RESEARCH DEVELOPMENT FOR ACCIDENT AND INJURY PREVENTION

IRP/APR 216 m31R
8923E
Original: English
Unedited

Foreword

The Alma Ata Declaration refers to the treatment of common injuries as part of the elements of primary health care, yet the prevention of injuries is not stated clearly as compared with what is said for prevention and control concerning health problems in general.

Care of injuries has been of great concern among medical and health professionals, but prevention of injuries or accidents has not, because it was and to a large extent is still not considered as a disease or health problem. Accidents are usually perceived as issues of individual behaviour caused by carelessness and a matter of fate.

Yet there is an epidemiology of accidents and injuries as there is an epidemiology of malaria and alcoholism, using the same methodological avenues. The problem is that it is only being taught in very few medical or public health schools at the present time.

Subsequently, there are no reference models for those willing to engage or develop such public health research, no agreed basic terminology or taxonomy and, above all because of these academic deficiencies, injury research remains at a very low priority level in terms of budget allocation.

Nevetheless, the phenomenon of epidemiological transition becomes a fact worldwide. After developed countries, the developing world is gradually bringing infectious diseases linked to malnutrition, poverty, poor hygiene, etc. under control and they are now facing chronic diseases more and more in a second stage. Most of the countries now face a third stage linked to health hazards stemming from environmental or socio-economic changes which rapidly bring about behavioural or lifestyle changes in communities. Alcohol, drug abuse, violence and accidents belong to this third phase.

It means that if accidents and injuries belong to the present because of the harm they cause to individuals and communities, research to control them, if it does not belong fully to the present, will be fundamental for the future.

In view of this, steps have been taken to initiate an analysis of gaps and needs through consultation with experts, in order to bring the conclusions to the attention of the WHO Advisory Committee on Health Research (ACHR). The first consultation was held in the South-East Asian Region of WHO and focused mainly on the developing countries and the second took place in WHO Headquarters in Geneva and covered principles valid for both developed and developing countries. A Programme Advisory Group considered this issue. This document sums up this first phase.

In the second phase a status report will be prepared and will include an in-depth analysis with proposals for injury research promotion, and several country case reviews. This report will form the background for a special session on accident injury prevention to be included in the agenda of the 29th Session of the ACHR in 1988.

Dr C.J. Romer
Chief, Accident Prevention Programme

CONTENTS

Page

FIRST REGIONAL CONSULTATION ON RESEARCH DEVELOPMENT FOR INJURY PREVENTION
New Delhi, 4-5 November 1985

1. Introduction 5
2. Injuries as health problems 6
3. Issues 6
4. Conclusions 9
5. Annex 1. Discussion Group 1 - Summary Report 11
   Annex 2. Discussion Group 2 - Summary Report 12
   Annex 3. Inaugural address by Dr Chaiyan K. Sanyakorn 15
   Annex 4. List of participants 17

AD HOC GROUP ON ACCIDENT AND INJURY RESEARCH
Geneva, 18-19 March 1986 21

General introduction 22

1. An introduction to the nature of the threat to world health 24
2. Priorities in accident and injury research 27
3. The research approach: its context, its potential and its achievements 30
4. Using the results of accident and injury research 32
5. Integrating programmes 33

Annex 1. Research strategy for accident/injury 34
Annex 2. Research and intersectoral cooperation in the field of accidents 39
Annex 3. Scope and purpose 43
Annex 4. List of participants 44
Annex 5. Advisory Committee on Health Research Report to the Director-General 45
Annex 6. Programme advisory group on accident prevention Extract from report IRP/APR 216/5 52

FIRST REGIONAL CONSULTATION ON

RESEARCH DEVELOPMENT FOR INJURY PREVENTION

New Delhi, 4-5 November 1985

1. Introduction

The First Interregional Consultation on Research Development for Injury Prevention took place at the World Health Organization Regional Office for South East Asia, New Delhi, 4-5 November 1985.

It was opened by Dr C.K. Sanyakorn on behalf of the Regional Director and by Dr Ramalingaswami, Director General of the Indian Council for Medical Research, who emphasized the community element of accident or injury prevention by saying that "Accident prevention lies at the very heart of primary health care".

Dr C.J. Romer joined the previous speakers on behalf of World Health Organization/Headquarters.

The purpose of this Consultation was, by initiating a beginning of thoughts on means for promoting injury research policies, particularly in developing countries:

1. to define main areas for research development, taking into account social, economic and geographical differences;

2. to consider methodologies for injury research and related needs for research;

3. to define and rate priorities for research issues, either in consideration of those requiring intercountry cooperation, specially (TCDC) or international coordination and support.

Professor K. Gürsu Hazarli was elected Chairperson and Professor E.M. Backett Rapporteur.

Public health research on injury or accidents has mainly concentrated on treatment techniques and organization of medical or rehabilitation services. With regard to prevention, with the exception of a very few industrialized countries, there is no policy or even a consideration of the needs for public health research in this area. Child safety research, however, is beginning to develop on a modest scale and there is specific research on biomechanics of trauma, although this is limited and not part of national public health research programmes.

As far as motor vehicle injuries are concerned, ministries of transport are usually in charge of traffic safety research, but the involvement of public health scientists in such research is either nil or very weak, despite the definite need in fields like child, adolescent and elderly traffic safety, drugs and alcohol, education, etc.

As a consequence of the situation mentioned above, there is a discrepancy between the epidemiological importance of injuries and accidents, especially in the general population during the first half of life, and the level, amount and quality of research which is developed in this respect. Injury research cannot compete with more traditional public health areas like cancer, cardiovascular diseases, communicable diseases, etc. in the rating of national

priorities, and it is often a marginal activity without either prospect for a recognized career or a specific curriculum for undergraduate or postgraduate training.

2. Injuries as health problems

2.1 As the tide of infectious disease declines, injury prevention is nevertheless still neglected; the proportionate contribution of injury to all mortality, morbidity and service use is rising and research must keep pace, as it has done in the clinical field.

2.2 The deficiency is in research into PRIMARY and SECONDARY prevention of injury.

2.3 To make up the deficiency new knowledge is needed and this is likely to be obtained through scrutiny of biomechanics and advancing technology, from community and individual behaviour, for example in houses, streets and factories. These are the areas of interest of primary health care. The prevention of injury thus becomes a major feature of PHC.

3. Issues

The meeting addressed the topic of injury prevention through a discussion of a series of issues, and most of the conclusions reached had the strength of a recommendation. Together they point the way ahead as seen by the participants.

3.1 Size and importance

By any criteria such as incidence, mortality, expected life loss, cost, grief, separation, pain, etc., injuries are of major importance and are always underrated.

3.2 Priority

Priorities for research into prevention will differ with each region and culture. To be considered in the process of allocation of priorities are:

- the vulnerable groups: e.g. children, adolescents, the aged, etc.;

- the site: e.g. home, road, industry, playplace;

- the nature of the injury: e.g. the burn, the fracture.

By relating these parameters to the incidence and cost (perhaps in expected healthy life loss as well as resource use), to a notion of how easily the injury could be prevented and to community priorities, a priority order will emerge.

3.3 Information systems

To achieve a priority order - or to establish who is at risk - vastly more information is needed about such obvious data bases as morbidity, mortality, disability, risk factors, the people concerned, the accident-injury sequence, the psycho-social effects and determinants and the quality of life of survivors. How these data are collected, presented and used is of great importance but it must be simple, as small as possible in amount, draw on several disciplines (social science and epidemiology) and above all, define denominators.

3.4 Terminology

To facilitate the new data bases, the terminology should be standardized, simplified, used universally and therefore easily translated and clarified. Records using new terminology should also be brief, clear, simple and their use - except for absolutely basic material short in duration.

3.5 Training

The shortage of trained research workers prompted a renewed demand for training courses, workshops and the inclusion of research methods in existing curricula. Emphasis was on training for simple research and for the development of "short-cut" methods.

3.6 Multiple disciplines

The skills and insights of the behavioural scientists, economists, engineers, etc. are needed as well as those of the health professionals. Just as the accident-injury sequence is multifactorial, so its study must, of necessity, be multidisciplined.

3.7 Multisectoral nature

Because the causes of accidental injury are so complex and involve so many sectors of a society, for example, transport, design standards, house construction, etc. as well as health and health behaviour, injury research is likely to be multisectoral. At the moment all these different sectors are undertaking their own research and coordination has proved difficult. The meeting felt strongly that although such coordination is difficult, it is a high priority. New measures were needed which could be generally applied and the political difficulties of intersectoral coordination recognized.

3.8 Difficulties in promotion of research

The meeting reviewed inter alia the obstructions and constraints which were preventing the development of research programmes and found that a preference for curative medicine, a refusal to recognize the individual and social importance of injury and a popular refusal to recognize risk were leading to a severe underfunding.

A problem impeding the recognition of the importance of injury was the denominator problem. This prevented a proper comparison of injury rates and thus a recognition of who was vulnerable and by how much.

Social policy development had been slow (and this in turn affected the recognition of need) largely because of a lack of measures which could show the probable effects of legislative and other changes.

The lack of clear patho-physiological "causes" of injuries had meant that classical preventive approaches through "classical" epidemiology were of little value.

Finally, the meeting felt that most accidental injury prevention programmes had been of a "vertical" nature and had not been coordinated with development or PHC programmes of which they were properly a part.

3.9 Implementation

Many of the studies which pointed to methods of injury reduction had not been implemented either as part of development or health care programmes. Implementation of findings should be considered at the outset of the research: the research should contain an "action" or service component.

3.10 National policy formulation

The evident lack of appropriate structures for national policy formulation was blamed in part upon the intersectoral and interdisciplinary nature of the problem (see above) but also directly upon a number of other factors. Among these the lack of appropriate measures, the lack of appreciation of injury as a formidable health problem by senior civil servants and the interconnected problems of lack of data and clinical disinterestedness were important.

3.11 The role of primary health care, the family and the community

"Injuries are at the very heart of primary heath care"
(Dr Ramalingaswami, Chairman of the meeting and Chairman of WHO's Advisory Committee on Medical Research)

The meeting added that, while that might be so, the subject and the need for research was largely neglected by those most closely concerned with PHC. It was also neglected by the health systems researchers, by the gerontologists and to some extent by maternal and child health researchers. These four research groups could be a source of resources and encouragement. They could also provide research expertise.

4. Conclusions

The conclusions fall into five groups:

4.1 Those aimed at convincing the research councils, WHO, Governments and NGO's of the greatly increased need for research into primary and secondary injury prevention.

4.1.1 Information systems which would present injury data in such a way as to impress the need for primary and secondary prevention and the need for research.

4.1.2 Stress the need for training of research workers and research managers. Special emphasis would be upon the relative simplicity and the appropriateness of the research proposed.

4.2 Those outlining the kind of research proposed:

4.2.1 Emphasis that the research would be population and community based, using small populations over short periods of time and with a standard terminology. The research method would be multidisciplinary, "participator" and would focus particularly on behaviour and the environment as the source of risk factors in accidental injury. It would also have a service or 'action' component and use simple case-control methods, surveys and health systems research. It would be intersectoral and have built-in evaluations; these being of particular importance.

4.3 Those suggesting subject for research:

Under this heading a number of examples were explored:

a) Economics and social science:
Why so little attention?

b) Methods:
Simple evaluations, weighing of risk factors, effects of removal of risk factors.

c) Behaviour:
Growth and learning of risk-taking behaviour. Modification of risk-taking behaviour in different age and sex groups. Recognition of risk. Risk-taking and technological change. Motivation and incentives in risk-taking behaviour. The relationship between knowledge and risk-taking. The effects on behaviour of design changes. Cultural patterns and imperatives.

d) The environment:
Making the environment safe through design standards variously enforced and particularly in housing, packaging, heating and cooking, vehicle structure, etc. Particular attention to appropriate technology, child labour, small sector industry and death by drowning.

e) The costs and benefits of different interventions

f) Evaluation:
Particularly of health education of different kinds, of A-V material and of legislation.

4.4 Cooperation in research:

Much of the research which was discussed was felt to be of the type which would benefit from TCDC (Technical cooperation with developing countries) and all other types of assistance and particularly the development of regional centres and collaborating centres. It was felt that such centres were particularly appropriate for biomechanical studies.

Annex 1

DISCUSSION GROUP 1 - Summary Report

Environment

A. There was general agreement that it is difficult to be very precise or unanimous about identification of priorities in the absence of extensive accurate and reliable data. Therefore it is essential to find research projects which help in:

(i) Standardization of injury severity and description systems for use both by laymen and professionals.

(ii) Development of methodologies which make recording of product and environmental details easier.

(iii) Understanding the epidemiology of injuries through special in-depth studies dealing with important problems in carefully selected representative populations.

B. The group considered a large number of areas important but all are not included in the list of priorities given below. This has been done with the understanding that it would serve no useful purpose to include those topics which are already receiving a great deal of importance. Much more stress should be laid on the following areas:

(i) Practical architectural improvements in the home and school environment with special reference to the low income group. The suggested improvements should be such that they are easily understood and implemented by the community.

(ii) Region and community specific studies on poisoning with a special effort on evaluation of different packaging and technical counter measures.

(iii) Research on environmental changes for burn control.

(iv) Injuries due to agricultural technology including pesticides.

(v) Injuries relating to the use of child labour.

(vi) Injuries in the small sector industry.

(vii) Epidemiology of drowning and evaluation of counter measures.

(viii) Better environmental and product design for the control of injuries to road users other than those enclosed completely within the structure of vehicles.

C. Research on appropriate technology and referal mechanisms for injury control at the primary health care level. This should take into account the existing health infrastructure.

Annex 2

DISCUSSION GROUP 2 - Summary Report

Behavioural research in accident prevention

Behavioural research is the assessment of socio-economic development, cultural patterns and different lifestyles on accident risk occurrence in society.

Behavioural research should give guidelines for the development of activities that will have a direct influence or will directly support country programme formulation and implementation in the field such as collection of relevant basic data for planning and programming purposes, legislation formulation, as well as support to training and education methodologies.

Behavioural research needs to support the establishment of national policies and strategies for controlling accident hazards or minimizing their public health consequences through situation assessment, dissemination of information, support to research on technology for safety as well as promotion of the application of known efficient and appropriate technologies.

Objectives

1. To aid in individual country programme formulation and implementation based on the system of information providing for surveillance, monitoring and evaluation.

2. To develop skills in data gathering and the design of information systems, including training programmes for those gathering the data.

3. To familiarize with behavioural and epidemiological research techniques.

4. To develop strategic planning skills as well as management skills for the effective management of accident prevention programmes.

5. To provide an opportunity for researchers, programme and policy developers and programme administrators to work together, learnimg from each others' experiences and expertise.

6. To develop evaluation skills, to assess the effectiveness of accident prevention programmes, thus ensuring the most efficient use of resources.

Priorities for intervention of injury problems

Legislation

For example, traffic laws can change human behaviour, creating a safer environment, government authorities or private industry may be forced to take action which would result in a safer environment by means of legislation relating to the many diverse areas - clothing, fireworks, hazardous substances, waste disposal or occupational health.

Annex 2 (Contd.)

Education

Education can change people's understanding of accident risks and preventive measures and thereby lead to a change in attitude and subsequently a behavioural change. Improved education and promotion based on sound scientific resarch is more likely to have an impact on a community's overall prorities and attitudes, resulting in legislation which expresses priorities in a tangible way.

Promotion

Promotion can change people's perceptions, attitudes, beliefs and opinions, which may also result in behaviour change as well.

Target groups

Intervention should be targeted specifically at high risk groups:

- parents of pre-school children
- parents of school children
- teachers
- children
- drivers
- pedestrians
- bicycle riders
- occupational focus
- sports involvement
- women
- aged, etc.

Recommendations

1. Establishment of a quality data base on which to develop programmes as an intervention of the accident problem.

2. Studies should be undertaken for the idenfitication of risk factors and vulnerable groups with special reference to demography (rural, periurban, urban areas) social and related parameters.

3. Specific project collection of baseline data on the problem including behavioural attitudes and awareness of what is a problem as well as environmental aspects.

   These studies should be community based.

4. Community involved in participating pilot projects should receive priority for injury surveillance, education and training, management, evaluation and rehabilitation.

5. Operational studies should be undertaken for purpose of education, intervention (social, cultural, behavioural and public health), and development of appropriate management systems.

Annex 2 (Contd.

6. Specific case studies on knowledge, attitudes and practice are recommended for development of appropriate health education intervention modules developed for the various specific regions.

7. Role of primary health care workers should be analyzed in safety promotion, prevention, mangement of injuries and accidents and the existing system of training should be geared to the community.

   Utilization of primary health workers in the establishment of a baseline-awareness of accident prevention knowledge, as well as a community based network promoting simple accident prevention messages, e.g. cold water treatment for burns.

   It is important to establish a control group to enable a comparison of results to be obtained.

   Evaluation should be based on not only awareness of knowledge but more importantly, behavioural changes in both the short and long term.

   The system of built-in evaluation should be developed for updating their skills.

8. Education programmes measure changes in behaviour not just awareness of knowledge.

Annex 3

INAUGURAL ADDRESS BY DR CHAIYAN K. SANYAKORN, ACTING REGIONAL DIRECTOR
WHO REGIONAL OFFICE FOR SOUTH EAST ASIA, NEW DELHI,
ON CONSULTATION ON RESEARCH DEVELOPMENT IN EPIDEMIOLOGY
OF INJURIES, NEW DELHI, 4-5 November 1985

Distinguished Participants,

It gives me great pleasure to welcome you here on behalf of Dr U Ko Ko, Regional Director, SEARO, at this First Inter-Regional Consultation on Research Development in Epidemiology of Injuries. Accidents represent an important public health problem the world over and constitute a major cause of death and disability. The causes, types and severity of injuries resulting from accidents vary from country to country. While in the developed countries, accidents are the third major cause of death, in developing countries the relative importance of accidents as a cause of death and disability is rapidly increasing as a concomitant of socio-economic development. The burden that accidents place on society in general and on health services and resources in particular has already been recognized as needing priority action.

The first resolution requesting WHO to play an active role in accident prevention and the coordination of related research was adopted by Member States at the World Health Assembly in 1966. A further resolution passed at the Health Assembly in 1974 relating to traffic safety and by the Executive Board in 1976 resulted in the development of a formal WHO programme for accident prevention. WHO's Seventh General Programme of Work covering the period 1984-1989 spells out, among other things, the identification of priority research areas, especially with regard to the importance of behavioural and socio-cultural aspects and life-style in accidents. The programme of accident prevention is based on information and education, and on the improvement or alteration of the work, home and traffic environment. The modalities of management both in the immediate and late post accident periods determine the fatality and disability rate that follows accidents.

Research into the public health aspects of injuries or accidents has until now concentrated on treatment techniques and on the organization of emergency accident or rehabilitation services. As regards prevention and the need for public health research, very few countries have clear national policy decisions in this regard. Even among those countries that have embarked on research studies, attention has been directed only to subjects such as child safety and the biomechanics of trauma. While road traffic accidents come within the scope of the ministry of transport, which manages and provides funds for traffic safety research, the urgent need for public health researchers to be involved in such studies has not been recognized. It is becoming increasingly obvious that such multidisciplinary endeavours need to be promoted in the light of, among other things, the epidemiological, medical, sociological, behavioural and psychosocial aspects of accident and injuries.

This first Interregional consultation on research Development for Injury Prevention has brought together experienced scientists, administrators and researchers from various disciplines and different geographical areas. This forum should provide an opportuinity to explore possibilities and areas for intercountry cooperation, especially Technical Cooperation among Developing Countries (TCDC) and for resource mobilization in support of research activities.

Annex 3 (Contd.)

From the point of view of WHO, this consultation would permit the identification of research needs, both at the global and regional level, within the context of the WHO programme for accident prevention.

This Consultation is expected to come up with a definition of the main areas for research development, and a listing of priority needs and methodologies for injury research which could be adopted by Member Countries for implementation in the context of their own priorities and resources. We are pleased to note the support and active participation of the Ministry of Health and Family Welfare of the Government of India and the Indian Council of Medical Research in the organization of this consultation.

I wish you all a very fruitful meeting and a very pleasant stay in New Delhi.

Annex 4

LIST OF PARTICIPANTS

AUSTRALIA

Ms S. Whitelaw
Executive Officer, National Safety Concil of Australia, Bowden

DENMARK

Prof B. Sorensen
Department of Plastic Surgery and Burns Unit, Hvidovre Hospital, Hvidovre

INDIA

Dr A.K. Bhattacharya
Deputy Director General (Medical), Ministry of Health, Department General of Health Services, New Delhi

Professor P.K. Dave
Head Department of Orthopaedics, All India Institute of Medical Scieances, New Delhi

Dr M.H. Keswani
Burns Association of India, Bombay

Dr S.K. Mitra
Associate Professor, Department of Paediatric Surgery, Postgraduate Institute of Medical Education and Research, Chandigarh

Professor D. Mohan
Centre for Biomedical Engineering, Indian Institute of Technology, New Delhi

Dr A.K. Mukherjee
Director, All India Institute of Physical Medicine and Rehabilitation, Bombay

Dr Reshmi Parhee
Senior Research Officer, Indian Council of Medical Research, New Delhi

Dr Bela Shah
Senior Research Officer, Indian Council of Medical Research, New Delhi

Prof P.N. Tandon
Head Department of Neurology, All India Institute of Medical Sciences New Delhi

Dr Tewari
Maulana Azad Medical College, New Delhi

Annex 4 (Contd.)

Dr M. Thangavelu
Dean, PSG Institute of Medicine, Peelamedu, Coimbatore

Dr V.K. Verma
Ministry of Health, Director, Emergency Medical Relief, Directorate General of Health Services, New Delhi

INDONESIA

Dr S. Praptasuganda
Badan Litbangkes, Departement Kesehatan, Jakarta

JAPAN

Professor T. Hirayama
Tokyo Women's Medical School, Tokyo

NEPAL

Dr N.B. Thapa
Kanti Hospital, Maharajgunj, Kathmandu

SAUDI ARABIA

Dr Abdul Rahman Al Bunyan
Chief of Surgical Department, Riyadh Central Hospital, Riyad

SRI LANKA

Dr L.M. Amarasinghe
Surgeon, Burns and Plastic Surgery Department, General Hospital, Colombo

THAILAND

Dr V. Punyahotra
Secretary General, National Safety Council of Thailand, Office of the Prime Minister, Bangkok

TURKEY

Professor Gürsu Hazarli (Chairperson)
Director of Plastic and Reconstructive Surgery Department, Hacettepe University, Ankara

UNITED KINGDOM

Dr M. Backett (Rapporteur)
Lids tones, South Town, Darmouth

Annex 4 (Contd.)

WORLD HEALTH ORGANIZATION

Regional Office for South East Asia

Dr Chaiyan K. Sanyakorn
Director, Prevention and Control of Diseases Programme

Dr M. Sathianathan
WHO Programme Coordinator and Representative, India

Dr Uton M. Rafei
Director, Health Protection and Promotion

Dr R. Pararajasegaram
Regional Adviser, Prevention Blindness Programme and Focal point, Accident Prevention Programme

Dr J. Putrali
Medical Research Officer, Tropical Diseases Programme

Regional Office for Eastern Mediterranean

Dr Al Khawashki
Focal Point, Accident Prevention Programme

Headquarters

Dr C.J. Romer (Secretary)
Chief, Programme for Accident Prevention

Support Staff

Ms A. Gudiksen
Accident Prevention Programme

Mr K. Surendranathan
Prevention Blindness Programme

Annex 4 (Contd.)

Chairperson of the consultation: Professor GURSU HAZARLI

Vice chairman: Dr Tandon

Rapporteur: Dr M. Backett

GROUPS DISCUSSIONS

GROUP A:

Rapporteur: Ms Whitelaw
Chairperson: Prof Thangavelu

Item 1 : Behavioural research in accident and injury prevention

GROUP B:

Rapporteur: D. Mohan
Chairperson: Dr Keswani

Item 1: environmental research in accident and injury prevention

GROUP A

1. Dr Abdul Rahman Al Bunyan
2. Dr M. Backett
3. Dr A.K. Bhattacharya
4. Prof. P.K. Dave
5. Prof. T. Hirayama
6. Dr M.H. Keswani
7. Dr A.K. Mukherjee
8. Dr S. Praptasuganda
9. Dr Reshmi Parhee
10. Prof. B. Sorensen
11. Dr N.B. Thapa
12. Dr M. Thangavelu
13. Ms S. Whitelaw

GROUP B

1. Dr L.M. Amarasinghe
2. Dr S.P. Bajaj
3. Mr P.R. Dasgupta
4. Prof. Gürsu Hazarli
5. Dr S.K. Mitra
6. Prof. D. Mohan
7. Dr V. Punyahotra
8. Dr R.S. Saxena
9. Dr Bela Shah
10. Prof. P.N. Tandon
11. Dr Tewari
12. Dr V.K. Verma
13. Dr Al Khawashki

AD HOC GROUP ON

ACCIDENT AND INJURY RESEARCH

Geneva, 18-19 March 1986

General introduction

(By Gordon S. Smith. Position Paper prepared for the Carter Center "Risks old and new; A Global Consultation on Health", Emory University, Atlanta, USA)

Injuries are the leading cause of death among youth and the working age population in both the highly industrialized countries (HICs) and the less industrialized countries (LICs). It appears that around 5 per cent of all mortality may be due to injuries in many nations and 20-40 per cent of hospital beds are occupied by injured patients around the world In LICs this also diverts scarce capital intensive resources from care of widespread chronic diseases to immediate care of the injured in hospitals.

Many developing countries are experiencing what Omran has called "the epidemiologic transition", where "the Old World epidemics of infection are progressively replaced by degenerative diseases, diseases due to stress, and man-made diseases ...". Leading among the "new" risks to which people are increasingly exposed are injuries. In many countries, injuries are now the leading cause of death during half the human life span and in developing countries are rapidly becoming one of the leading causes of death and disability. Selya describes the epidemiologic transition in Taiwan, where from 1960 to 1977, unintentional injuries have gone from the 7th to the 3rd leading cause of death, and the injury mortality rate from 38.9 to 57.15 per 100 000 population.

In the USA, as an example of a developed country, injuries are the third leading cause of death following cardiovascular disease and cancer, and the leading cause up to age 44. As a result, they are the leading cause of premature mortality or years of life lost prior to age 65. While detailed statistics are not available for most developing countries, a study of causes of death and premature mortality in Thailand, Singapore, and Hong Kong found injuries due to drowning and motor vehicles to be a major cause of premature mortality. Motor vehicles along were responsible for more years of life lost than tuberculosis malaria combined. Similar data is not available for other injuries. In Shanghai county, China, injuries are now the leading cause of death for ages 1-44.

The impact of both permanently crippling injuries and deaths to parents or other dependent members of the family has yet to be accurately determined, but can only be presumed to be considerable. This is especially the case in more rapidly developing countries with large urban populations. Extended families in these countries are often financially dependent on one or two working members of the household. With an almost universal lack of welfare systems, migration from rural villages, and reliance on purchase foods, an injury to the "bread winner" could be catastrophic not only to the individual, but to the whole extended family. Some obvious consequences include the development of malnutrition in the children, and inability to purchase health care or medication for illnesses for any member of the household.

Until recently in developed countries, injuries were regarded as unavoidable accidents and were not subjected to careful study and prevention as have been many infectious diseases. Such fatalistic attitudes are changing rapidly in many countries. Careful epidedmiological studies of age, sex, and

occupational groups at high risk for particular injuries, together with analysis of common causes of injury, especially environmental ones, has led in many cases to prevention of large numbers of deaths and disabilities througheffective preventive strategies. Unfortuately, much less is known about the incidence, high risk groups, and causes of injuries in developing countries. Death and disability from injury are accepted as risks that most tropical villagers and many city dwellers in developing countries must face daily in coping with the daily demands of their lives. Little attention has been directed at injury prevention in developing countries, especially for non-motor vehicle injuries. The application of many of the same basic principles and technologies used so successfully in developed countries to reduce injuries could prevent one of the major "new" risks, namely, injuries, from simply replacing the traditional diseases as major causes of morbidity and mortality in developing countries.

1. An introduction to the nature of the threat to world health

1.1. The nature of the accident and injury threat[1]

Accidental happenings, unforeseen events, occur in all societies and among all species of animals. Occasionally they are truly random but usually the potential for the accident could have been seen beforehand. Often these accidental happenings are associated with injury and only too often injuries are followed by incomplete recovery thus handicapping the individual and his or her society. A large proportion of accidents are preventable and an even larger proportion of injuries are also preventable. Finally, so much is now known about the early and long term care of the injured that many of the resulting handicaps can also be prevented.

So there is a three-fold challenge; to prevent accidents, to prevent the injuries which result and to prevent the handicaps which so often follow the inadequate care of injuries. These are classical challenges to the Public Health of the type to which WHO has so often responded in the past and the response has always been the same: to find out about the threat through research, and, with the help of the populations concerned, to apply this knowledge in its control. But the accident/injury threat has some novel features which at once place it even more firmly at the door of WHO and yet make orthodox single sector "medical model" solutions extremely difficult. Because the threat demands an understanding of a sequence of events - the causes and dynamics of the accident, the reasons why that accident resulted in injury and the caring systems involved in repairing the body and preventing handicap - research aimed at control must be both multidisciplined and multisectoral. Or again, because of the distribution of the accident/injury threat - its excess, for example, in the developing world, the outstripping by technology of vocal understanding and sophistication (its principal background "cause), and the urgency of its demand for effective high quality care at all levels, makes it fit better than most public health problems into the current work of WHO. This is particularly true of the proposed eighth programme of work.

1.2. A conceptual framework

Research into accidents and injuries aims at the understanding and modification of the sequence of events which first predisposes to and then causes an accident and which then causes an injury and all its consequences. It is useful to consider this sequence as having a series of research entry points. Thus, for example, there is a range of research approaches (see also part 3) from the medical case study, through the behavioural sciences and engineering to the vital statistical and epidemiological. Some nine or ten

---

[1] Definitions: Injury: Damage to a person caused by a transfer of energy: mechanical, thermal, chemical, electrical, or radiation. Intentional injury: An injury that is purposefully inflicted by the victim (e.g., suicide and suicide attempts) or by another person (homicide, assault, rape, child abuse, etc.). Accident: An event that produces - or has the potential to produce - an injury.

disciplines can be distinguished and in some seven of these modest research is yielding information which should be and sometimes is of value in the prevention of accidents and injuries. However, perhaps because of the many sectors and disciplines involved and because of the peculiar and challenging difficulties which are met, research is too little and implementation is all too slow. We could well add, therefore, another category of needed research, that is into the reasons for the neglect of accident/injury research and for the slow implementation of such research findings as there are in social policy; or in a positive sense, that is, into what factors might promote injury research and facilitate the implementation of research fidings into social policy.

1.3. The "causes" of accidents and injuries

Progress in the understanding of the cause of public health problems from single factor to multifactor interaction has been slow. It is particularly slow in the field of accidents and injuries and many recording systems still disregard the interaction of, for example, environmental and behavioural factors. The notion of a cause rather than of a causal sequence has also slowed research; a defect disappearing with the application of systems and regression analyses to the risk factors involved. So notions of a cause - say "carelessness" - have gradually given way to notions of interacting systems in which an accident - usually some unintended human/environment breakdown - precedes an unusual release of energy with consequent injury. The focus has therefore shifted; research is now more than ever preoccupied with the many determinants of injury and with the practical issues of prevention.

1.4. Gaps in our knowledge

There has been a plethora of descriptive research and a dearth of experiments. Much is known in the advanced industrial countries of the vulnerable groups, of trends in mortality and, more recently of the long term consequences of injury, but little is known for certain of the best methods of prevention. From this generalisation there are some fine exceptions in the fields of traffic injuries and injuries to small children. But, perhaps because it is so very difficult to carry out, for example, a prospective "clinical" trial of injury prevention, many of the basic principles are elusive. The authority of WHO might go some way to filling this gap and to stimulating research into injury prevention in the developing world, particularly intervention (or "evaluation" or "action") research.

1.5. Urgency

Technical change, particularly in the developing world, advances exponentially and with it go the injury risks. Increasing expectation of life and the concentration of injuries among the young combine to make loss of expected years of life through injury for all but infants the most serious health problem of the developing world. At the same time, and paradoxically, any improvement in care results in an increasing prevalence of handicap as those who would have died survive. Primary prevention is therefore urgent and imperative.

1.6. The main groups - foci for research

So diffuse and widespread is the injury threat that a simple grouping of "sites" of accident has grown up to facilitate study. Thus Traffic, Domestic and Occupational injuries (which embrace more than 90 %) have usually been treated separately, if only because preventive action is usually in different hands and involves different approaches. This classification, for all its rough and ready usefulness, has tended to obscure some common features such as the vital role of learning good risk taking (that is, recognition and awareness of a potential accident and injury) and, more important, common research methods (for example, the importance of using accurate denominators for rates so as to measure the extent of the real threat to those at risk).

Other useful classifications have concentrated on age groups (such as accidents to children), functions (such as leisure and sports injuries), various agents (such as toys, buildings, domestic appliances and equipment), types of injury (such as drowning, burns and scalds). Various cross classifications have also repaid concentrated attention, for example, burning injuries to young girls, moped injuries to adolescent males or falls and fractures of the neck of femur in the elderly - all reflecting particular injuries to highly vulnerable groups.

1.7. The role of WHO in the prevention of injuries

The role of WHO in the face of a mounting threat to world health is, as it has always been, to lend its prestige to the acquisition and dissemination of new knowledge. Because of its preoccupation with primary care it can help promote intersectoral and multidisciplined studies of prevention and to promote particularly the participation of populations in their own primary health care of injuries through local preventive action and first aid. It is of mounting importance to sponsor experiments and innovations in this latter area.

2. Priorities in accident and injury research

2.1. Deciding priorities for research

The decision as to which is the most important subject among conflicting claims for research priorities rests usually upon the personal interests of researchers and the relative importance of the subject. Into this latter assessment must come considerations of prevalence and seriousness and their associated databases. Two other criteria should always be considered and these are first the likely yield from the research, i.e. the chances of a satisfactory outcome and implementation (not necessarily positive finding considering the resources, design etc. to be used). Finally, and of considerable importance, the priority accorded to the subject by the local population. These four criteria can be used in a number of ways. For example, they can be weighted so as to present crude numerical orders of merit or priority, additive or multiplicative models can be used (for example, popular notions of "importance" probably reflect prevalence multiplied by seriousness) and qualitative material can be added. To these can also be added new weightings based on demographic projections and analyses of trends. All are simply aids to the assessment of priorities and usually yield no more than a priority order somewhat more realistic than our personal preferences.

2.2. A choice of priorities in accident/injury research

Applying the ideas outlined above - albeit in a necessarily rough and ready manner - yields a number of high priority research subjects*. For example:

2.2.1. Data for hypotheses

Clearly the provision of well based, simple data from which hypotheses about trends, distribution, costs and effectiveness of prevention, local attitudes and beliefs, mortality and morbidity (including long term morbidity) can be derived are of top priority. This does not mean burdensome and continuous surveillance but coordinated surveys using the same definitions, denominators and methods of presentation of results.

2.2.2. Tools for decision makers and for resource allocation - Data for good decisions

To the classical measures of a health problem which have for so long been used by decision makers - the mortality and morbidity at different ages, for example, or the extent of handicap and loss of autonomy, the burden on communities and families, the loss of expected life and the distortion of the quality of life, can be added some new measures. In particular the attributable and relative risk of risk factors are important. The former, a social policy tool, estimates the likely reduction in the injury load in a community consequent upon the removal of risk factors. It therefore provides a rough basis for analyses of the costs and benefits of administrative or legal innovations

---

* The attitudes of local populations, inevitably omitted, may alter substantially this list.

and provides a basis for rational choice. The latter measure, the relative risk or odds ratio, is a useful guide to the relative importance of risk factors, this time probably of most use to the individual and family in prevention but also a useful tool in health education. A third measure of considerable value is the "injury per accident" rate and case - fatality rate; measures of how likely and how serious are the injuries resulting from similar accidents.

2.2.3. Defining the vulnerable groups - who will be injured and why? What with and how?

A perennial problem in injury analyses is the absence of correct denominators for rates. Thus, for example, women and children are said to be most vulnerable to injuries in the home. Corrections to the mortality and morbidity rates, however, using a more accurate measure of exposure than the total population - say man, woman and child hours or days actually in the home, shows that the man is far more vulnerable to domestic injury. Similar studies of vulnerability using denominators based on those actually exposed to the risk rather than the whole population (most of whom are not at risk at all) will enable the focusing of preventive action.

2.2.4. Behaviour perception and learning: Who will take good risks?

Many of the rewards and punishments of early life are a part of learning to avoid injury, to assess correctly the risk of actions (for example, in crossing the road) and to judge what is the best risk-taking behaviour. This kind of responsible behaviour in adults is also copied by the growing children who themselves reflect the risk-taking behaviour of the family group. A new emphasis on active teaching of this responsible behaviour, particularly in relation to traffic, is to be found in Scandinavia while other research has sought to use the individual, the family and the community as safety resources reinforcing training in cognitive acuity. Much more work, and particularly experimental work, is needed.

2.2.5. The safe environment: Inappropriate technology is dangerous technology

Where technical advance outstrips the sophistication and understanding of a community there is obvious potential danger, the extra energy is not adequately controlled and the dangers of heat, speed, electric power, etc. multiply. To make the environment safer requires the difficult collaboration between the bio-engineer, the health professional and the manufacturer. Social policies which set and enforce standards of safety and attention to the outstanding dangers in the traffic environment (speed regulations, braking efficiency, vehicle and road construction etc.), in the domestic environment (protection from fire, sharp gadgets, electricity, house construction, proper lighting, etc.) and in the occupational environment (covers of power drives, protection from machines, overhead gantries, slippery floors, etc.), probably offer high benefits at low cost. It is here that epidemiological experiment is so badly needed particularly in the developing world where the rapid transition to complex mechanical machines is so threatening. Phenomenological or case studies of the human/environment interaction are also needed.

2.2.6. Health education, communications and the media: Is this the best way to prevent injury?

The fascination of new technology undoubtedly increases the impact of media presentations of some educational material on injury prevention. However, recent work suggests that methods which involve people in 'real life' responsibility for their own and their family's accident/injury prevention are more effective. The change from didactic methods to more participatory work with communities which are facing their own problems of injury prevention needs detailed study and experiment.

2.2.7. The special cases of the toddler and the elderly: Assisting the most vulnerable

Because trial and error (with errors mostly hurtful) play a major part in infant and toddler learning about the hazards of their environment, the completely safe place in which to grow up is, like any sterile or unchallenging environment, in the long term very dangerous indeed. "Avoiding" and "understanding" types of behaviour start, we are told, at birth or shortly after, and, in the long term, the least seriously injured child is one who learns early from the bruises, cuts and other injuries which are there in profusion in his or her experience, but which are never serious. We need to know much more about the genesis of this protective behaviour in the very young and also in teenagers, and about how to foster it and other aspects of responsible learning.

For the very old the physiopathology of declining senses - particularly proprioception, sight and hearing, is a special and additional challenge. Characteristically the prevention of injury in the elderly therefore requires collaboration between the neurologists, the biologists, psychologists, and the construction designers and engineers. Because demographic projections everywhere show increasing numbers of old people, the injury problem has become part of the complex issue of the place of social care - institution or family home? Of paramount importance is the maintenance of autonomy in senescence and the very old flourish in their own - safe - surroundings.

2.2.8. The economics of injury - can we reallocate resources?

Preventable injuries are exceedingly costly to society, family and individual. Injury insurance is a major and unproductive industry and the expensive health care of the injured could, with fewer patients, benefit others. Studies of the costs and benefits of injury control policies and of the cost effectiveness of care (including first aid and long term rehabilitation) are two examples of much needed research while the role of insurance in accident prevention should be explored.

2.2.9. Breaking the rules and the effect of sanctions

Massive reductions in injury rates have come from innovations which are purely voluntary (the effects of the use of non-flammable material, for example). Others have followed regulations and laws which are not only enforceable but punitive (seat belts, fire guards, aviation and traffic regulations, building standards, factory legislation etc.).

With the injury costs in economic and, above all, human terms mounting in some communities it is becoming essential to know the effects of sanctions upon injury rates and the optimal balance between punitive social policies and those promoting socially responsible actions in injury prevention.

3. The research approach: Its context, its potential and its achievements

3.1. The research sequence - The "Ideal"

Almost all research into the prevention of injuries has followed to some extent the classical sequence. This begins with descriptive studies which in turn prompt the formation of hypotheses. These hypotheses are then tested, i.e., attempts are made to disprove them and if they survive, the results become the basis of conclusions which can be implemented and the implementations evaluated. Three major and welcome modifications to this "ideal" are to be found in the literature: first, research is of necessity often rough and ready (sometimes referred to as "quick and dirty") and, though results are likely to be correspondingly less reliable, they are probably better than nothing. Next, much research is "operational" and some is called "action" research. Each term implies a departure from the "pure" design; one in which a service is carried out at the same time as the research. Finally, and more recently, there has been a blending of the more rigid epidemiological studies with phenomenological or case study material. This latter fills out and colours the more arid population enquiries and thus helps research workers to understand individual attitudes and behaviour as well as the statistical patterns.

3.2. The methods of accident/injury research

Nine areas of research endeavour can be distinguished from the literature. Most have been mentioned above but while some of the disciplines involved have contributed to several kinds of research, others stand alone using their own methods and designs.

3.2.1. Epidemiological and vital statistical research methods

These represent the largest contribution and include, for example, all population based studies, the collection and presentation of mortality and morbidity rates and their trends. They also include the presentation of risk material identifying vulnerable people, places and agents. Studies under this head are the principal source of information about the distribution of injuries and therefore about the links in the causal chains involved.

3.2.2. Behavioural and psychological research methods

Studies in this area include surveys of individual attitudes to risks and risk-taking and to learning to take "good" risks; studies of cognitive abilities, emotional and other factors such as pride, 'machismo' and the effects of punishment. Training methods and the methods of health education, the effects of alcohol addiction and drug abuse and the effects of a huge array of cultural and societal factors on injury patterns also use the methods of the behavioural sciences.

3.2.3. Mechanical and bio-mechanical research

This includes engineering and physical analyses of the dangers of various technologies, the design, understanding and control of machines and the machine environment. Ergonomic factors and rendering the work, home, traffic and leisure environments safe by controlling and reducing the energies involved and the creation of relevant standards of construction, colour, function, speed, etc. This important field of research also embraces the use of artificial intelligence in the control of accidents and the creation of the relevant software.

3.2.4. Therapeutic research

Therapeutic research has been the main (but not the only) contribution of medical scientists to the control of injury and it has been impressive. The range has been from the physiopathology of injury through studies of the biochemistry of optimal treatments for shock to that of, for example, the microbiology of skin substitutes for burned patients. Most of these studies are laboratory based and bio-medical and statistical in orientation.

3.2.5. Rehabilitative research

Rehabilitative research embraces prevalence studies of disability and handicap and of the physical, social, phychological, emotional, economic and occupational factors in prevention and rehabilitation.

3.2.6. Manufacturing and design standards research

These studies use the engineering research referred to above and convert principles to practice in commerce and in the mass production of safe machines, toys, instruments and their packaging. They also include the testing of the effectiveness of standards.

3.2.7. Legislative and social policy research

These studies include work on the economics of accidents and injuries using the methods of the health economists as well as audits of insurance and the effects of sanctions. They include studies of the effectiveness of legislation, the collection and display of data used in formulating policies and experiments (both natural and contrived) which measure policy effectiveness, efficiency and acceptability.

3.2.8. Toxicological and pharmacological research

These studies have sought to develop methods which can be used to avoid poisoning and the toxic side effects of drugs. A useful by-product of the failure to detoxify many therapeutic substances has been the production of "safe" containers and storage cupboards for medicines.

3.2.9. Health systems research

The contribution of this expanding research area to injury control and prevention is likely to increase with increasing understanding of the effects of good and bad care. Health systems studies, particularly of

the primary care of the injured in the developing world, are desperately needed and along with studies aimed at primary prevention are likely to offer the greatest rewards for least outlay of resources and skills.

4. Using the results of accident and injury research

4.1. Research as a service to the community

The social function of injury research is rarely stressed but, particularly in studies aimed at prevention, it is potentially immediate and profound. Implementation of research findings, if undertaken with the participation of local communities, can achieve three objectives: first, it can produce increased community coherence through local efforts to reduce an easily recognised and common health problem. Second, and much more subtle, it can promote a spirit of enquiry - the enquiring or inquisitive mind - which is the basis of acquiescence to or participation in community research; third, and most important, it will, of course, increase the chances of the primary prevention of injuries.

4.2. The gap between research and implementation

To achieve the objectives of injury research it is necessary that findings be translated at once into policies and legislation, into popular knowledge and attitudes and above all into behaviour. There are many reasons for the failure - particularly in the developing world, to achieve these objectives, that is to bridge the gap between research and implementation. Publication of research in learned journals rarely leads to social action and one reason at least is because local communities - those who suffer the injuries - and local administrators, who make the rules, are not involved. Research teams are often paternalistic and their methods little understood. Suspicion of bureaucracy and the private interests of medicine often poison local relationships and all health care, preventive as well as curative, has a poor record in many areas.

4.3. After the research - Intervention experiments

Where the initial research findings point to social action it is essential to try out the proposed changes in some kind of an experiment - however crude. Once more the ideal must usually be sacrificed for the practical and while the philosophy of the truly blind randomised trial should inspire special care in the evaluation of innovation, rough comparisons are usually all that can be achieved. Thus the "before" and "after" or "case" and "control" (using the experimental and nearby regions or communities as cases and controls) models, though statistically hazardous, may have to be used. Sometimes "experiments of opportunity" present the chance to evaluate policies. They must be grasped. Thus a sudden crisis in the provision of petrol was the cause of a briefly imposed drop in maximum speeds in an affected country. There followed a highly significant drop in traffic injuries. An imposed experimental speed reduction would probably have been politically unacceptable.

There are two prerequisites to successful intervention experiments and often both are lacking. First, there must be official (that is government, tribe, regional or community) agreement and cooperation. The intervention must be seen to be potentially good and the experiment agreed upon. Next, there must be a database of some kind so that effects may be judged. A profound difficulty in the achievement of official agreement is that the nature of experiment, the very notion of hypothesis testing, is often alien to the culture in which the experiment is to take place. An important by-product of community involvement in modest operational experiment therefore is that a few people are likely to become scientifically inquisitive. The essential database is often even more difficult for while the extra recording necessary during the experiment can be well understood by the "experimental" community, a nearby "control" community will not understand and is probably correct in objecting to the recording of health problems in the absence of action taken to lessen them. So problems of ethics, of "leakage" and of confounding accumulate.

Applications of research in health education are on the whole easier than in social policy though it is in the latter that we will see the best and most convincing results. In the meantime many results of injury research are so obvious that once demonstrated there is little point in further elaborate evaluation.

5. Integrating programmes

Accident and injury prevention at the heart of primary health care

An important feature of primary care is village or community work with health professionals - often village health workers - in the control of a health problem. Primary health care also provides a setting for educational interventions. A specific example would be parent education regarding age-specific injury hazards and how to prevent them, geared to the developmental abilities of children and the specific hazards that exist in each country.

In this context we can see the contribution of injury prevention to a number of programmes, for example injury prevention as part of technology transfer, injury prevention as part of appropriate technology, as part of health manpower development, health education, maternal and child health, programmes on ageing, etc. Accident prevention (which in this case includes injury prevention) has already been included in HFA strategies by a number of countries and the integration of these preventive activities in National Health Plans is projected.

More detailed discussions on injury prevention appear in the document "Accident and injury prevention at the primary health care level", (report on a Seminar Pattaya, Thailand. Global Programme Accident Prevention, Copenhagen, 1987 (IRP/APR 218H)), which provides basis for furthering research needs in this field.

Annex 1

RESEARCH STRATEGY FOR ACCIDENT/INJURY

by
Dr B.Z. Nizetic

THE RESEARCH STRATEGY for accident/ injury related problems should :

1) Consider short - medium - and long term perspectives

2) Have a systematic approach to the analysis of all relevant parameters.

3) Be action oriented

4) Be multidisciplinary and multisectorial.

Furthermore to be internationally acceptable and applicable it should be based on clear operational definitions and conceptual models.

The following conceptual models may prove useful for a systematic analysis:

A) THE NATURAL HISTORY OF HEALTH, ITS DEVIATIONS AND THEIR CONSEQUENCES

This in fact is an expanded model of the classical medical model of disease, the simplest expression of which, would be presented in the sequence

Etiology-pathology-manifestations

On the etiology side the monocausal approach of the germ theory is replaced by the epidemiological triade of predisposing and enabling factors (necessary or sufficient) related to the host, environment (physical, chemical, socio-economic) as well as to an agent or event (precipitating or reinforcing factors).

Annex 1 (Contd.)

In this last cathegory we find THE ACCIDENT (an event!) followed by an INJURY, which is the damage (pathology) inflicted to the human body.

The pathology, in its asymptomatic and clinical phases, as well as its epidemiological dimension will be studied with available methodologies. This part of the research spectrum will be predominatly organoriented.

The model is further expanded to include the consequences of pathological conditions in terms of impairments (still organ level!), disabilities and handicaps (these last two phenomena being at the level of the individual).

Disability is experienced as restriction of the ability to perform specific activities/tasks,
e.g. reading, learning, walking.

EXPANDED MEDICAL MODEL OF EYE HEALTH, EYE DISORDERS AND THEIR CONSEQUENCES

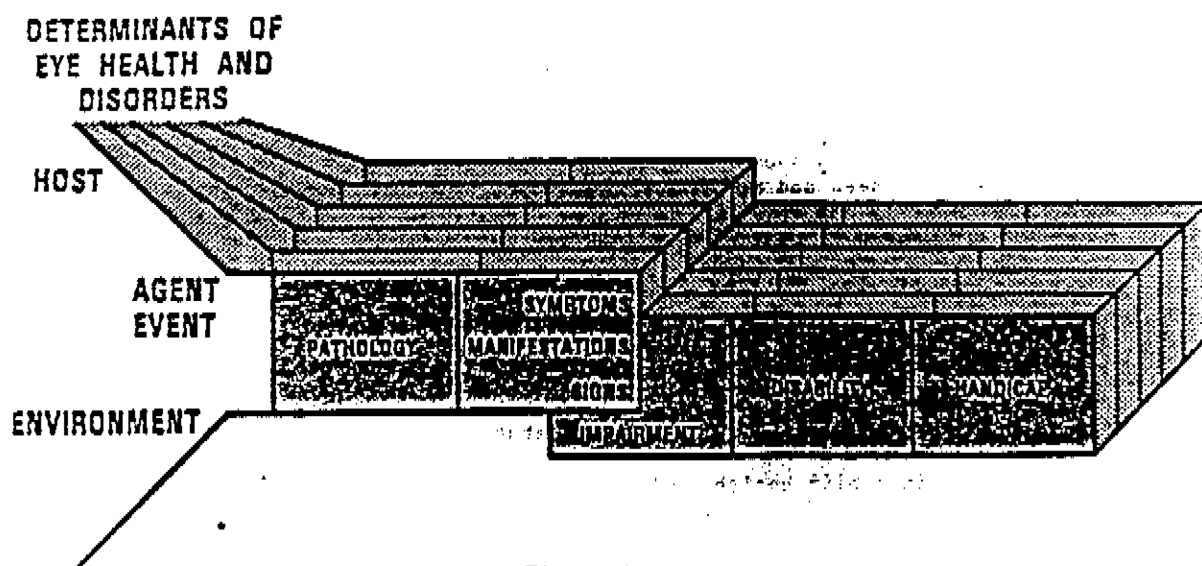


Figure 1

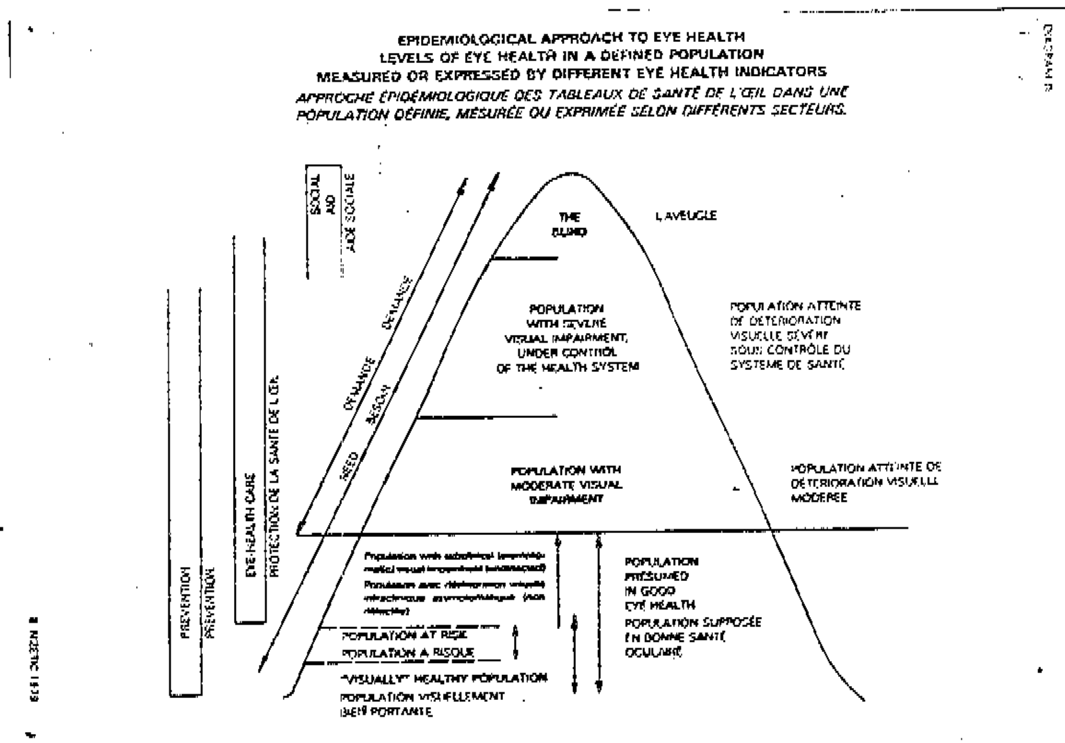
B.Z. NIŽETIĆ, 1983

Handicap refers to consequences to the individual as related to the environment / society, e.g. physical independence, social integration and economic self-sufficiency.

Annex 1 (Contd.)

B) THE "ICEBERG" PHENOMENON

A research strategy concerning accidents and injuries cannot ignore the population dimension of the problem. Population cathegories, as depicted in the fig. 2 refer



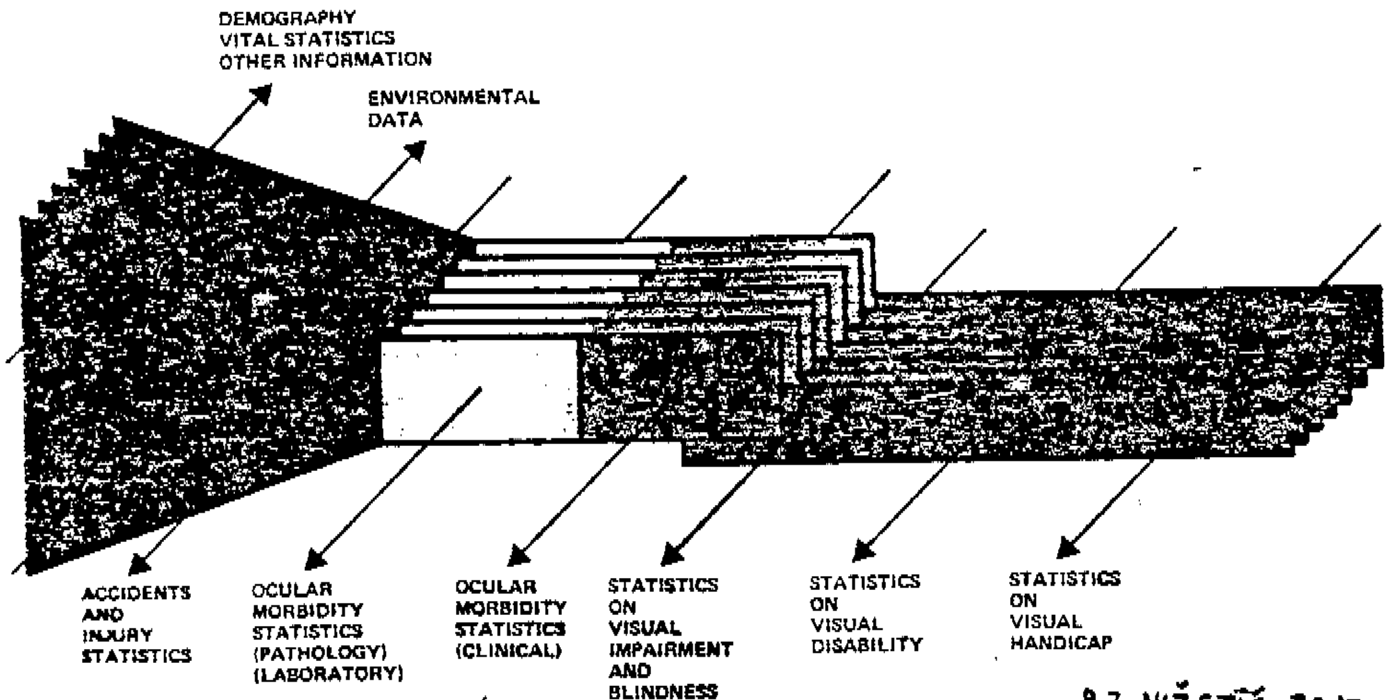
to basically different types of population groups to which the scientific analysis should be directed when dealing with accidents and injuries.

The upper (and visible) part of the "iceberg" will concern people who actually have experienced an accident, with consequent different degrees of injury. The necessary multidisciplinary research will be in part retrospective and etiological (why accident has occured?) partly prospective (pattern of consequences and management alternatives-.

The lower part of the "iceberg" concerns the presumed "healthy" population and will necessitate mainly epidemiological and behavioral research for the identification of risk factors and a better understanding of the so-called "ACCIDENT-PRONESS".

Annex 1 (Contd.)

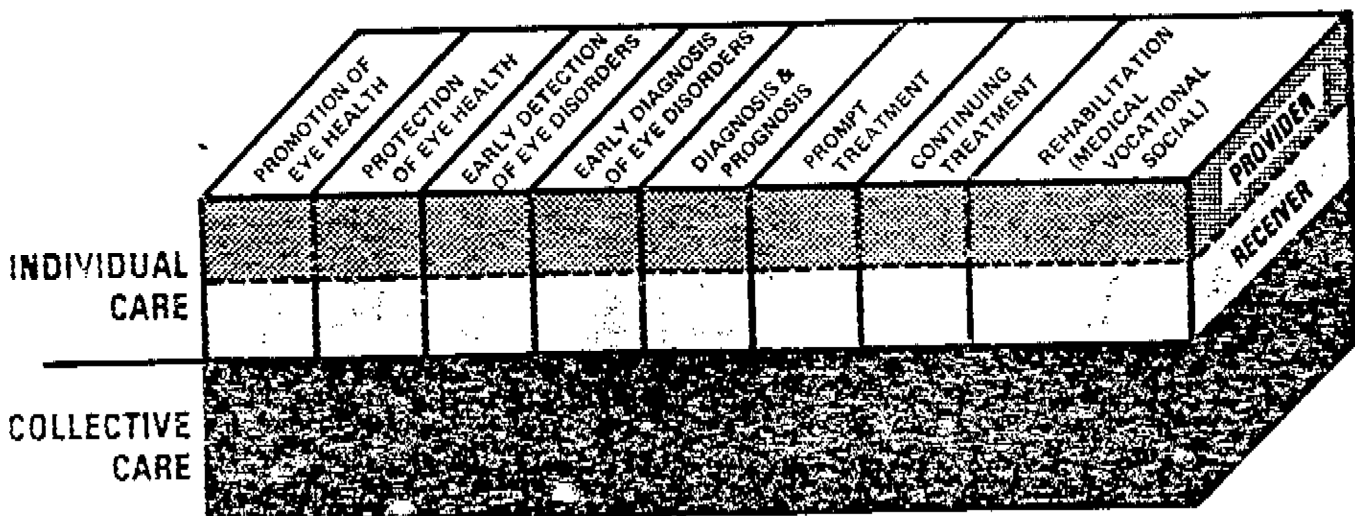
EPIDEMIOLOGICAL INDICATORS OF OCULAR AND VISUAL MORBIDITY, THEIR DETERMINANTS AND CONSEQUENCES



B.Z. NIŽETIĆ 1983

C) Research related to personal accident/ injury care must inevitably consider the whole spectrum of possible interventions("comprehensive health care") at the individual and collective levels.

THE SPECTRUM OF COMPREHENSIVE EYE HEALTH CARE

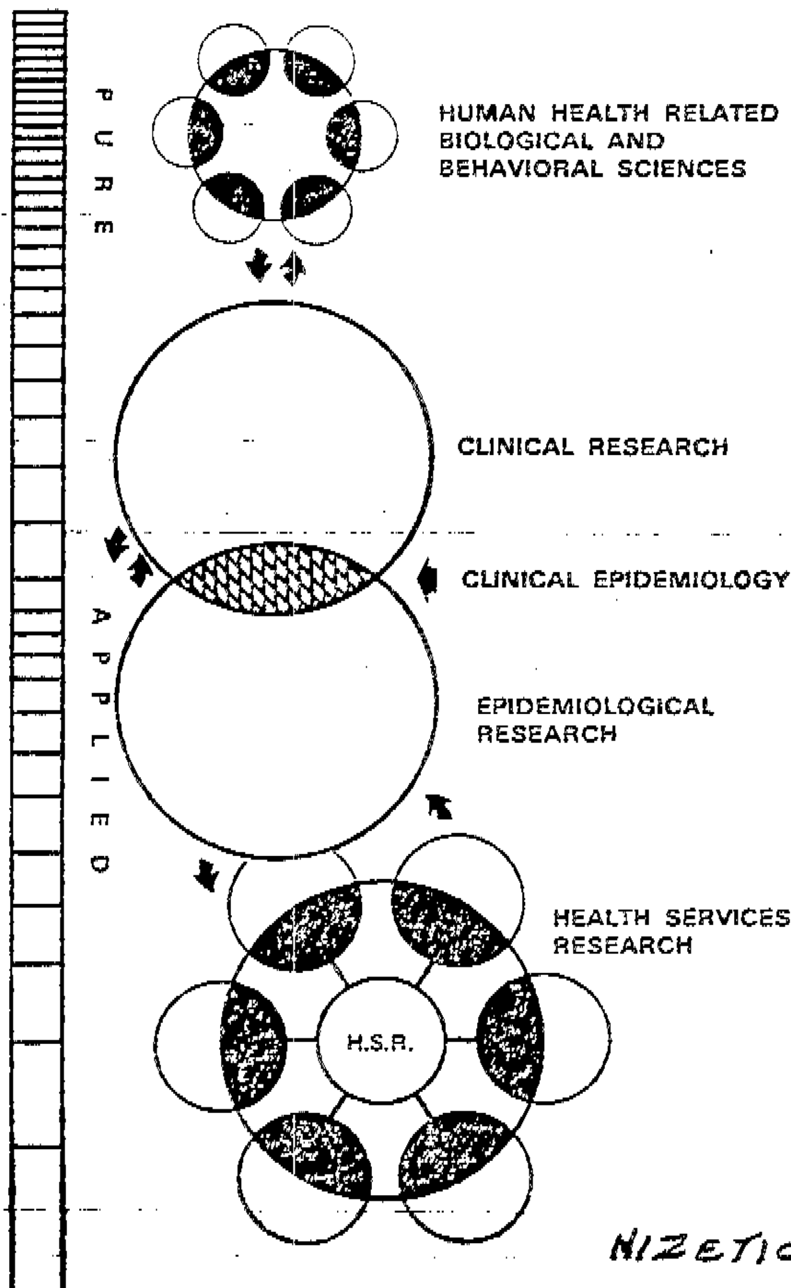


B.Z. NIŽETIĆ - 1983

Annex 1 (Contd.)

Again multidisciplinary and multisectoral perspective will require the contributions from clinical epidemiological, behavioral and management sciences. The latter will be called upon to elucidate the society's answer to problems related to accident/ injury epidemics (planning, organisation, management and evaluation of appropriate services including manpower development.

SPECTRUM OF HEALTH (OR HEALTH RELATED) RESEARCH



NIZETIC 1979

RESEARCH AND INTERSECTORAL COOPERATION IN THE FIELD OF ACCIDENTS

Claude J. Romer[a] & Michel Manciaux[b]

Accidents and their consequences are part of a complex process characterized by the interaction of many different determinants relating to a host (the individual victim), a vector (the agent of injury) and an environment (physical, cultural or socioeconomic), which may to a greater or lesser extent affect the health status of vulnerable groups of the population such as children, adolescents, certain categories of workers, or the elderly. This essentially multidisciplinary and multisectoral nature of the origin of accidents and injuries results in a number of shortcomings in the management of this major health risk, particularly in the area of research, application of research results and prevention programmes.

It is evident that safety is very much the poor relation in public health research in general, whereas accidents are one of the leading causes of death among young people and their cost to society is almost as great if not greater than the cost of heart disease or cancer.[c] Moreover, the setting of priorities, and consequently the allocation of resources, tends to concentrate on clinical aspects and provides little opportunity for research into appropriate technologies of prevention, involving either action on the environment or promotion of safety in the same way as health is promoted at the different levels of society.

As with most other health problems today, accident research covers a very wide range of disciplines, and hence of sectors. It requires contributions from physicians, engineers, epidemiologists, psychosociologists, specialists in behavioural sciences and in communication, legal experts, etc.

But this variety leads to a division and multiplicity of initiatives and responsibilities and raises the fundamental question of the implementation of consistent research policies and programmes. This can only be done if there is relevant evaluation of existing knowledge, and in particular if the problems for which there is sufficient knowledge for action to be taken are differentiated from those which require further research. Where sufficient knowledge does exist, its fragmentation hampers the use and application of research results, which are addressed to several different decision makers and lead to isolated action that may sometimes be counterproductive. It is thus essential that policy formulation and programme planning and implementation should grow out of an intersectoral managerial structure which will ensure consistency of method and the appropriate allocation and optimal use of resources.

Several fields of research are described below, but without any implication as to their priority, which will depend entirely on the circumstances prevailing in each country.

Clinical research, which is mainly hospital based, deals with the patient-injury binomial. It mainly has to do with the improvement of techniques of care. However, it may

[a] Programme Manager, Global Programme for Accident Prevention, World Health Organization, Geneva.

[b] Consultant, Global Programme for Accident Prevention, World Health Organization, Geneva.

[c] The example of the United States of America is a good illustration of this point: although accident injuries are the country's most costly health problem, and account for the greatest number of potential years of life lost, only 2% of the research budget of the National Institutes of Health is devoted to this problem (see *Fig. 1*).

Annex 2

RECHERCHE ET COOPÉRATION INTERSECTORIELLE DANS LE DOMAINE DES ACCIDENTS

Claude J. Romer[a] & Michel Manciaux[b]

L'accident et ses conséquences font partie d'un processus complexe, caractérisé par l'interaction de nombreux déterminants se répartissant entre un hôte (l'individu), un vecteur (l'agent traumatisant) et un environnement (physique, culturel ou socio-économique), et dont l'effet peut influer avec plus ou moins d'intensité sur l'état de santé de groupes de population vulnérables comme les enfants, les adolescents, certaines catégories de travailleurs ou les personnes âgées. De ce caractère essentiellement pluridisciplinaire et multisectoriel de la genèse des accidents et des traumatismes, résultent un certain nombre d'insuffisances dans la gestion de ce risque majeur pour la santé, notamment dans le domaine de la recherche, de son application et des programmes de prévention.

En matière de recherche, il apparaît clairement que le secteur sécurité est le parent très pauvre de la recherche en santé publique en général, alors même que l'accident se situe parmi les premières causes de mortalité chez les jeunes et que son coût pour la société est presque égal sinon supérieur à celui des maladies cardiaques ou néoplasiques.[c] De surcroît, l'établissement des priorités, et par voie de conséquence l'attribution des ressources, se concentre sur les aspects cliniques et donne peu de cas à la recherche de technologies appropriées de prévention, soit par intervention sur l'environnement, soit par la promotion de la sécurité au même titre que la promotion de la santé aux différents niveaux de la société.

De même que pour la plupart des problèmes de santé actuels, la recherche en accidentologie couvre un spectre très varié de disciplines et par là même de secteurs. Elle nécessite la contribution de médecins, ingénieurs, épidémiologistes, psychosociologues, spécialistes des sciences du comportement, de la communication, de juristes, etc.

Cette variété entraîne cependant une fragmentation des initiatives et des responsabilités et soulève une question fondamentale liée à la mise en œuvre de politiques et programmes cohérents de recherche. Cette mise en œuvre ne peut se faire que sur la base d'une évaluation pertinente des connaissances, distinguant en particulier les problèmes pour lesquels les connaissances sont suffisantes pour l'action de ceux qui requièrent de nouvelles recherches. Enfin, lorsque les connaissances sont suffisantes, cette fragmentation nuit à l'utilisation et à l'application des produits de cette recherche qui s'adressent à plusieurs décideurs et entraînent des actions isolées qui vont parfois à l'encontre du but recherché. Il est donc fondamental que la formulation d'une politique, la planification des programmes et leur mise en place puissent s'appuyer sur une structure de gestion intersectorielle, gage d'une harmonisation des méthodes et d'une allocation appropriée des ressources ainsi que de leur meilleure utilisation.

Plusieurs champs de recherche sont envisagés ci-après sans que la liste qui est faite n'implique un quelconque ordre de priorités qui ne dépendra que des situations prévalentes dans chaque pays.

La recherche clinique, principalement à base hospitalière, porte sur le binome patient-lésion. Elle a essentiellement trait à l'amélioration des techniques de soins. Toutefois, elle peut

[a] Administrateur, Programme mondial de prévention des accidents, Organisation mondiale de la Santé, Genève.

[b] Consultant, Programme mondial de prévention des accidents, Organisation mondiale de la Santé, Genève.

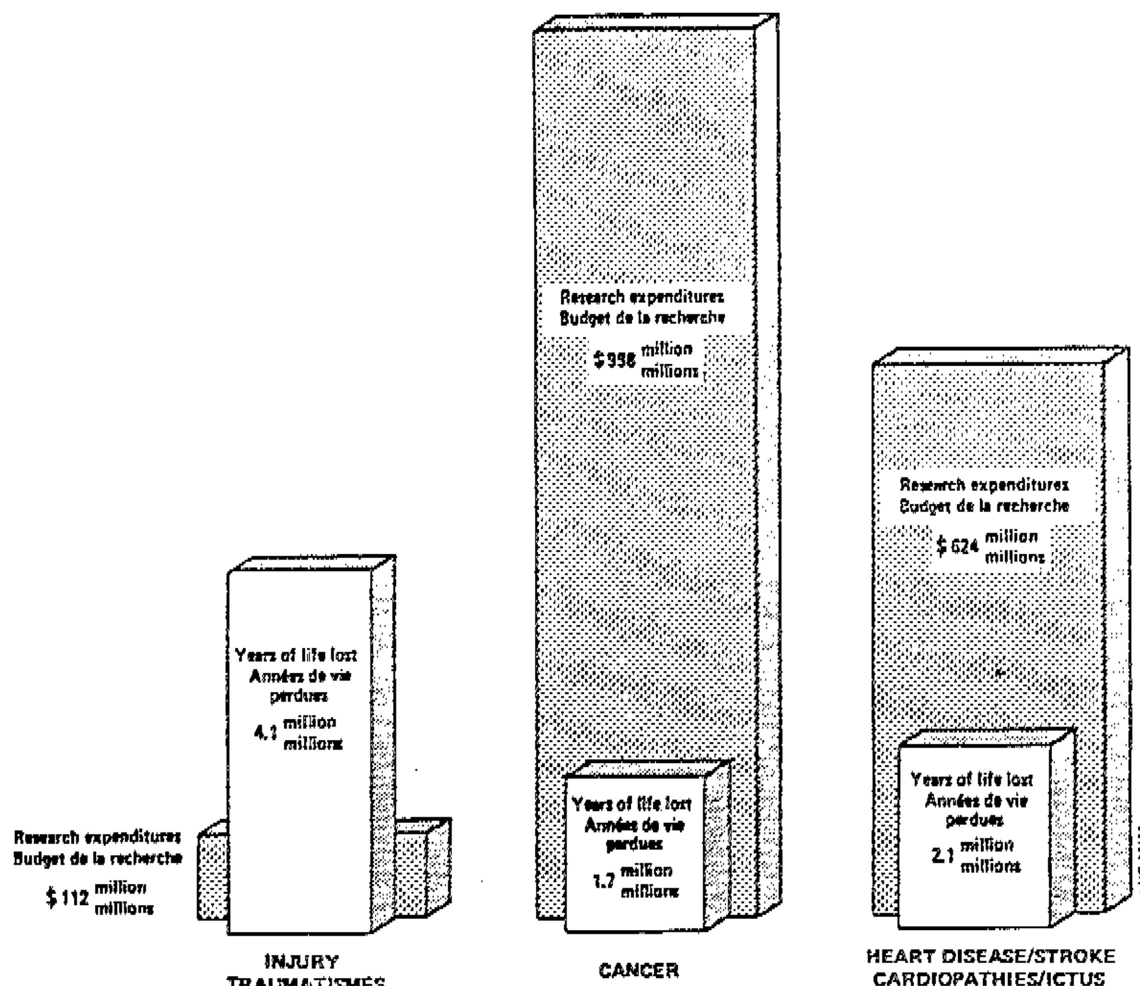
[c] L'exemple des États-Unis d'Amérique est très évocateur à cet égard. Bien que les traumatismes soient le problème de santé le plus coûteux dans ce pays, et responsable du plus grand nombre d'années potentielles de vie perdues, seulement 2% du budget de recherche des *National Institutes of Health* est consacré à cette question (voir la *figure 1*).

Annex 2 (Contd.)

FIG. 1

PRE-RETIREMENT YEARS OF LIFE LOST ANNUALLY AND FEDERAL RESEARCH EXPENDITURE FOR MAJOR CAUSES OF DEATH IN THE UNITED STATES OF AMERICA

NOMBRE D'ANNÉES DE VIE ACTIVE PERDUES ANNUELLEMENT ET BUDGET FÉDÉRAL DE RECHERCHE SUR LES PRINCIPALES CAUSES DE DÉCÈS AUX ÉTATS-UNIS D'AMÉRIQUE



Source: *Injury in America, a continuing public health problem.* Washington DC, Academy Press, 1985. (Figure 3, p. 14).

also play an important role in prevention; by furnishing a more accurate estimation of the overall level of severity of the injuries treated, it should attempt to answer the question, which is of crucial importance for the formulation of prevention policies, as to whether the reduction in accident mortality that has been noted in many industrialized countries is or is not accompanied by an increase in accident sequelae and long-term or permanent disabilities.

Basic epidemiological research on accidents needs to be strengthened both in its objectives and in its methods. Its objectives need to be more operational and action-oriented; it should give priority to community-based studies, rather than hospital-based studies, which are inherently biased and cannot provide essential data on exposure to risk (denominator problem), the nature of the risk, or other data essential to the evaluation of established programmes; and ultimately it should transcend the purely descriptive stage of enumerating and classifying injuries, and study the circumstances in which accidents occur. This latter aspect needs to be more fully developed. It draws upon the behavioural sciences, including psychophysiology and sociology, and in particular the study of the relationship between stages of human development — including aging — and accident risk. This type of research is more broadly interested in all the psychosocial factors that may help to cause accidents. Knowledge in this area is fundamental to the formulation of strategies for the promotion of healthier and less risky behaviour or life-

jouer un rôle important en matière de prévention; par une estimation plus précise du niveau global de sévérité des traumatismes traités, elle devrait tenter de répondre à cette question qui a une importance cruciale pour la formulation de politiques de prévention: est-ce que la diminution de la mortalité accidentelle, observée dans de nombreux pays industrialisés, s'accompagne ou non d'une augmentation des états-séquelles et des incapacités durables, voire définitives?

La recherche épidémiologique de base en accidentologie doit être renforcée à la fois dans ses objectifs et ses méthodes. Dans ses objectifs, elle doit être plus opérationnelle et orientée vers la recherche action, donner la priorité aux études à base communautaire par rapport à celles à base hospitalière qui sont biaisées par nature et ne peuvent fournir des informations essentielles sur l'exposition au risque (problème du dénominateur), sur la nature de celui-ci et sur d'autres données nécessaires à l'évaluation des programmes mis en place. Enfin, en dépassant le stade purement descriptif du nombre et des types de traumatismes, il convient d'étudier les circonstances de survenue des accidents. Ce dernier aspect devrait être plus amplement développé. Il fait appel aux sciences du comportement incluant la psychophysiologie et la sociologie, notamment l'étude des relations entre les stades du développement humain — y compris le vieillissement — et les risques d'accidents. Ce type de recherche s'intéresse plus largement à tous les facteurs psychosociaux en jeu dans la genèse des accidents. Les connaissances dans ce domaine sont à la base de la formulation de stratégies de

styles, especially through the encouragement of community action.

Reduction of environmental risks in the home, at work, in leisure activities and on the roads to a minimum, and assurance of the safety of the consumer goods that are distributed, require research and coordinated multidisciplinary action in fields such as ergonomics[d] or the biomechanics of collisions, particularly with a view to developing technologies for the protection of vulnerable groups, such as children and the elderly. The latter type of research, in which the principles of mechanical physics are used to study the physical and physiological responses of the body to external agents of injury, is an area where biology and engineering can work together for a safer environment and thus prevent a considerable number of deaths or severe disabilities.

There are two other areas of vital importance for research:

- *safety economics research* can provide decision makers with pertinent arguments by helping to pinpoint the medical and social cost of accidents, which can then be compared with the cost of other current health problems, and can help to rationalize budget choices by indicating the cost-benefit ratio of possible action options.
- *health services research,* in which the health sector has a vital role to play: in determining service delivery requirements, especially at the primary level, in increasing and evaluating the utilization and quality of these services, and in optimizing the utilization of prevention technologies and research results by the health services at all levels in an intersectoral framework, and translating research into appropriate action, particularly at the community level.

On the question of data acquisition, it must be pointed out that certain types of accidents, such as road accidents, have already been very thoroughly studied. The real problem is to ensure the broadest possible dissemination and application of prevention techniques (safety belts, helmets for motor cyclists, etc.).

Data on other types of injuries, however, are very incomplete, although their numbers may be surmised to be far from negligible, particularly in the case of accidents in the home such as burns, falls and poisoning and of certain occupational accidents, especially among farm workers. This is even more true for developing countries where there is generally very little knowledge of these problems. For these countries some kind of inexpensive action research which is directed towards the solution of their predominant problems needs to be promoted.

Lastly, the increasingly widespread dissemination of products and techniques, especially from the industrialized to the developing countries, means that international cooperation is needed, not merely for the appropriate transfer of know-how, but also to attempt to ensure that these products (products for domestic use, motor vehicles, etc.), and the safety regulations that govern the use of various occupational techniques and technology, especially in industry and agriculture, are of equal safety "quality".

Thus, there is tremendous scope for research in the field of accidents and health among the young, and teams of epidemiologists, psychosociologists, economists, engineers and environmentalists must be encouraged to become actively involved. The magnitude of accident injury as a public health problem in most of the countries of the world is such that this is a matter of real urgency. Even if

[d] *Table I,* taken from Jeanneret (Les accidents liés à l'activité sportive en milieu scolaire: point de vue d'un épidémiologiste. *Archives françaises de pédiatrie,* **38** (10). 791-796 (1981)), compares the advantages and drawbacks or limits of clinical epidemiological and ergonomic research.

promotion de comportements ou de styles de vie plus sains et moins risqués en favorisant notamment l'initiative communautaire.

La réduction à un niveau minimum des risques de l'environnement domestique, de travail, de loisirs ou routier, ou la diffusion de produits de consommation sûrs nécessitent une recherche et une action multidisciplinaire coordonnée dans des domaines tels que l'ergonomie[d] ou la biomécanique des chocs, en particulier pour l'élaboration de technologies de protection de groupes vulnérables, tels les enfants et les personnes âgées. Ce dernier type de recherche, qui utilise les principes de la physique mécanique pour l'étude des réponses physiques et physiologiques des organismes aux agressions traumatiques, est un secteur où l'alliance de la biologie et de l'ingéniérie en vue d'un environnement plus sûr permet d'éviter un nombre considérable de décès ou d'invalidités sévères.

Deux autres domaines sont également fondamentaux en matière de recherche:

- *la recherche en économie de la sécurité* peut apporter des arguments pertinents aux décideurs en aidant à préciser le coût médical et social des accidents, comparer ces coûts à ceux des autres problèmes de santé prévalant à un moment donné et, dans une optique de rationalisation des choix budgétaires, donner des indications sur le rapport coût/bénéfice des interventions possibles.
- *la recherche sur les services de santé* où le secteur sanitaire a un rôle primordial à jouer: pour déterminer les besoins en services de traitement, en particulier au niveau des soins de santé primaires pour en accroître et en mesurer l'utilisation et la qualité, pour optimiser l'utilisation des technologies de prévention et des résultats de la recherche par les services de santé à tous les niveaux dans un cadre intersectoriel et traduire celle-ci en actions appropriées notamment au niveau communautaire.

Sur le plan de l'acquisition des connaissances, il reste à mentionner les faits suivants. Certaines catégories d'accidents ont été particulièrement bien étudiées, c'est le cas des accidents de la route. La vraie question est la diffusion la plus large et l'application des techniques de prévention (ceinture de sécurité, casques pour les conducteurs de véhicules à deux roues, etc.).

Par contre l'état des connaissances est très incomplet pour d'autres catégories de traumatismes dont il est permis de penser que l'importance est loin d'être négligeable: ceci est notamment le cas pour les accidents domestiques comme les brûlures, les chutes, les intoxications, certains accidents du travail, en particulier en milieu agricole. Cette dernière remarque est encore plus valable pour les pays en développement où l'état des connaissances sur ces problèmes est en général insignifiant. Pour ces derniers il est nécessaire de promouvoir un type de recherche action peu coûteuse orientée vers la solution des problèmes prédominants.

Enfin, du fait de la diffusion croissante des produits et techniques, notamment des pays industrialisés vers les pays en développement, une coopération internationale s'avère nécessaire, non seulement en vue d'un transfert approprié de connaissances, mais aussi pour favoriser sinon assurer une «qualité» égale de sécurité à ces produits (produits à usage domestique, véhicules automobiles, etc.) et pour promouvoir des normes de sécurité dans l'utilisation des techniques et technologies dans les milieux du travail, en particulier l'industrie et l'agriculture.

Il y a donc, en matière d'accidents et santé chez les jeunes, un immense champ de recherches, et il faut encourager des équipes d'épidémiologistes, de psychosociologues, d'économistes, d'ingénieurs, d'environnementalistes à s'y engager activement. Compte tenu de l'importance de la traumatologie accidentelle en tant que problème de santé publique dans la plupart des pays du monde, il y a là une véritable

[d] Le *tableau 1,* emprunté à Jeanneret (Les accidents liés à l'activité sportive en milieu scolaire: point de vue d'un épidémiologiste. *Archives françaises de pédiatrie,* **38** (10): 791-796 (1981)), compare les avantages et les inconvénients ou les limites de la recherche clinique épidémiologique et ergonomique.

Annex 2 (Contd.)

TABLE 1. SYNOPSIS OF THE THREE MAIN APPROACHES TO ACCIDENTS IN CHILDHOOD AND ADOLESCENCE

Approach	Clinical	Epidemiological	Ergonomic
Object of study	— Patient — Injuries	Characteristics — of high risk situations — of high risk groups — of risk factors — of the classic triad: victim-agent-environment	— Interface — Interaction } between the elements involved
Relevant questions	— To whom (host, victim)? — What (what injuries)?	— How much? — When? — Where? — To whom (victim)? — Why?	— How?
Advantages	Availability of hospital records	Possibility of collecting quantified data on: — exposure — the characteristics listed above — the incidents	Possibility of transposing the concepts and experience built up in the field of occupational accidents
Drawbacks	— Records deficient in details of interest to epidemiologists — Usual bias of hospital cases	Low predictive value of risk factors Difficulty of direct observation Comprehensive data: — difficult to obtain for accidents — almost impossible for incidents Complexity of the causation network	Ergonomists lack experience of the development of children and adolescents
Level of prevention	Secondary Tertiary	Essentially primary, active	Essentially primary, passive

Source: see note d, p. 283.

TABLEAU 1. COMPARAISON SYNOPTIQUE DES TROIS PRINCIPALES APPROCHES POUR LES ACCIDENTS SURVENANT CHEZ L'ENFANT ET L'ADOLESCENT

Approche	Clinique	Épidémiologique	Ergonomique
Objet	— Le patient — Les traumatismes	Les caractéristiques — des situations à risque élevé — des groupes à risque élevé — des facteurs de risque — de la triade classique: victime-agent-environnement	— L'interface — L'interaction } entre les éléments en présence
Questions pertinentes	— A qui (hôte, victime)? — Quoi (quels traumatismes)?	— Combien? — Quand? — Où? — A qui (victime)? — Pourquoi?	— Comment?
Avantages	Disponibilité des dossiers hospitaliers	Possibilité de collecter des données quantifiées sur: — l'exposition — les caractéristiques mentionnées ci-dessus — les incidents	Possibilité de transposer les concepts, les expériences acquises dans les accidents du travail
Inconvénients	— Dossiers lacunaires pour les caractéristiques intéressant les épidémiologistes — Biais habituels aux cas hospitalisés	Faible pouvoir prédicteur des facteurs de risque Difficulté de l'observation directe Exhaustivité des données: — difficile pour les accidents — quasi impossible pour les incidents Complexité du réseau causal *(Causation network)*	Absence d'expérience des ergonomistes dans le domaine du développement de l'enfant et de l'adolescent
Niveau de prévention	Secondaire Tertiaire	Surtout primaire, active	Surtout primaire, passive

Source: voir note d, p. 283.

enough is known about certain types of accident for action to be taken, studies are still needed to apprehend more clearly the obstacles, constraints and resistances, which are hampering the progression from knowledge to action in the matter of safety. Exchange of experience between countries at different levels of development and with differing sociocultural values should prove very useful.

urgence. Même si, pour certaines variétés d'accidents, on en sait assez pour agir, il reste des études à faire pour mieux cerner les obstacles, les contraintes et les résistances qui freinent le passage de la connaissance à l'action en matière de sécurité. Et l'échange d'expériences entre pays de niveaux de développement différents et de valeurs socioculturelles contrastées peut s'avérer ici du plus haut intérêt.

Annex 3

WORLD HEALTH ORGANIZATION
ORGANISATION MONDIALE DE LA SANTE
ORGANIZACION MUNDIAL DE LA SALUD

Ad Hoc Group on Accident and Injury Research

Geneva, 18-19 March 1986

IRP/APR 216m32 S
28 February 1986
6930E
ORIGINAL: ENGLISH

SCOPE AND PURPOSE

One of the objectives of WHO's Global Programme for Accident Prevention is to provide guidance on the formulation of accidents and injury research policies particularly as part of national health research policies. In addition there is a need for clarifying issues with regard to the role of WHO in accident and injury research as well as to define areas on priorities to be considered within its programme particularly in view of the preparation of the 8th General Programme of Work (1990-95). It is also a recommendation from the Programme Advisory Group, held in January 1986 to convene such a meeting.

The group will be responsible for the preparation of a document on accident and injury research development which will form the background for the discussions of the Advisory Committee for Medical Research (ACMR) during one of its session in 1986.

Annex 4

Ad Hoc Group on Accident and Injury Research

Geneva, 18-19 March 1986

IRP/APR 216m32S

28 February 1986
6930E
ORIGINAL: ENGLISH

LIST OF PARTICIPANTS

ALGERIA

Dr N. Benhabylés
Chef de service d'orthopédic, Hôpital Ben-Aknoun, Alger

BELGIUM

Dr B. Nizetic (Co-rapporteur)
Laboratoire d'épidémiologie et de médecine sociale, B-1070 Brussels

DENMARK

Mr J. Christensen
Chairman of the OECD Road Research Programme, Council for Research in Traffic Safety, DK-2820 Gentofte

EGYPT

Professor I. Badran
Academy of Scientific Research and Technology, Cairo

UNITED KINGDOM

Professor E.M. Backett (Co-rapporteur)
South Town, Devon TQ6 9BU

WORLD HEALTH ORGANIZATION

Dr M. Abdelmoumème
Chief, Research Promotion and Development

Dr C.J. Romer (Secretary)
Chief, Programme for Accident Prevention

WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTE

Annex 5

DISTR.: LIMITEE

ACHR28/86.11 Report

ORIGINAL: ENGLISH

ADVISORY COMMITTEE ON HEALTH RESEARCH

REPORT TO THE DIRECTOR-GENERAL

on its twenty-eighth session
held at WHO headquarters, Geneva
7-10 October 1986

CONTENTS AND AGENDA

	Page
List of members and other participants	2
Summary of recommendations	5
Agenda item:	
1. Opening of the session	6
2. Election of officers	6
3. Adoption of the agenda and programme of work	6
4. Introductory statement by the Director-General	6
5. ACHR subcommittees	6
5.1 Enhancement of transfer of technology to developing countries with special reference to health	7
5.2 Follow-up activities on health research strategy	9
5.3 Health manpower research	11
5.4 Research on aging	15
6. Regional research activities: reports by the Chairmen of the regional ACHRs	17
7. Food policies, nutrition and health	24
8. Communication on current activities of the Council for International Organizations of Medical Sciences	26
9. Future ACHR initiatives	27
10. Other business	30
11. Review and adoption of the report	30
12. Closure of the session	30

This document is not issued to the general public, and all rights are reserved by the World Health Organization (WHO). The document may not be reviewed, abstracted, quoted, reproduced or translated, in part or in whole, without the prior written permission of WHO. No part of this document may be stored in a retrieval system or transmitted in any form or by any means - electronic, mechanical or other without the prior written permission of WHO.

The views expressed in documents by named authors are solely the responsibility of those authors.

Ce document n'est pas destiné à être distribué au grand public et tous les droits y afférents sont réservés par l'Organisation mondiale de la Santé (OMS). Il ne peut être commenté, résumé, cité, reproduit ou traduit, partiellement ou en totalité, sans une autorisation préalable écrite de l'OMS. Aucune partie ne doit être chargée dans un système de recherche documentaire ou diffusée sous quelque forme ou par quelque moyen que ce soit - électronique, mécanique, ou autre - sans une autorisation préalable écrite de l'OMS.

Les opinions exprimées dans les documents par des auteurs cités nommément n'engagent que lesdits auteurs.

Annex 5 (Contd.)

ACHR28/86.11 Report
page 2

LIST OF MEMBERS AND OTHER PARTICIPANTS

Members

Professor V. Ramalingaswami, former Director-General, Indian Council of Medical Research, New Delhi, India (Chairman)

Professor I. Badran, Scientific Adviser to the Government, Cairo, Egypt (Vice-Chairman)

Professor M. Tubiana, Director, Gustave-Roussy Institute, Villejuif, France (Vice-Chairman)

Professor B. O. Osuntokun, Department of Medicine, University of Ibadan, Ibadan, Nigeria (Rapporteur)

Professor M. Benmiloud, Professor, Department of Endocrinology, Pierre and Marie Curie Centre, University Hospital of Algiers, Algeria

Dr D. Bersh Escobar, Director, Health Division, Committee of Coffee-Growers of Quindío, Armenia (Quindío), Colombia

Professor N. P. Bočkov,[1] Director, Institute of Medical Genetics of the Academy of Medical Sciences of the USSR, Moscow, USSR

Professor N. D. Huong, Director, National Institute of Tuberculosis and Respiratory Diseases, Hanoi, Viet Nam

Professor A. Keynan, Vice-President, Department of Biological Chemistry, Institute of Life Sciences, Hebrew University, Jerusalem, Israel

Professor T. McKeown, Department of Social Medicine, The Medical School, Edgbaston, Birmingham, United Kingdom of Great Britain and Northern Ireland

Professor V. A. Ngu, Minister of Public Health, Yaoundé, Cameroon

Professor H. G. Pauli, Director, Institute for Research in Education and Evaluation, Faculty of Medicine, University of Bern, Bern, Switzerland

Professor L. Rakić, Chairman, Committee for Biomedical Research of the Academies of Sciences in Yugoslavia, Belgrade, Yugoslavia

Professor Bintari Rukmono, Head, Department of Parasitology and General Pathology, Medical Faculty, University of Indonesia, Jakarta, Indonesia

Dr Siraj-ul-Haq Mahmud,[1] Senior Chief, Health and Nutrition, Ministry of Planning and Development, Islamabad, Pakistan

Professor Sun Tsung-tang, Director, Cancer Institute and Hospital, Chinese Academy of Medical Sciences, Panjiayuan, Beijing, China

Dr J. B. Wyngaarden, Director, National Institutes of Health, Bethesda, Maryland, United States of America

---

[1] Unable to attend.

Chairmen of the Regional Advisory Committees on Medical Research

Professor J. Assi Adou, Department of Paediatrics, Faculty of Medicine of Abidjan, Côte d'Ivoire (Chairman, African Advisory Committee on Health Research)

Professor F. C. Robbins, Case Western Reserve University, Department of Epidemiology and Biostatistics, Cleveland, Ohio, United States of America (Chairman, PAHO Advisory Committee on Health Research)

Professor Prawase Wasi, Faculty of Medicine, Mahidol University, Bangkok, Thailand (Chairman, South-East Asia Advisory Committee on Health Research)

Professor T. M. Fliedner, Rector, University of Ulm, Ulm (Donau), Federal Republic of Germany (Chairman, European Advisory Committee for Health Research)

Professor Abdel Salam Majali, President, University of Jordan, Amman, Jordan (Chairman, Eastern Mediterranean Advisory Committee on Health Research)

Professor Jong Huh, School of Public Health, Seoul National University, Seoul, Republic of Korea (Chairman, Western Pacific Advisory Committee on Health Research)

Council for International Organizations of Medical Research (CIOMS)
Dr Z. Bankowski, Executive Secretary, CIOMS, Geneva, Switzerland

Temporary advisers

Professor M. Abdussalam, former Chairman, Eastern Mediterranean Advisory Committee on Health Research, Robert von Ostertag Institute, Federal Health Office, Berlin (West)

Professor G. L. Ada, Head, Microbiology Department, John Curtin School of Medical Research, Australian National University, Canberra City, Australia

Dr Elsa L. Segura, Director, Instituto Nacional de Diagnóstico e Investigación de la Enfermedad de Chagas "Dr Mario Fatala Chaben", Buenos Aires, Argentina

Representatives from the WHO regional offices

Regional Office for Africa: Dr F. Aboo-Baker, Technical Adviser to the Regional Director, Research Promotion and Development

Regional Office for the Americas/Pan American Sanitary Bureau: Dr Maria Leite-Ribeiro, Chief, Research Coordination

Regional Office for South-East Asia: Dr B. A. Jayaweera, Director, Research and Family Health

Regional Office for Europe: Dr H. Vuori, Chief, Research Promotion and Development; Dr D. M. Macfadyen, Manager, Global Programme for Health of the Elderly

Regional Office for the Eastern Mediterranean: Dr A. Nadim, Regional Adviser, Research Promotion and Development

Regional Office for the Western Pacific: Dr A. Shirai, Special Programme for Research and Training in Tropical Diseases/Research Promotion and Development

Annex 5 (Contd.)

WHO headquarters Secretariat

Dr H. Mahler, Director-General

Dr T. A. Lambo, Deputy Director-General

Mr W. W. Furth, Assistant Director-General

Dr J. Hamon, Assistant Director-General

Dr S. K. Litvinov, Assistant Director-General

Dr Lu Rushan, Assistant Director-General

Dr M. Abdelmoumène, Chief, Office of Research Promotion and Development (Secretary)

Dr R. Bos, Planning, Management and Operations, Division of Vector Biology and Control

Dr B. Mansourian, Office of Research Promotion and Development

Mr V. R. Oviatt, Coordinator, WHO Special Programme on Safety Measures in Microbiology (Secretary of the ACHR Subcommittee on Enhancement of Transfer of Technology to Developing Countries with Special Reference to Health)

Dr A. Pradilla, Chief, Nutrition, Division of Family Health

Dr A. Segall, Health Manpower Research, Division of Health Manpower Development (Secretary, ACHR Subcommittee on Health Manpower Research)

SUMMARY OF RECOMMENDATIONS

Agenda item

5. ACHR subcommittees:

5.1 Enhancement of transfer of technology to developing countries with special reference to health

- ACHR endorsed the main recommendations of the Subcommittee (see paragraph 23).

- ACHR further recommended that the Subcommittee should be continued for four main reasons (see paragraph 34).

- Finally, ACHR agreed that an abridged, short version of the Subcommittee report, directed to policy-makers, should be widely publicized (see paragraph 34).

5.2 Follow-up activities on health research strategy

- ACHR endorsed the recommendations of the Subcommittee (see paragraph 45).

5.3 Health manpower research

- ACHR endorsed the Subcommittee's approach and the plan of action proposed for implementing the strategy on health manpower research (see paragraph 59).

- ACHR also endorsed the other recommendations of the Subcommittee (see paragraph 60).

5.4 Research on aging

- ACHR endorsed the Subcommittee's proposal to establish a modest multidisciplinary, WHO-coordinated research programme on aging (see paragraph 77).

7. Food policies, nutrition and health

- After appropriate modifications following its discussion in the global ACHR, the document on food policies, nutrition and health should be discussed by the regional ACHRs.

- A more detailed document on global strategy for nutrition research should be presented to the twenty-ninth session of ACHR (see paragraph 159).

8. Communication on current activities of the Council for International Organizations of Medical Sciences

- ACHR supported the plan of action presented by the Executive Secretary of CIOMS and requested him to present a progress report on CIOMS activities at the twenty-ninth session of ACHR (see paragraph 168).

- WHO should continue to give CIOMS moral and financial support (see paragraph 168).

9. Future ACHR initiatives

- Accident prevention: ACHR endorsed the interim report presented by Professor Badran on this subject and requested him to develop this theme further in collaboration with the Secretariat and present a paper for in-depth consideration at the twenty-ninth session of ACHR (see paragraph 180).

- WHO/FAO/UNEP Panel of Experts on Environmental Management for Vector Control: a document providing broad overview on this topic is to be presented to the twenty-ninth session of ACHR (see paragraph 191).

FUTURE ACHR INITIATIVES (Agenda item 9)

169. ACHR considered the following issues which had been proposed in the course of the past year as deserving special attention and possible development into research-oriented initiatives.

Accident prevention

170. This subject was presented by Professor Badran. Nearly three million deaths occurred each year in the world as a result of injury due to accidents, representing about 5% of the global annual mortality. The majority of the deaths occurred in developing countries, and we can assume that the figures are grossly underestimated. The major causes of accidental deaths were motor-vehicle crashes, falls and drowning, followed by burns and poisoning; they could be classified in three major categories - motor-vehicle, domestic, and occupational accidents.

171. The real extent of the problem could only be assessed if the morbidity and disability caused by accidents and their cost to society were taken into consideration. For instance, each year in the USA there were about 150 000 deaths caused by injury and several million injured cases necessitating more physician contact than any disease; there were 6000 deaths from burns and more than one million burn injuries requiring medical attention; 90 000 patients were admitted to hospitals, requiring over one million days of hospital care, or an average of 12 days per admission; 80 000 brain trauma and spinal cord injuries occurred, motor-vehicle injuries being the first cause of paraplegia and quadraplegia.

172. In addition, accidental injuries were the first cause of early death in developed countries and second in developing countries after communicable diseases. In most of the countries of the world injuries and poisoning ranked among the first five causes of death in the first half of life, and for the first time the incidents or injuries had shown an alarmingly increasing trend in developing countries. Finally, the cost to society was very high. For instance, motor-vehicle accidents cost about 2% to 3% of the GNP as an average (in the United States of America about US$ 75 000 million to $ 100 000 million, in the European Community about 275 000 million French francs).

173. Yet research on safety had a very low priority compared with, for instance, cancer and cardiovascular diseases. Therefore primary prevention was imperative, particularly in rapidly changing societies like those of developing countries. Safety research was fundamental to the formulation of policies and to understanding the process by which accidents occurred and the events predisposing people to accidents and injuries, as well as to understanding the socioeconomic and human consequences. Safety research should be considered before any intervention or the introduction of new technologies. It also implied multidisciplinary and multisectoral cooperation.

174. Accidents were events during which several predisposing human or environmental factors occurred to produce an injury; an injury was a deformation of tissues beyond their limit of resistance, resulting in damage to anatomical structures or an alteration of physiological or biomechanical functions. Several levels of prevention had to be considered: prevention of occurrence of the event; prevention of injury after the accident; prevention of handicap after the injury.

175. Types of research would include: emergency or contingency research (cheap and rapid, or "dirty", research); action and operational research; research for decision-making; environmental research; and socioeconomic evaluation.

176. The following were possible priority areas for accident and injury research:

(1) Epidemiology, vital statistics and data bases; population studies; calculation of denominators to assess risk level; identification of vulnerable groups; establishment of information banks.

(2) Research on human factors; psycho-behavioural research on the influence of lifestyle, culture, individual beliefs, socioeconomic status; technological innovations as they related to risk-taking and accident occurrence.

(3) Research on biomechanics of trauma; interdisciplinary research; research at the interface between medical and engineering research to produce safer environmental products.

(4) Therapeutic research for the management of injuries.

(5) Research on rehabilitation for the injured.

(6) Environmental research to produce safety standards for products; cooperation between bioengineers, health researchers, and manufacturers.

(7) Toxicological and pharmacological research in relation to epidemiology of poisoning.

(8) Socioeconomic research; effects of social policies, legislation and enforcement, analysis of economics of safety.

(9) Health systems research to determine the value of an efficient use of safety technology as well as of health care delivery. (It should include the formulation of integrated programmes for safety promotion and research on programme evaluation.)

177. Finally, research should provide the basis for action by decision-makers and initiate political commitments at the highest level to consider safety as an integral part of socioeconomic and other development programmes. It should also provide the basis for serious involvement of communities in the monitoring of programmes on "own safety" as well as in social training for the promotion of safety.

178. Three major recommendations were made:

(1) development of effective surveillance systems;

(2) development of an infrastructure for supporting multidisciplinary and multisectoral accident/injury research;

(3) formulation of preventive technology and strategy for its use.

179. WHO should assist countries in collecting, generating, and making available relevant information for national policy and programme formulation. It should catalyse the development of multidisciplinary and multisectoral studies, widely disseminate research findings, encourage participation of various sectors and promote principles for strong community involvement for "own safety" in countries, particularly in developing countries.

180. The presentation was received with considerable interest by ACHR. Several members echoed the concerns expressed by Professor Badran and reported that in their own countries the problem had reached alarming proportions. ACHR expressed the view that consideration of the subject was timely; it requested Professor Badran to develop the theme further in collaboration with the Secretariat and to present a paper for in-depth consideration at the twenty-ninth session of ACHR. It endorsed the interim report.

WHO/FAO/UNEP Panel of Experts on Environmental Management for Vector Control (PEEM)

181. In the discussion on this subject it was recognized that vector control was an important component of strategies directed against vectorborne diseases such as malaria, schistosomiasis, filariasis, and various viral infections. However, national vector control authorities were increasingly faced with a number of constraints in their conventional chemical control operations: the spread of insecticide resistance; rising costs, because of the need to apply more expensive insecticides; environmental concerns; and reduced effectiveness of spraying campaigns because of a decline in acceptance by the local population.

182. These issues had been considered by the Expert Committee on Vector Biology and Control at its meeting in 1979, on environmental management for vector control.[1] At that meeting special attention had been focused on the growing problem of vectorborne diseases associated with land and water resource development projects, including irrigation projects, dams for hydroelectric power generation, and flood control projects.

[1] WHO Technical Report Series, No. 649, 1980.

Annex 6

PROGRAMME ADVISORY GROUP ON ACCIDENT PREVENTION
Extract From Report IRP/APR 216/5

Chapter 3.4: Research

Geneva
14-15 January 1986

3.4 Research

Research on accident and injury prevention is indeed a multifaceted process, which reflects the multifactorial causation of the problem. Thus it is important to define carefully the priorities and areas, as well as research procedures, in accordance with the priorities of each country or group of countries. While considering that research is playing a promotive role for the development of the programme, the group insisted on the fact that the programme's research activities supported by WHO should be essentially applied and action-oriented.

3.4.1 A review of the various types of research on accident and injury prevention leads to the following to be considered:

- clinical research, mainly hospital based, related to individual patient and injury;

- epidemiological research, collective in nature, community-based, informing on topics such as risk, exposure, sometimes evaluative;

- behavioural research, using psychophysiology and psychosociology, dealing with the relationship between stages of human development (or aging) and the related risks, with the gap between knowledge and action, and with the psychosocial factors at play in accident. Concerning the control of alcohol involvement, while accepting the logical sharing of responsibilities regarding "production of technical guidelines for the control of alcohol" between the Accident Prevention Programme and the Mental Health Programme, the group drew attention to the possibility of cooperating with the International Conference on Alcohol and Drugs in Traffic (ICADS), which may be able to offer valuable support to the timely and simultaneous development of this objective in all WHO regions;

- environmental and technological research: engineering, ergonomics (systems, man-machine, environment), environmental psychology. A specific interest lies in research on appropriate technology;

- research in the economic field: socio-economic cost of accident injury, cost/benefit evaluation of prevention programmes;

- health service research: imposition of accident-injury on service, calculation of the needs for care and cure, optimisation of the use of existing facilities;

- health and safety policy research: up-to-date information on policies and laws, obstacles to enforcement, evaluation of policies.

In the field of road safety, WHO should encourage research in the following general subject areas, which require medical leadership:

- the implications of socio-economic conditions and general health on accident involvement, injury severity and recovery from injuries;

- the biomechanics of impacts on unprotected road users of the types of heavy vehicles responsible for a large proportion of serious accidents in many developing countries, with a view to developing less aggressive vehicle structures;

- the effects of aging on practical abilities to drive a car (rather than on sensory and psychomotor capacities);

- long-term consequences of accident injuries in terms of disability, loss of work and income opportunities, physical and mental suffering etc;

- the demand on individual cognitive capacities by traffic environments - in search for the limits of the loads which a road user may be expected to sustain without detrimental consequences for road safety.

This enumeration - though not comprehensive by far - clearly indicates the importance of research for the programme. But it is also clear that WHO cannot embark on every field and a strategy has to be designed.

3.4.2 A possible strategy

a) A definite priority must be given to research action, that is action oriented research with community participation. In this respect, some pilot studies have been conducted in selected countries (mainly developing) for children's and adolescents' accident prevention. This should be continued and broadened, by studying the influence of life-styles, cultural background and economic development on the occurrence of accidents in urban and rural communities.

Prevention programmes should be evaluated, and epidemiology represents the best tool to do this: research should focus on the comparative effectiveness of the components, of the programmes, including education, and it should seek the best balance between a passive approach (protection) and a more active approach (promotion) in all prevention work.

Keeping this absolute priority in mind, the role of the programme in the promotion of research on accident injury prevention could be two-fold, according to the availability of research data.

b) Areas where data are already available: here the problem is the application of the existing knowledge (seatbelt protection for instance), and research - mainly psychosocial, but also on policies - should be geared to the resistance to change at the individual and collective level. There are quite a few fields where research has already resulted in clear preventive deductions, and a tremendous progress would be achieved should this knowledge be translated into action.

c) At the opposite end, there are areas where more research is necessary, and the question is whether or not the needed research falls within the reach of WHO, and within the scope of the programme:

i) In spite of the resource limitations of the programme, in manpower and budget, there are some possibilities of WHO involvement through internal cooperation with programmes like Family Health on vulnerable groups and risk approach, Mental Health on alcohol and drugs, Occupational Health on occupational hazards, Health Education on safety education, etc.

The programme has already started to establish a network of collaborative institutions in order to support research on human and environmental factors of accidental injuries. Such an effort should be extended, and the existing collaborative centres associated with the programme (e.g. on burns, on accidents caused by new techniques introduced in agriculture) or external to it (for instance on psychosocial factors, on growth and development, on aging) should be mobilized in this global strategy.

It is difficult to strictly delineate the field where WHO could - even indirectly - promote the needed research. Health service and policy research is certainly a domaine where a specific input from the health system is badly needed. In addition, WHO should encourage research in the following general subject areas which require medical leardership:

- the implications of socio-economic conditions of deprived groups, (especially migrants, populations in slum areas etc.) and of general health on accident involvement, injury severity and recovery from injuries;

- the effects of aging on practical abilities in daily life activities (rather than on sensory and psychomotor capacities);

- the long-term consequences of accident injuries in terms of disability, loss of work and income opportunities, physical and mental suffering;

- additionally, the epidemiology of traffic injuries must progress beyond counts of victims to concentrate on the circumstances of crash injury. A basic epidemiology of trauma is lacking: there is need for specialized information on certain specific types of injuries, particularly head injuries. Also basic epidemiological information is needed on the clinical consequences of certain types of trauma, for instance spinal cord injuries. These problems seem susceptible to giving rise to clinical research. There are also great opportunities for the public health sector to make a contribution in evaluating actual consequences of policies for prevention. Biostatisticians and epidemiologists are needed to evaluate the effectiveness of strategies aiming at protecting the population at risk. WHO can still play a positive role by providing advice, information and expertise, in relation to the expressed needs of countries or communities. WHO can help countries to introduce research on accident injury into their health research plan. It can help develop the technical cooperation between countries, including developing ones, especially on research for appropriate safety technology.

ii) Should the programme be involved in more specialized research activities, which seem to fall outside the mandate of WHO, for example vehicle safety? The group felt strongly that a cooperation - or at least regular contacts - is badly needed, since it is sometimes difficult to draw a clear-cut borderline between the various fields of research, because, for example, very little is known about the injury tolerance levels of different segments of the population. Better information is needed on the response of children to road trauma. Countries experiencing a demographic shift to an older population will find an increasing need for basic information on the mechanism of injury causation to elderly persons. Indeed, basic information on injury tolerance levels is required to devise new means of preventing severe injuries to the unprotected pedestrians or bicycle riders, the majority of them being children or elderly persons.

It is equally important to study the biomechanics of impacts of unprotected road users on the types of heavy vehicles responsible for a large proportion of serious accidents in many developing countries, with a view to developing less aggressive vehicle structures.

The demand on individual cognitive capacities by traffic environments, in search for the limits of the loads which a road user may be expected to sustain without detrimental consequences for road safety.

The above are only a few examples of the possible involvement - or at least interest - of the health sector in research that is largely intersectoral. Other examples could be easily found in the field of home technology and safety.

Several participants expressed concern and impatience with respect to WHO's efforts to arrive at a recommended system for the classification of injury accidents. Cooperation with other sectors in the field of accident prevention is indeed very dependent on the availability and use of a viable and practical yet comprehensive system for recording and classifying injury accidents. The system must be able to facilitate the compilation of longitudinal records of accident cases which, inter alia, are required for badly needed studies of the long-term consequences of accidents.

3.4.3 The scope of research in accident injury prevention is so broad that it was impossible for the group to clearly delineate the input that the Programme and, by extension, the Organization could have in this respect. Hence two recommendations:

- a small interdisciplinary group should explore further the subject and shape a consolidated - yet not comprehensive - research action programme;

- a large consultation should be initiated with the Advisory Committee on Medical Research, in order to get advice and guidance, to "publicize" the Programme and seek help for its implementation, and, finally, to sensitize, through ACMR, the national medical research councils and institutes, for them to include research on accident injury prevention in their plans.

Annex 1

LIST OF PARTICIPANTS

TEMPORARY ADVISERS

DENMARK

Mr J. Christensen
Research Director, Council for Traffic Safety Research, DK-2820 Gentofte

INDIA

Professor D. Mohan
Centre for Biomedical Engineering, Indian Institute of Technology, New Delhi 110016

TURKEY

Professor K. Güler Gürsu Hazarli
Director of Plastic and Reconstructive Surgery Department, Hacettepe University, Ankara

UNITED KINGDOM

Professor E.M. Backett
(Professor Emeritus, Dept. of Community Medicine, University of Nottingham), Lidstones, Devon TQ6 9BU

Dr N.P. Halliday
Medical Officer, Department of Health and Social Security, Hannibal House, Elephant and Castle, London SE1 6TE

USA

Dr S.T. Brown
Director, Division of Injury, Epidemiology and Control, Center for Environmental Health, Centers for Disease Control, Atlanta

WHO COLLABORATING CENTRE

UNITED KINGDOM

Ms Barbara E. Sabey
Transport and Road Research Laboratory, Berkshire RG11 6AU

Annex 2 (Contd.)

REPRESENTATIVES OF OTHER ORGANIZATIONS

FRANCE

International Paediatric Association
Château de Longchamp, F-75016 Paris

represented by: Professor M. Manciaux, Dept. of Public Health, University of Nancy, F-54005 Vandoeuvre

International Centre of Social Gerontology
F-75017 Paris

represented by: Professor G. Lambert, Lab. of Physical Anthropology, Collège de France, F-75005 Paris

SWEDEN

Professor B. Aldman
International Research Council on Biokinetics of Impacts, Chalmers University of Technology, S-402 20 Gothenburg

SWITZERLAND

Professor A.B. Rossier
International Medical Society of Paraplegia, CH-1207 Geneva

USA

Ms Elaine Petrucelli
American Association for Automotive Medicine, Arlington Heights, Il 60005

WORLD HEALTH ORGANIZATION

Dr E. Leparski
Director, Disease Prevention and Control

Dr C.J. Romer
Chief, Accident Prevention Programme