fires, political and social conflicts, serious transport accidents are among the severe emergencies the medical services are facing. The health services need to face these challenges. How to face chemical spills, how to handle mass casualties, how to calculate the resources to meet these emergencies or how to

**Table 1.** University of the Witwatersrand School of Public Health Postgraduate programmes<sup>13</sup>

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Master of Medicine in the field of public health/community health.
MA in demography and population studies
MSc in epidemiology and biostatistics
MSc in population-based field epidemiology
Master in Public Health (MPH), with the following options:
• MPH in the field of health policy and management
• MPH in the field of health measurement
• MPH in the field of disaster management
• MPH in the field of hospital management
• MPH in the field of occupational hygiene
New programmes coming on line are:
• MPH in the field of health communication
• MPH in the field of maternal and child health
• MPH in the field of rural health

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increase emergency preparedness, are among the urgent questions which few public health institutions are able to answer confidently today.<sup>15</sup> The MPH in the field of disaster management aspires to enable the graduates to manage these issues. This programme was successfully launched in February 2006 by Wits SPH, within the Faculty of Health Sciences, with the assistance of the Department of Emergency Medicine in the Faculty of Health Sciences and the Office in Disaster Preparedness for Africa in the School of Engineering. Current resources are able to manage and present this programme.

This degree can be taken over a period of 3 to 4 years part time or 2 years full time. The majority of students do the part-time course. Students are predominantly from a health sciences background, but some are in other emergency care areas or are involved with disaster mitigation activity of some kind.

a) The first part of the course, the first year if it is the part-time course, is generic for all MPH options and is the responsibility of Wits SPH. It comprises the following modules:

- Health measurement 1
- Health measurement 2
- Management of health and health services
- Public health law and health system integration
- Primary health care and social context of health
- Introduction to environmental and occupational health

b) The disaster management option comprises the following modules:

- i) Responsibility of the division of emergency medicine:
- Medical emergency management (Table 2)

**Table 2.** Medical emergency management module components of the Master in Public Health in the field of disaster management<sup>13</sup>

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Hazards and medical emergencies in Southern Africa
Casualty projection and response, including emergometrics <sup>16</sup>
Rescue capacity, transport and treatment
Field operations
Mass casualty preparedness
Triage and on-site activity
Logistics
Hazardous materials response (chemical, biological, radiological)
Disaster procedures
Assessment of medical preparedness and disaster severity
Incident command
Staff training

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- Hospital disaster preparedness (Table 3)
- ii) Responsibility of school of public health:
  - Public health management in emergencies (Table 4)
  - Research methods and biostatistics (Table 5)
- iii) Responsibility of office in disaster preparedness:
  - Environmental impacts of displacement emergencies (Table 6)
  - Water and sanitation lifelines and displacement emergencies (Table 7)

It is also necessary that the student complete a research project in an appropriate area with the

**Table 3.** Hospital disaster preparedness module components of the Master in Public Health in the field of disaster management<sup>13</sup>

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Risk management challenges
Hospital treatment capacity
Regional capacity planning
Hospital command, control and communications
Hospital incident command and interagency interaction
Security, law enforcement, media relations
Hospital disaster committee
Equipment, stocks and facilities
Emergency management procedures
Alert and notification
Hospital triage
Emergency departments
Chemical, biological and radiological emergencies, burns teams
Hospital response teams
Field operations
Simulations and drills

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**Table 4.** Public health management in emergencies module components of the Master in Public Health in the field of disaster management<sup>13</sup>

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Public health emergency preparedness
Community participation
Project management
Emergency preparedness policy development
Community vulnerability assessment
Bioterrorism – overview, likely diseases, management
HIV/AIDS as a Public Health Disaster – extent of problem, what should be done
Relief Organizations: International Federation of Red Cross and Red Crescent Societies; Medecins Sans Frontiers
Pandemics – overview, diseases, preparedness, management
Forced migration – public health needs and management, simulation of refugee camp set-up
Public health emergency responses
Media communication during public health emergencies

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**Table 5.** Research methods and biostatistics module components of the Master in Public Health in the field of disaster management<sup>13</sup>

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Outline of research protocol
Formulating a research question
Formulating aims and objectives
How to do a literature search
How to use literature
Ethics in research
Data collection
Data analysis
Report writing
Postgraduate Committee processes
Wits Human Research Ethics Committee processes

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**Table 6.** Environmental impacts of displacement emergencies module components of the Master in Public Health in the field of disaster management<sup>13</sup>

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Displacement hazard monitoring and early warning
Preparedness
Displacement
Health monitoring and quarantine
Shelter and public health
Site selection
Security
Resettlement
Returnee programmes
Settlement management
Environmental health – water, sanitation, vector control, waste management, drainage
Nutrition and food supply
Mother and child health
Special needs of vulnerable groups

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responsibility and supervision being shared between the three parties.

## Emergency medicine involvement

Emergency medicine has a major role in the presentation of this degree course. During the allocated modules demonstrations are presented, including the on-scene deployment of emergency services at a simulated incident, the setting up of incident command and the management of the incident. This takes place at a local fire and emergency service training area. There is a walk around of a teaching hospital, reviewing the hospital disaster plan and there is a large hospital disaster exercise in collaboration with the South African Military Health Service.

**Table 7.** Water and sanitation lifelines in displacement emergencies module components of the Master in Public Health in the field of disaster management<sup>13</sup>

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Water borne diseases and public health
Community participation
Construction
Infrastructure
Water sources, treatment, storage and distribution
Sanitation systems
Planning
Sanitation without water
Water saving systems
Sewerage
Maintenance

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## Conclusions

Emergency physicians have an important role to play in the development of disaster medicine and disaster management programmes and it is important that they engage in this activity, collaborating with colleagues of various other disciplines as appropriate. Emergency medicine is more than just the management of acute cases in the ED.

The disaster management MPH of the University of the Witwatersrand is an attempt to address the lack of local and continental capacity by training Disaster Managers who have the knowledge to do the overall management and coordination required for the particular emergencies related to disasters that are experienced in Africa. Interest has been expressed by African countries to the North of South Africa in the programme and it is hoped that this training can be extended throughout the continent, in a spirit of President Mbeki's 'African Renaissance'.<sup>17</sup>

## Competing interests

None declared.

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