

Disaster Medicine

A. A. BALKEMA

Disaster Medicine

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Edited by Dr ⁽¹⁾A. G. Mac Mahon and Dr M. Jooste



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One contribution, *Mobile cardiac care in Port Elizabeth* by Dr A. R. Bosman, was presented in the form of projected slides, and is therefore not represented in this book.

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DISASTER MEDICINE

Man-made events and the unpredictability of natural disasters require that every country, every authority and every community be prepared to meet and cope with any man-made or natural disaster which may occur. The importance of this conference lies in its essential instructional and educational nature.

Dr the Honourable SCHALK VAN DER MERWE

Minister of Health, Republic of South Africa

In this year of 1979 when mindless terrorism can strike deep into the most stable of communities and threaten ordinary folk busy with their normal affairs, no community can declare itself safe from onslaught. The transporting of hazardous substances menaces the man in the street without him even being aware of it. We have seen in comparatively recent months in Europe how a caravan community was decimated by an exploding tanker of the very gas they were using daily for their lighting and cooking.

Over and above the normal — if anything these days can be termed normal — risks of aircraft and train disasters, mankind faces a constant menace to his environment and thereby to his very existence. We live with these things daily and accept them as the hazards of living: yet within them lie the seeds of disaster. From time to time somebody voices concern but unless positive action is taken, not only to obviate the threat but to organise and train people to deal with the situation, little is done and the community tends to settle back hoping that someone else is doing something about it.

Dr the Honourable L. A. P. A. MUNNIK

Administrator of the Cape Province

Disasters, whatever the cause, more often than not result in human injuries and other casualties. It is thus implicit that provision be made for aspects such as first-aid, medical treatment, hospitalisation, ambulance services, nursing of the injured and other medical and para-medical facilities.

Brigadier C. J. MULLER

Director of Civil Defence, Republic of South Africa

Foreword

It is clear that we are facing increasing risks of mass casualties owing to the complexity of modern city life, methods of transport and industrialisation and the activities of terrorists.

When the South African Government decided to declare 1979 as National Health Year, it was resolved to hold an International Conference on Disaster Medicine in Cape Town as part of the activities of that year.

Fortunately disasters in most parts of the world occur infrequently. While indeed this is a happy situation it creates problems for the disaster planners who face an individual lack of experience. For this reason it is essential that those who plan should be brought in contact with individuals possessing a wider experience of emergencies who collectively constitute a pool of expertise. The conference was planned to provide such an opportunity for an exchange of experiences.

Many of the individual papers which were selected for the conference, and have been subsequently included in this publication, emphasise the cardinal importance of ensuring that all the components of the disaster machine (whether hospitals, ambulance or rescue services) should be well organised in everyday application to be of value in major incidents or disasters.

Medical problems following a disaster are multiple and involve *inter alia* public health, psychological and medico-legal aspects. These

have not been ignored and perhaps the greatest value of this conference has been to create an awareness of the totality of medical and allied problems associated with disasters, and to stimulate local planning, national training and educational effort.

In preparing these papers for presentation in book form editorial policy has been to present all papers in English in order to achieve a wider audience. Editorial right has been reserved to edit, delete and amend where necessary. Many figures and photographs have been found to be unsuitable for reproduction and have been omitted. This publication is basically a compilation of papers presented at the Conference with the exception of two papers withheld by their authors for good reason.

It is our hope that this publication will stimulate discussion and practical action.

A. G. Mac Mahon

M. Jooste

Joint Editors

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The International Conference on Disaster Medicine was jointly organised by the South African Department of Health; the SA Defence Force; and the Hospital Departments of the Provincial Administrations of the Cape of Good Hope, Natal, the Orange Free State and the Transvaal. The Cape Provincial Administration was host to the Conference as a contribution to National Health Year.

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Disaster Planning in Perspective

R. L. M. Kotzé

Director of Hospital Services, Cape Town

Man-made and natural disasters are unusual events which disrupt the usual order in the community, and would overwhelm it if not countered. Besides physical destruction, disasters may also cause more casualties and health problems than the community can cope with. A disaster that cannot properly be controlled develops into a catastrophe. Disaster counteraction has on the one hand a biological facet which is concerned with the victim's physical survival, while on the other hand there is the social and ecological facet which is concerned with the preservation of man's environment and the means of his existence. Both these facets present a threat to man's survival, a threat which is intensified in the present era. Thus not only is man's physical existence being threatened but also his habitat.

For its own preservation the community will therefore have to systematically prepare itself to withstand a disaster. Medical men are understandably intensely committed towards the survival of mankind. They therefore are not only idealistic in this regard, but also insist that resuscitation measures and other support facilities be applied with maximum impact in order to save lives and alleviate suffering.

In order to accomplish this goal medical resources should under no circumstances be brought into play in isolation, but should be thoroughly integrated with the total national civil defence system. Advanced medical and rescue techniques have undoubtedly in the past succeeded in saving many disaster victims, but it is also true that by themselves these techniques will have only a minor impact in comparison to the dimensions that some disasters can assume.

If the other components of the community mechanism for dealing with

*Based on article by author and M. Jooste, *S.A.M.J.*, 8 July 1978, p. 61.

disaster cannot be deployed on the widest possible basis so that the ordinary person also contributes fully, the effectiveness of the entire response to a disaster may be jeopardised.

It is incumbent on the State to become involved in order to take effective action to protect all of its subjects and their habitat against this threat. If the threat cannot be averted an attempt should be made at restoring the victim to health and reconstructing his habitat. This task is the responsibility of every sector of the State establishment in which the medical services will take up their full role. In this era the greater the disaster the greater is the need for a realistic approach.

Wide knowledge, experience, a thorough comprehension of the situation and expertise on a multidisciplinary basis are called for in order to act successfully. A new dimension in the medical services sector is now apparent. The medical sector, inclusive of all para-medical, nursing, technological and administrative categories, has to co-operate with other sectors in the country's household (normally strictly speaking outside of the medical sphere) in order to fulfil a major community need brought about by extraordinary circumstances.

Types of Disaster

The following is a summary of the usual situations which can be identified as disasters. A full knowledge of their characteristics and a realistic picture must be maintained of each particular situation.

- 1 Natural disasters — such as earthquakes, floods etc.
- 2 Man-made disasters such as, for example, are encountered in times of terrorism, war (guerrilla and conventional). ABC confrontation could also occur, namely: A: Atomic onslaught; B: Biological onslaught; C: Chemical onslaught; Accidents could occur at nuclear installations, something which should not be overlooked)

STRATEGY OF COUNTERACTION

A matter of primary importance in counteracting a disaster is the early determination of an effective total strategy. The first priority is to ensure the establishment of a comprehensive basic organisational structure and secondly the identification and effective co-ordination of all possible resources required during the counteraction.

A Basic Organisation by Means of which a Disaster Situation can be Withstood

It has been clearly shown that the most effective means of withstanding an

unexpected disaster situation is to have ready a basic general organisational structure which can with comparative ease be adapted to meet any form which the disaster may assume. Once a catastrophic situation has occurred there is no time for considered decision-making and organisation, and important aspects may in consequence be overlooked. The watchword must be 'pre-disaster preparedness' and not 'post-disaster improvisation'. In the event of a national disaster situation, such an organisational structure will have to make provision for all the resources at the country's disposal to be mobilised for the combating of the disaster. It is imperative that there should be unified control of such an organisation. Provision should also be made for proper liaison and co-ordination at all levels.

A disaster control organisation is only adequate when it, in the first instance, is able to provide maximum services to huge numbers of casualties, secondly, has integrated the most effective methods of treatment into its programme and, lastly, has at its disposal the best equipment, transport, follow-up facilities (such as hospitals) and means of communication. No single organisation has at its disposal all these resources, but the various bodies can, if they co-operate, achieve such an ideal. The key to success is, therefore, to devise a delivery system in which all resources are deployed on a national scale.

Identification and Co-ordination of all Possible Resources

Because a disaster may possibly assume catastrophic proportions and at times the entire country may be affected, it is imperative that a survey be made timeously of all the resources which can be utilised in combating it. The resources at the disposal of a country consist of the following elements: expertise, leadership and sound administration; manpower; supplies; accommodation; other.

The Medical and Health Services Component

So much depends on the effective utilisation of the medical and health services in combating disasters that the contribution of this sector is of decisive importance for ensuring success or otherwise. Over the years, sound experience has already been accumulated about the medical treatment of casualties in disaster situations of different kinds. Everyone in the medical and health services sector is aware that if this information can be drawn upon and the knowledge that has already been accumulated can be applied, there will be a great difference in results.

It is also fortunate that certain priorities in the medical field in regard to action in disaster situations of divergent nature, can already be determined in accordance with the best standards, and it has been shown that good results can be obtained whatever form the disaster may assume. On the other hand it must be realised that there is still a great deal to learn about the impact of disasters, and of new facets which are coming to the fore and are still shrouded in a measure of obscurity. The task of those who make a contribution to these services will be to keep pace with research and study, and to fix priorities in regard to their course of action so that those who carry out routine duties (such as nurses and para-medics) can receive clear-cut instructions regarding their roles.

A working definition of objectives in this regard would then be: *Continued study and research on the impact of disasters of various kinds on the human body, mind and spirit*, this to be followed by precise descriptions of procedures, priority-wise, in order to help the victim by taking prompt action and carrying out the appropriate procedure either at the scene of the disaster or in the hospital casualty department. This comprises all aspects of triage (sorting) and the evacuation of casualties. It is of the utmost importance which casualty has to be treated first, for example, whether attention by a surgeon, physician or anaesthetist is the major requirement. Valuable time can be wasted with resulting loss of life if treatment action is misplaced by treating the 'wrong' person first. Further, the treatment of pain and suffering should not be neglected. It should under no circumstances be accepted that a doctor (even if a specialist) will act meaningfully in this dimension of medicine without the medical profession as a whole and related disciplines being properly prepared for it. A handbook of instructions in handling emergency situations should be prepared for general use.

Preventive Medical and Community Health Aspects

It should not be forgotten that major problems can arise in regard to the delivery system in this sphere, during a disaster situation. There are aspects of shelter, food supplies, water-supplies and the combating of infectious diseases and epidemics, poisoning, industrial diseases, dangers and disasters all of which demand special measures. The role and the planning of community self-help action should be laid down and a priority programme in regard to measures to be adopted, should be drawn up in good time.

Psychological and Social Welfare Aspects

Coupled with a disaster and resulting therefrom, great panic and hysteria

sometimes prevail amongst the community and have to receive attention. Disasters bring with them also, to a greater or lesser degree, needs in the social welfare sphere. If these aspects do not receive purposeful attention the morale of the community will suffer and have a detrimental effect on its capacity to cope.

Medico-legal and Identification Aspects

In the event of mass casualties, human bodies are sometimes mutilated beyond recognition. For example, when an aircraft full of passengers burns out or crashes, it becomes an enormous problem to identify the victims. This is an aspect, although not life-saving, which requires priority attention, and demands skill of a high order. Ongoing study is still needed in this field.

Disaster Prevention Aspects and Warning Mechanisms

Many threatening disaster situations can be forecast in advance. An effort should be made to monitor threatening disasters and to institute warning mechanisms on as wide a front as possible.

Education and Training in the new dimension of Disaster Medicine

It has already been mentioned that if the greatest possible measure of success in the combating of a disaster situation is to be achieved, every individual in society has to be given a specific role to play. An effective organisational structure can indicate that task, but each person, in order to function satisfactorily, must have adequate knowledge of his role. This knowledge can only be acquired by basic training in the task which has to be carried out. Doctors, medical students, nurses, 'para-medics', the voluntary service organisations, and so forth, will have to receive standardised training in their own disciplines. Disaster Medicine ought to enjoy professional status in formal curricula of the aforementioned disciplines and it will be necessary to take action to this effect. Lower down the scale the police, Government officials and even the general public, can all be trained in the particular tasks that such persons can master and will thus be able to contribute their share. A child may, for example, save the life of his companion who shares his school bench. All these contributions may be necessary in a catastrophic disaster and could make all the difference between survival or otherwise. Our objective should be the introduction of a training programme for everyone. Universities, schools and public institutions should be involved in the programme.

In conclusion a brief word on behalf of all involved in medical services whether in the private sector or not. This corps of people ably represented by their leaders, are aware of a great responsibility and it is fitting that they take the lead in efforts to provide modern resuscitation and life-saving measures for those whose lives may be shortened or threatened by any emergency situation or disaster. It is wrong for this responsibility to be left only to statesmen, politicians and scientists who, to be sure, must each accept his own responsibility. The prevention of man-made disasters such as war must receive priority from rulers of states and representatives on international political organisations. Granted that prevention of disasters falls outside the scope of medical workers, the latter should, nevertheless, assume a leading role in rendering help to the victims of a disaster.

For this difficult undertaking to succeed doctors and their co-workers must, in the first place, set in motion a co-ordination campaign to ensure that all resources and means, which can further this aim, are used to the full, and, in the second place, ensure that all obstructions or delays, no matter who is responsible for them, are obviated.

Before concluding, I give you a short résumé of the aims in connection with disaster control as expounded by the Advisory Committee on Medical Services in Disaster Conditions in the South African context. These aims are in the process of being implemented and represent the contribution of the medical component in the national disaster control mechanism.

- 1 Establishment of an organisational structure on a national, regional and local basis.
- 2 Planning general strategy in regard to the delivery system of medical service in co-ordination with the national effort.
- 3 Determining priorities in respect of the treatment of disaster victims (triage).
- 4 Surveying, recruitment and co-ordination of manpower connected with medical services.
- 5 Surveying, standardisation and co-ordination of supplies, equipment and services.
- 6 Surveying and co-ordination of accommodation resources.
- 7 Compilation of manuals and handbooks on procedures.
- 8 Stepping up training and educational programmes of all disciplines participating in the effort, including the community at large.
- 9 Making a special effort to co-ordinate and standardise ambulance vehicles, equipment, communication systems, etc, and to train personnel.

Disaster planning in perspective

- 10 A special effort is made to organise diversified study groups who are expected to keep up to date with knowledge and research.

In conclusion, I do not intend to expand on what the Minister has already said about the reasons for holding this Conference. With my own paper I have made a humble effort to show how everyone can contribute to the total national effort of disaster control, and that it would, therefore, be worthwhile to encourage effective action on the lines set out.