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# Health technology assessment and public health: a commentary

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This article reviews the developments in HTA in four countries, France, The Netherlands, Sweden, and United Kingdom, in relation to public health. It emphasizes that the majority of assessments made are concerned with individual clinical care rather than with the optimization of health. Possible reasons for the neglect of public health issues are that these are inherently more complex than the assessment of individual procedures or drugs. They are usually multisectoral, politically charged, and often considered mundane and “common sense” and, thus, not requiring evaluation (although when evaluations are done they are often counterintuitive). Unless more emphasis is given to the development and evaluation of public health measures, it is unlikely that there will be any major advances in health status. Possible areas for future assessment should include such issues as smoking, drug and other substance misuse, nutrition, and health inequalities. However, it is unlikely that these major areas of concern will be included in the future unless the methods of choice for priorities of development and assessment are changed to include measures that improve health status rather than only clinical services.

**Keywords:** Health technology assessment, Public health

Formal evaluation of procedures and equipment, including pharmaceutical agents, has become the norm in most health services. This development of the use of evidence to influence practice is welcome. A particularly interesting development has been the creation of formally designated centres for the assessment of health technology in several countries. “Criteria for the assessment of health technology have been developed and the field has become rapidly professionalized, with an emerging consensus on procedures and key findings” (1).

This special issue contains articles that describe the experience in four countries. It is interesting to observe the similarity, as well as the differences, in these. From the public health perspective, the interpretation of meaning is important.

Health has been defined in the preamble to the constitution of the World Health Organization, “Health is a state of complete physical, mental, and social well being, and not merely the absence of disease or infirmity” (3).

Health problems vary in different parts of the world but can be grouped under communicable disease, noncommunicable disease, trauma, and mental disorders. It is generally accepted that the major determinants of health are nutrition, environmental and occupational hazards, lifestyle, income,

and biological factors such as genetics. Clinical or medical care services undoubtedly contribute to levels of health but are of a much lesser order of magnitude than the above listed determinants. It is noteworthy that the four studies largely cover the assessment of clinical procedures, drugs, techniques, and equipment.

The French government has a National Agency for Accreditation and Evaluation in Health (ANAES). It has had a role in contributing to health policy by its recommendations on screening, for example, for breast cancer (positive) and hemochromatosis (negative). ANAES is stated as addressing public health programs on cancer, cardiovascular disease, and diabetes, but no examples are given of evaluations on actually preventing these conditions.

The Swedish study is more careful in its use of terminology for HTA as it talks of medical technology and health. It is of particular interest that Sweden’s early initiatives were on polio vaccination and water fluoridation. This study also emphasizes the stimulus provided by the US Office of Technology Assessment, which were largely concerned with “big ticket” (expensive) technologies. This contribution emphasizes that, after this original concern with services to

improve health, the next period was largely devoted to the assessment of medical technologies and clinical procedures. Only more recently have the projects again become concerned with the wider problems of health and prevention, e.g., tobacco and oral health or the prevention of obesity. This has been linked to the treatment of specific conditions, for example, anxiety states, depression, and psychosis, and not only the assessment of individual drugs or procedures. The authors emphasize the need for more critical assessment of the complex interventions of health promotion activities, organizational changes or caring for individual groups of the population such as the elderly. They accept that the methods and criteria for these will need to be different (and probably more complex) than those used in clinical research.

In The Netherlands, economic evaluations were introduced in response to high-cost health technologies such as heart and liver transplantations. Later assessments were concerned with routinely used services, for example, psychotherapy and cancer drugs.

In the United Kingdom, HTA is also primarily concerned with the evaluation of clinical procedures including screening (which can be classified as secondary prevention). Of the 117 National Health Service's Research and Development program (the NHS R&D program) reports published between 1997 and 2001, 19 were concerned with screening services, and 28 were methodological—for example, Bayesian methods, assessment of costs in randomized control trials, and publication biases. Several were concerned with services for specific groups—for example, outpatient services for chronic pain control. Only one was concerned with primary prevention—"health promoting schools and health promotion in schools: two systematic reviews." The authors describe with great clarity the various mechanisms that have been put in place and the differences between assessment and appraisal.

## PUBLIC HEALTH AND HTA

These studies illustrate the problem that public health faces. There is little dispute about the relative contributions that public health and clinical measures can make to the improvements of health status of populations. But we are confounded by the terms and language we use. Terminology often leads to misunderstanding. Thus, the difference between private and public health, for example, requires clarification. The term *clinical services* describes more aptly those health services that focus on the cure and care of individual patients, whether these are publicly or privately financed. An effective public health service identifies and responds to health problems to protect the health of populations. It is unfortunate that the term *health technology assessment* (HTA) has taken on such a universal usage—as shown in the studies, and discussed here, the majority of subjects tackled are concerned with individual clinical care rather than with the optimization of health.

If one considers the history of the development of formal assessment of technical procedures to improve and maintain health, the best examples are in the field of immunization, where large-scale trials of vaccines were carried out, for example, diphtheria, poliomyelitis (both the killed and live vaccines), and measles. These rarely included the economic assessments now deemed mandatory, although rough estimates of resource consequences were made. The assessments of benefits were in terms of mortality or cases.

A good example of the assessment of changes in practice to prevent maternal mortality in the 1930s were the studies by Colebrook and colleagues of the ways in which delivery in hospital needed to be changed to reduce the risk of streptococcal infection. Again these studies did not include formal economic assessments.

In most of the examples quoted from the four countries, the consideration of topics appears limited to drugs, equipment, and a few services, for example, transplantation. Although HTA requires sophisticated economic analyses of the procedures examined, there would seem to be a gap in the use of economic assessments of what actually is important in improving health. From the public health viewpoint, this is far too narrow a perspective. Obviously, there is a need to evaluate different types of hip prostheses or transplantation (to give just two examples), but these are not necessarily the major "drivers" of health concerns.

It is perfectly understandable why some types of drugs have been included in HTA evaluations—their cost may be very high; thus, it is important to balance these with the benefits. However, the treatment of the appropriate individuals with such drugs, although of benefit to the individual, will have little effect on the health status of the population.

The rigorous examination of screening procedures in all four countries has an effect on population health status. It is, however, disappointing that, except in Sweden, there appears to be little effort to tackle the assessment of measures which might have a large effect on health, rather than on only clinical services.

Examples that would lend themselves to tackling issues of health might be technological measures to reduce the incidence of accidents in childhood, for example, measures to reduce road accidents or fires in the home. A major social and health problem, particularly in inner city areas, is pregnancy in women under 16 years, or even single parenthood. Clearly these are very much more difficult areas to tackle than which screening tests to use or how to manage dyspepsia—but tackling them, and providing guidance, might have an important effect on health status.

## POSSIBLE REASON FOR THE DEARTH OF PUBLIC HEALTH ISSUES IN HTA

There are several possible reasons why HTA has not engaged in public health issues. First, public health programs are inherently far more complex to evaluate than, for example, a

new drug or diagnostic procedure. In the former case, one aims to identify beneficial effects in terms of function or outcome as measured by mortality and side-effects. In the latter case, the end point is usually an improvement in diagnosis. A public health program may lead to lower mortality (or morbidity), but this is usually on a far longer time scale than, for example, the effect of treatment on a patient with a disease with a new drug. The change in smoking habits as a result of antismoking measures took many years to be evident in mortality (or morbidity). Many public health measures may lead to changes in attitude—but behavior change and improved outcome, except in rare instances, take a long time to occur.

Second, the introduction of public health measures are often complex and require the cooperation of multiple agencies or organizations, as well as often involving payment by individuals from their own resources and changing their behaviors. A good example was the introduction of the Clean Air Act in 1956, which entailed a change in the way homes were heated. Of course, this measure has had a dramatic effect on both health and the environment, as seen after approximately 15 years. Thus, not only is the time scale different for the introduction of a new drug/machine, but the degree of complexity is of a different order of magnitude.

Third, public health interventions are frequently politically charged and resisted by powerful groups. An example in the nineteenth century was the resistance to the introduction of sanitary regulations, which was opposed by landlords and shopkeepers. Currently, tobacco control and tobacco advertising is a good example of how powerful economic industries, allied to their political friends, can stymie suggested public health measures—and their evaluation.

Fourth, it must not be forgotten that many public health measures are considered to be common sense, or obvious, and proper assessment is resisted—for example, the usefulness of routine health examinations in the middle aged (shown to have no effect on mortality or morbidity and yet still propagated by many).

Fifth, another obstacle to HTA neglect of public health is the lack of charisma of public health measures—cleaning up the water supply or adding fluoride to water is far less newsworthy than evaluating a new molecular drug or shiny piece of machinery that is promoted by powerful industrial groups and their client-media. Because priorities for HTA are not set by individuals concerned with wider public health issues but by clinicians, nurses, managers, consumers, etc., it is not surprising that public health issues take a back seat.

As I mention below, unless there is a major improvement in both the funding for public health research, the standing and influence of public health in the setting of health (not clinical) priorities, and in the number of well-trained researchers and implementers of public health research, it is unlikely that much change in the status quo will occur.

## **SUGGESTED FRAMEWORK FOR INCLUSION OF PUBLIC HEALTH ISSUES IN HTA**

If public health issues are to be included in HTA it is crucial that there be both agreement on their objectives as well as their prioritization. The actual design of a public health HTA would follow accepted research methodology.

Possible outcomes for public health would include:

- (a) improved health status,
- (b) risk factor reduction,
- (c) improved services and protection,
- (d) appropriate methods for continuing surveillance.

Examples of areas where public health measures need to be developed and assessed are smoking, alcohol-related harm, drug and other substance misuse, nutrition, accidental injuries, birth control, physical and sensory disability, and health inequalities.

In each of these areas, all of major importance to health and health services, the possible, promising interventions would need to be identified. The population “at risk” and suitable measures of outcome, as outlined above, need to be identified, developed, and applied. The time scale for an evaluation would depend on the problem and the size of the trial—for example, an evaluation of measures to reduce childhood accidents could, probably, be achieved in a 2-year period if the size of the exposed population was large enough (5–10 large primary schools). The evaluation of methods to promote less conceptions in girls below age 15 is likely to be somewhat lengthier—3–5 years at best. The problems are likely to arise in both identifying and prioritizing suitable technologies for assessment as well as gaining the necessary participation of appropriate test and control populations—all of whom would consider themselves healthy in contrast to patients with a disease or problem.

## **OTHER ISSUES INCLUDED AND OMITTED IN HTA**

Although the topics chosen by each of the countries include some examples of assessment of organizational structures, none address some of the major issues that need to be addressed. No examples are given of the assessment of different types of personnel to deal with medical issues—for example, do we need to see a doctor, and if not, would a nurse do?

Although call services have been introduced in the United Kingdom, they have not been evaluated with the same rigor as individual drugs—and yet they have far greater consequences. This narrowness of approach to evaluate what is easy and simple to do is undoubtedly necessary—and has changed the climate for the acceptance of proper evaluation—but is very limited in its effect on the methods and costs of health service delivery. A far more open and wider

perspective is required if we are to improve the health of the public rather than only improve the delivery of individual clinical services.

Stevens and Milne comment that, in the United Kingdom, the major stimulus to HTA was the House of Lords Report on Priorities in Medical Research (2), but they fail to say that the major aims of the committee have been neglected. Certainly, the creation of the NHS R&D Directorate has had a powerful effect in increasing activity in health services research. But, as I have pointed out above, this is not equivalent to public health. The Committee emphasized the need to “encourage the long-term development of public health and operational research. The Committee have no doubt that these are areas of research which would repay—literally repay—investment. The Committee recommend that spending in these areas should, therefore, be markedly increased” (para 4.13). “The Committee believe that these recommendations underpin, rather than duplicate, the recommendations made in the Acheson Report on “Public Health” in England . . . Monitoring of health is not enough: systematic public health research must be undertaken . . .” (para 4.14).

It is unfortunate that, since the publication of the House of Lords Report, the issues considered of primary importance in improving public health research capability, which would enable public health issues to be tackled under the HTA umbrella in the UK, have been neglected at the expense of concentrating on what some would term relatively trivial issues concerned with individual clinical services rather than health.

## CONCLUSION

The concentration by HTA on single drugs or procedures such as neonatal screening is understandable. These issues can be defined with reasonable clarity, and suitable studies/data are available or can be commissioned easily. They are of immediate relevance and interest to both industry and the providers of clinical services. From the public health point of view, most of the programs described are disappointing and irrelevant. Concentrating on drugs and clinical procedures does not really have a great influence on population health. The use of

the term *health technology assessment* is misleading, because most assessments are limited to a single technology or instrument, omitting other possible solutions for tackling a particular problem. For example, it will investigate a single procedure such as heart surgery but fails to put it into context with other options to reduce either the incidence of heart disease or other means of reducing mortality and disability from heart disease. Of course, this is much more difficult, but essential if the objective is a national, effective, efficient health policy.

In England, Stevens and Milne describe some of the other agencies or mechanisms that have been introduced—for example, Health Service Delivery Organisation, NICE, etc. But although they and the other authors state that a formal prioritization process exists and is discussed, no details are given of the framework within which priorities are allocated. For example, whether the procedures to be assessed are primarily concerned with a reduction of disability and an improvement of quality of life, or a reduction of mortality. Similarly, in the examples given, it is difficult to understand the relation between those chosen and the burden of disease—particularly in the United Kingdom (for example, 2 of 117 HTA reviews between 1997 and 2001 were on “fragile x” syndrome screening—a very rare condition, while there was none on screening for coronary heart disease, a common condition). Thus, it may be seen that, although the HTA programs may be important, both their design and content is of little public health significance. This is a great pity—only the Swedes appear to have made attempts to include health in addition to clinical issues.

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