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PROGRAMME ADVISORY GROUP ON ACCIDENT PREVENTION

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Note

The issue of this document does not constitute formal publication. It has been prepared for distribution to all who participated in the meeting and other persons professionally concerned with the field of accident prevention. Additional copies are available from the WHO Global Programme on Accident Prevention, Scherfigsvej 8, 2100 Copenhagen, Denmark.

The views expressed are those of the participants in the meeting and do not necessarily reflect the policy of the World Health Organization.

CONTENTS

1. Introduction
2. Situation analysis
3. Review of activities
  - 3.1 Epidemiology and data collection
  - 3.2 Training
  - 3.3 Support for country policy and planning
  - 3.4 Research
- Annex 1. List of participants

## 1. INTRODUCTION

As foreseen in the WHO Global Medium-Term Programme for Accident Prevention, 1984-89, (1) and in view of updating the medium-term programme and preparation of the programme budget 1988-89, an advisory group of experts belonging to collaborating centres and other relevant institutes involved in the development of the programme, met in Geneva, 14-15 January 1986, to undertake a situation analysis and make an external assessment of the extent to which the programme's achievements will allow the programme to meet its target for the period of the Seventh General Programme of Work, 1984-1989.

## 2. SITUATION ANALYSIS

At the beginning of the second biennium (1986-87) of the 7th Programme of Work the road safety situation is still deteriorating on a global basis, although there are large differences between regions and countries. In the industrialized world, the decline in the number of fatalities, which began in the early seventies, has continued and is likely to continue for a while as seatbelt legislation is taking effect in many countries where such legislation has been or is being introduced. However, a few countries appear to have exhausted the potential pay-offs of their preventive policies and are now reporting an increase in accidents as traffic continues to grow. In most developing countries the implementation of preventive measures is unable to keep pace with the increase in traffic, which results from a combination of population growth and the increasing role of motorized transport in the economic and social life, and this causes accidents to grow in number.

For identical reasons, the threat to human safety represented by the uncontrolled development and dissemination of products, chemicals, drugs etc. is increasing, whereas the rapid move towards urbanization and industrialization of many third world populations exposes them to risky situations, without giving them the chance to adapt to, and to master their new environment.

Though numerous, severe accidents and their consequences are rare events for individuals: to the general public they are experienced only by a minority in the span of life time. Therefore they do not appear to constitute a problem that requires priority attention. However, the repercussions on society of the losses in human capital, and the drain on the health and rehabilitation services resulting from these accidents, should obviously be a serious concern for the informed decision maker; they represent an enormous challenge to any agency, authority or individual who is entrusted with responsibilities in the field of public health.

It is thus noteworthy that such an important problem does not receive the attention and interest it deserves. Policy makers at all levels, health professionals, and the general public need to be convinced. To do this, various approaches should be used: providing each target group with an appropriate message and the tools for getting more involved in accident prevention. Therefore, well known information on mortality statistics will not be reproduced in this section of the report, but it will rather underline main issues, points of emphasis and necessary enlargements of the programme, before looking at the objectives, targets and evaluation procedures of the programme.

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(1) World Health Organization, Medium-Term Programme on Accident Prevention, 1984-89 (APR/MTP/84.1, section 8).

## 2.1 Main issues

All over the world, accidental injuries are a priority health problem as far as their frequency, potential severity and amenability to prevention are concerned. They rank as the third cause of mortality in developed countries, and as an emerging one in most developing countries, increasingly important as communicable diseases and malnutrition are better controlled. They cause tremendous human suffering and an unbearable collective cost. Their importance is even greater in younger age groups, with a terrific loss of potential years of healthy life.

Even if the severity of the problem is largely documented by mortality statistics, epidemiological surveys remain necessary, in order to obtain a better knowledge and understanding of its magnitude, especially in terms of morbidity, for sensitizing communities and decision makers and for providing a basis for action and evaluation.

Because of the multifactoral nature of accidents, an intersectoral approach is required: is it the lack of this necessary trans-disciplinary cooperation that is so far impairing the launching of sound and relevant prevention programmes?

On the other hand, accidental risk is a normal component of daily life: what is important is to select the risks, avoiding dealing with those unnecessary or beyond control: this is a difficult process which calls for educational investments at both family and community level.

## 2.2 Emphasis

Some specific points should be stressed.

Regarding mortality, one must emphasize its selective impact: injuries kill or impair mainly adolescents and young people, workers, and their toll is heavier in males which is partly responsible for the lower life expectancy of men. In developing countries, victims of road traffic accidents are often young educated persons and professionals.

A particular emphasis should be put on morbidity, and on the burden placed on health services due to accidental injuries. A first question arises: is the decline of mortality, observed in the last 10 years in many developed countries, counterbalanced by an increase in morbidity, especially in permanent disabilities? Then, an estimate should be made of the human, social and economic cost of injuries, and the increasing part of the health budget this represents; the aging of the population in the industrialized world will indeed augment this cost, since elderly people represent a vulnerable group.

Large age structure differentials between industrialized and developing countries are reflected by major differences in frequency and pattern of serious injuries and deaths. This is a reason for undertaking local surveys, taking into account the age structure of the population, as well as cultural values and customs.

Priority should be given to those accidents and products that are, at the same time, the most likely to cause severe injuries and the most amenable to prevention through appropriate technology and/or legislation. In this respect, cooperation between health and industry is essential.

Another critical point is evaluation of existing preventive programmes. Too much money is invested in prevention without any kind of cost/benefit or efficiency evaluation.

Training in accident and injury prevention and care, as well as health and safety education, have to be developed extensively everywhere. Curricula and teaching/learning material could help, provided they are of a good standard and adapted to various audiences.

Equally, a definite effort should be made towards communication of information on safety technology and behavioural methods to large groups of people (managers, policy makers, media and education specialists, etc.)

### 2.3 Scope of the Programme

The scope of the programme should be broadened, in order to encompass the injury facet. "Accident prevention and injury mitigation" represents a good overall scope. However, the title - if it is to be changed - should be more concise. Accident and injury prevention would be appropriate, "prevention" referring, indeed, to the various levels, including tertiary; such a title would be the short form of "prevention and control of accidental injuries".

In the future, the programme will give more emphasis to accidents other than road traffic: domestic accidents, seen in the broad context of community rather than restricted to home; physical exercise and sports accidents, more and more common in the industrialized world... However, the concept of accidental injury should not be extended too much: for example suicide, homicide, non-accidental injuries, such as child abuse, are not part of the programme.

The programme should be completely action oriented. However, action sometimes needs research as a prerequisite: in these cases, the research component must consist of research action (see section 3.4).

The needed enlargement should increasingly include the work of the other sectors involved in accident and injury prevention, with a strong need for intersectoral cooperation-coordination. For example, the system approach "man-machine-environment" has to be used as a model, whereas the time enlargement leads to consider the 3 stages "pre, per, post" of any accidental situation. As a matter of fact, it is important to emphasize the success of the road accident prevention programmes so far obtained by transport, road and other authorities, largely without assistance from the health sector. It is obvious however that further progress is strongly dependent on the active involvement of health and medical professionals.

### 2.4 Objectives and targets

Taking the above remarks into account, the general objective should read "... to support the development, adaptation, use and evaluation of methods for promoting accidents and injuries prevention" (additive underlined).

The specific objective no 1: add "accident occurrence and consequences"; no 2 unchanged.

The targets should be kept rather vague, by avoiding too constraining dates and figures, since the programme proceeds at an unpredictable pace.

They should insist on:

- the regional level (task force, activities, etc.), which could serve as a centre with delegated responsibilities, multiplying the work of the global level;
- the extended contacts with experts, groups, agencies etc. outside the health sector;
- the production and testing of educational material (manuals, guidelines etc.) for various groups of receivers.

## 2.5 Evaluation

Finally, the question should be asked: what should be measured? For practical and operational reasons, the outcome of the programme should be estimated against indicators of achievements (changes in policies, implementation of research action programmes etc.) rather than through indicators of crude results in mortality and morbidity. A comprehensive evaluation of the programme effectiveness - desirable, yet difficult to achieve - would request the development of suitable procedures and performance indicators. On the other hand, regional, national or local projects have to use their own indicators, according to their own objectives.

## 3. REVIEW OF ACTIVITIES

The intersectoral and multidisciplinary nature of the accident/injury problem is both a constraint and a challenge. The activities of the Global Programme reflect both, and the Programme Advisory Group was at pains to applaud the successes in some countries while seeking to sensitize, assist and interest others.

Three persisting barriers were identified: first, while injuries are seen as health problems, it is often difficult to see how medicine can contribute to prevention. Second, so much responsibility for accident/injury prevention must be taken by different groups of people that coherent social policies are particularly difficult to achieve; and third, community involvement is also particularly difficult, again because so many technologies and sectors are concerned.

### 3.1 Epidemiology and data collection

All discussions on the prevention of accidents and injuries return to the changing patterns made by these events in different societies. A knowledge of who is vulnerable and of the risk factors involved is both the traditional and the most effective way of prevention. It is also the most effective way of arousing interest.

#### 3.1.1 Impact

The Programme Advisory Group paid particular attention to the epidemiology of accidents and injuries as a way of arousing attention to their importance for it was increasingly preoccupied with the lack of attention to this major health problem which is a feature of many societies. Thus the kind of data

collected and the manner of its presentation was of paramount importance. The Programme Advisory Group was inclined to broaden the scope of data needs in this way and to experiment with new and perhaps more provocative presentations of them. In particular the Group was attracted by the importance of the longitudinal life experience of the injured, their handicaps, their social isolation, disturbances to the quality of their lives and their loss of autonomy. In addition new economic data should reflect not only the monetary cost of accidents and injuries but social deprivation and the loss of productivity.

### 3.1.2 Patterns

The patterns made by accidents and injuries are the traditional entry point for the epidemiologist, but his findings are rarely converted to social and fiscal policy and only occasionally into legislation. Where this has been done, declining indices of severity follow. In this the Global Programme has played its important part. The Programme Advisory Group felt that looking to the future there were a number of simple epidemiological tools which could be used by policy makers. Among these, various expressions of risk, trends and changes of pattern linked to changing demographic composition of societies were of great importance. Again attention was drawn to the Global Programme's continuing concern for children, the adolescent and the elderly, not only as vulnerable groups but as groups of great numerical importance.

### 3.1.3 Strategies

At a more sophisticated level a major use for epidemiological data in the prevention of accidents and injuries is as a basis for intervention strategies. The Programme Advisory Group saw an inevitable development in this type of work and was impressed by the potential of some of the "new" epidemiology. However, it saw an increasing gap between common understanding and the complexity of some of the new methods. There is, here, a major task for the programme both in bridging the gap and in translating findings into material for country based strategy interventions. Before epidemiological findings can be used in this way the strategies must be tested. This is the main research thrust of implementation and the Programme Advisory Group was concerned at the complexity of the indicators of successful intervention particularly where more than one discipline was involved. More simpler and perhaps "softer" criteria are favoured, some of the latter being concerned with subjective or quality of life measures.

### 3.1.4 Community involvement

The epidemiological basis of prevention does not exclude the collection and use of elementary data at village and community level. The Programme Advisory Group was increasingly concerned to involve women's movements, village health committees, school children, teachers, religious leaders and health workers in accident and injury prevention. To this end they favoured the continuing development of protocols, manuals, instruction booklets and information packs which can be used by the community itself in the control of accidents/injuries. It was noted that this "bottom-up" rather than "top down" approach taps unexpected resources of local enthusiasm and participation. The Programme Advisory Group was happy to support the lay reporting programmes of WHO and welcomed the work done by the global programme (protocols and data collection formats in the control of childhood and adolescent accidents) in many countries.

### 3.2 Training

In reviewing the work of the Global Programme the Programme Advisory Group was impressed by the progress made in the face of some continuing popular and administrative complacency. A number of ways of attacking this complacency are currently being developed and seem likely to succeed. However, the Group felt that a strong case could be made for a systematic increase in the educational thrust of the programme. First, the programme itself is broad enough to embrace with equal effort more of the categories of accident/injuries than hitherto and, next, its community components can well be developed further. This latter is recognised mostly as a response to community needs but also in consequence with its regard for, and concern with, Primary Health Care.

#### 3.2.1 Purpose

The purpose of educational endeavour in the field of accidents and injuries is, of course, to promote preventive behaviour. However, between the imparting of knowledge and the hope for behaviour and attitude changes lie a number of complex impediments, many of which are understood but not overcome. The decision of the Programme Advisory Group to recommend an increase in training activity was seen to serve a number of purposes. First, and at the individual and family level, there is evidence that training about accidents and their avoidance increases good risk taking behaviour. At the level of the decision-maker, the policy maker and legislator training, both informal and formal (of the type sponsored and encouraged by the Global Programme e.g. WHO/Johns Hopkins International Course on Injury Prevention, 1983 and subsequent activities at national level) sensitizes and promotes a more rational approach. At the level of community trend setting, village headpersons or women's committees, training can be shown to promote preventive behaviour. Among these latter the Programme Advisory Group returned repeatedly to the attitudes and behaviour of the health professionals - particularly doctors whose influence on others was important. Finally and quite separately, the Programme Advisory Group was concerned to promote to the limits of programme commitment a knowledge of epidemiology sufficient to prompt a great deal more research. They were particularly concerned with research at two extreme levels (see section 3.4, Research) the first elementary and of the kind which might be called "appropriate" research, the surveys and evaluations of which could be used by the non medical community. At the other end, the Programme Advisory Group was concerned to promote a number of "teachers" whose research skills were such as to equip them to work in the development and testing of intervention strategies.

#### 3.2.2 The process of educational planning

The process of educational planning within a Global Programme demands attention to a sequence of steps - the educational objectives for each target group, the development of curricula, the planning of teaching methods relevant to the groups and its objectives and the introduction of courses and their evaluation. The Global Programme has institutionalized several of these steps already and more courses are planned particularly in languages other than English. However, the Programme Advisory Group insisted that more should be developed in association with the educational specialists concerned.

#### 3.2.3 New horizons

Part of the increased interest in training by the Programme Advisory Group stems from the new recognition that deep community involvement is a prerequisite of preventive action at community level. Whilst the most

effective prevention probably results from legislative and biomechanical intervention, the community must sanction, approve and agree. To this end there is increasing interest in lay data collection, community accident/injury prevention projects and village health surveys. The training of these groups at community thus achieves increasing importance.

#### 3.2.4 Activities

It is highly important and a prerequisite for the eventual success of the entire programme that training activities be encouraged and supported so that health and medical professionals may obtain professional competence in the various disciplines of accident prevention. A first priority is the development of standard curriculae for theoretical as well as practical courses, which can be adapted to the needs of the countries. The production of course material which can fulfill the immediate needs until local training material becomes available is also important.

The educational programme is likely to have to address senior health officers and health policy decision makers in order to sensitize them to the problems and the role of the health sector in accident prevention before proceeding to training medical and public health professionals in proper methods and targets for epidemiological studies and research. It is of vital importance that the chain of training reaches the level of health workers in local communities, where the potential pay-off is likely to be particularly high.

For WHO the only realistic target is to initiate this process of education and training in cooperation with national ministries, selected schools of public health and non-governmental organizations.

### 3.3 Support for country policy and planning

Once more the multidisciplinary and multisectoral nature of the accident/injury problem poses difficulties. These constraints impede inevitably the Global Programme in its main task of helping countries to respond to their own needs for prevention. Some other less obvious constraints were identified by the Programme Advisory Group. For example, the diversity of the challenge in different cultures and countries - making unified approaches and common solutions dangerous. Or, again, the diversity of the methods of assistance needed or, from WHO's point of view, the differing interests at regional or country level. In spite of these formidable difficulties the Programme Advisory Group was impressed by the extent and variety of support which had been provided. They looked forward to increased assistance to the Programme in the future, associated with the more general recognition of the nature of the problem coupled with increasing popular demand for solutions.

#### 3.3.1 WHO support for national policies' programmes

Traditional methods of WHO support for health programmes are all applicable to the special problem of accidents and injuries. Technical and other support through, for example, regional centres is developing well and more recent emphasis on Appropriate Technology and Primary Health Care are particularly relevant. The former offers some partial solution to the main "cause" of accidents - the overtaking by technology of its understanding and comprehension by the people. The latter offers a site for preventive action

at the level of family and community. WHO has an increasingly important role in acting as a clearing house for the exchange of material, research results, evaluation of new programmes, legislation and technical developments.

### 3.3.2 Culture and country specificity

In spite of the obvious value of exchanged information to member countries, there is much evidence pointing to important differences between countries and cultures, differences which force individual attention. Differences which are of importance in the process of assistance stem from differing political structures, differences in stability of administrations and therefore attitudes to policy development, and from differences in the accident/injury patterns themselves. Vehicles, products, attitudes, population growth, research proposals and policy solutions must all, therefore, be adjusted to the local culture. Obvious as these generalisations are, the Programme Advisory Group was impressed by the difficulties which were thus imposed on support programmes. All of these had to be different and sensitively adjusted to meet the needs of the recipient country. One result is that policy assistance is inevitably of a general rather than a specific nature, support for the specific items coming through a support for the country's own decision making. For this reason the programme has invested much effort in specialized courses, in the training of policy makers and in sensitization to the issues involved.

### 3.3.3 Country reviews

The involvement of WHO in giving support to the initiation of national policies and programmes obviously needs the backing of independent reviews of the situation of the client country as regards accidents and accident prevention. The group noted with interest that such reviews had been conducted and documented by way of examples for a number of countries and seemed to provide the desired overview of the situation in these countries. The value of this activity was seen as being twofold. Firstly, the overall insight which would accumulate from a number of such reviews would provide WHO with a unique knowledge about the possibilities, approaches, obstacles and outcomes of a multitude of safety programmes, which can be applied by other countries. Secondly, these reviews can be used to develop and test a systematic and comprehensive scheme for country surveys, which will facilitate the collection of information and the compilation of an information bank based on country profiles, and which can be offered to countries for national monitoring purposes. The group noted with satisfaction that the first attempts to develop such a scheme had been made and urged the pursuit of this objective. These country reviews open the way to a new kind of enquiry - that into the most effective modes of assistance in policy making and, thence into comparative reviews of the policies themselves. Thus the policies themselves become a proper field for research.

### 3.3.4 Legislation for product safety

The group expressed concern over the fact that some developing countries are importing second-hand and obsolete vehicles of a much poorer safety standard than is offered by today's technology. Such arrangements are of course the responsibility of the government of the importing country and the motor vehicle manufacturer, but the decision of import should be made with a clear understanding of the safety problems. A heightened sensitivity to road safety problems among the local health community and the availability of sufficient information may have a positive influence on such decisions.

In many developing countries the road safety situation is dominated by accidents between unprotected road users and trucks and buses. No standards exist for the front structures of these heavy vehicles which, as a consequence, may have very aggressive features. WHO should continue to encourage and promote cooperation between engineering and medical specialists in search for simple and effective means for limiting the injurious properties of these vehicles.

The group pointed to the regrettable lack of adequate motor vehicle standards in most of the developing and some industrialized countries and expressed its strong support for the programme objective of having such standards adopted - and as necessary developed - by all countries. Although it must be recognized that standards valid in the industrialized countries cannot be copied directly and may indeed be insufficient in view of the road safety problems existing in many developing countries, it is nevertheless of urgency to identify the minimum set of vehicle standards which could and should be developed. It was further suggested that the study group which the programme plans to convene in 1987 and which will have the task of providing an "authoritative statement on technological means for road injury prevention" should specifically undertake to determine the minimum vehicle standards set. It is necessary to be able to enforce the adherence to adopted safety standards and this is in many cases another factor which limits the value of extensive standard systems.

The legislation which has been so outstandingly successful in some countries, and where the Programme has been of considerable value, depends for its effectiveness upon enforcement. Methods of enforcement differ as to the extent of tolerance and degree of authoritarian control. The Programme Advisory Group was of the opinion that WHO's clearing-house function was of considerable value in the exchange of preparatory material, social policy papers etc. Safety standards imposed by legislation on toys, domestic products and, particularly, vehicles, are of growing value and though, for example, the motor bus must be of different safety and construction in, for example, India from that utilized in Europe, there is much that can form a common core.

### 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: a strategy has to be designed, partly based on the results of two meetings held on this topic and convened by the Programme in 1985\*.

\*1. Workshop on Strategies for Action Research on Prevention of Accidents to Children and Adolescents, Le Vésinet, 1985 (IRP/APR 216 s4F)  
2. First Interregional Consultation on Research Development for Injury Prevention. New Delhi, 1985 (IRP/APR 216 m31R)

### 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 or external cooperation: with Maternal and Child Health/Headquarters on vulnerable groups and risk approach, with Mental Health/Headquarters on alcohol and drugs, with Occupational Health/Headquarters on occupational hazards, with Health Education/Headquarters 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 leadership:

- 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;
- contacts should be strengthened with the WHO Advisory Group on Medical Research (ACMR), 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, to include research on accident injury prevention in their plans.

Annex 1

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IRP/APR 216  
4363R  
page 16

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