Health Research Strategies

These four articles were written in the context of work being carried out by WHO's Advisory Committee on Health Research (ACHR). They represent a small part of the ACHR's current wide-ranging discussions on scientific and technological research in support of global health development.

What health for whom? A challenge for epidemiology
Rodolfo Saracci

The ideal of universal access to the best possible health is being replaced by questions of how best to distribute limited health resources. Epidemiology can help to answer these questions by combining its functions of investigation and target-setting. Thus studies on health differences should be aimed at reducing unjust inequalities.

The last half century has seen a remarkable improvement in health on a worldwide scale. Average life expectancy at birth increased from 48 years in about 1950 to over 65 years in the early 1990s, the range now being from 52 years in sub-Saharan Africa to 76 years in developed countries. Social, economic and medical advances have contributed to the improvements in health that have occurred, while epidemiology, the science of health in populations, has played a strong supporting role.

An impressive past
Successful epidemiological studies have led to significant preventive and therapeutic measures during the past 50 years. The health risks of smoking, previously indicated by comparisons of survival curves for smokers and non-smokers, were clearly demonstrated in 1964 when accumulated data on respiratory cancers, chronic obstructive lung disease, ischaemic heart disease and other conditions were analysed and published. Ever since then, epidemiology has continued to provide impressive documentation on the spread of tobacco-related diseases. Should current trends continue, the annual death toll attributable to tobacco smoking will reach several million in the early decades of the twenty-first century.

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Similarly, the major risk factors for ischaemic heart disease were identified largely by means of epidemiological studies. The fact that more than 100 potential risk factors were reported in the vast literature on this subject is sometimes adduced to mock the epidemiological approach. However, it is equally true, and crucially relevant, that when all these studies are examined together they reveal the actual main determinants, which are blood cholesterol, tobacco smoke, high blood pressure, and diabetes.

Epidemiology has also played a significant part in environmental and occupational health. For example, all 74 of the substances evaluated as carcinogenic by the World Health Organization have been confirmed as such by vital evidence obtained from epidemiological investigations. Furthermore, clinical trials conducted in an epidemiological mode on large populations of myocardial infarction patients have demonstrated the life-saving effects of early thrombolytic treatment.

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International Agency for Research on Cancer – ranging from asbestos to papilloma viruses – have been confirmed as such by vital evidence obtained from epidemiological investigations. Furthermore, clinical trials conducted in an epidemiological mode on large populations of myocardial infarction patients have demonstrated the life-saving effects of early thrombolytic treatment.

### A challenging future

Such successes, however, may not be easy to match in the future for reasons related to the evolving scientific and social context in which epidemiology operates. In the scientific context, biology is in the midst of a revolution more radical than any that has occurred since its birth in the modern era, bringing the power of molecular and cell biology to the investigation of etiology. Subjects that used to be largely or entirely beyond the epidemiologist’s ken, such as gene–environment interactions in disease causation, or the evaluation of extensive programmes on community genetics, now have to be mastered. This calls for new knowledge, new skills, and even new attitudes. Just doing “epidemiology as usual” will not be enough.

In the wider social context, it has to be borne in mind that the achievements of epidemiology have occurred against a background of economic expansion, optimism, and widespread acceptance of the view that health is a universal right. The emphasis placed on populations, etiology and prevention came to be regarded as an approach to health care that was well worth supporting. In recent years, however, optimism has given way to a growing awareness that resources and budgets for desirable objectives are limited. In this way the principle of “all health for all” turns into the question of “what health for whom?” This immediately opens up two series of questions.

### The key questions

First, what do we really mean by “health”? Is it just a matter of measuring mortality and perhaps morbidity as well? Should we include measurements of quality of life? How possible is it to make such measurements? Should modifications of human biology such as cosmetic surgery be seen as a matter of health? Who should be involved in deciding what comes under the heading of health and what does not?

Second, to whom and how should health benefits be distributed? Should these
benefits be defined in terms of the availability of health care or of health status, or both? Are effectiveness and efficiency in health care the key and perhaps the only aims worth pursuing, or should equity also be taken into account? How should health determinants outside the health care system – many of which are crucial for prevention – be taken into account? Which priority groups of people should be used to measure and evaluate the distribution of health benefits? Countries? Areas within countries? Male and female? Socio-economic status? And who should decide on the definition of these priority groups?

Most of these questions have a wide range of scientific, technical, social and ethical dimensions that are far beyond the scope of epidemiology. But it would be a matter of serious concern if epidemiologists were to see them as peripheral to their own area of activity or of only incidental, philosophical interest. In fact all these questions stand at the critical juncture between epidemiology and its application, and hence its value, to contemporary societies. To be of any value the answers should be formulated in relation not only to individuals, whether healthy or not, but also to populations.

All this makes the question of “what health for whom?” a key item on the epidemiological agenda. It calls, in particular, for practicable methods of documenting and understanding how and why health evolves in a given community and its relevant subgroups. This means choosing indicators, study designs, and procedures for data collection and analysis. In fact even in the eyes of the most cautious observers there is little doubt that in the coming years further advances in biology and medicine will make increasing health benefits available to at least some individuals, groups and countries. The main question from the public health standpoint will be how these benefits get distributed.

Epidemiology can approach society in two ways. If it is used for investigating health and disease, populations are its fields of observation, and it needs to locate differences of risk or of health status in order to identify the factors that cause this difference. If on the other hand it is used as a part of public health, populations become its targets for achievement in health, and here the minimization of inequalities is the paramount aim. I believe these two approaches should be united into one guiding purpose which may be expressed as follows: epidemiology investigates health differences in order to produce health equalities.