

BMJ

Health impact assessment

Karen Lock

BMJ 2000;320:1395-1398
doi:10.1136/bmj.320.7246.1395

Updated information and services can be found at:
<http://bmj.com/cgi/content/full/320/7246/1395>

These include:

References

13 online articles that cite this article can be accessed at:
<http://bmj.com/cgi/content/full/320/7246/1395#otherarticles>

Rapid responses

2 rapid responses have been posted to this article, which you can access for free at:
<http://bmj.com/cgi/content/full/320/7246/1395#responses>

You can respond to this article at:
<http://bmj.com/cgi/eletter-submit/320/7246/1395>

Email alerting service

Receive free email alerts when new articles cite this article - sign up in the box at the top left of the article

Notes

To order reprints follow the "Request Permissions" link in the navigation box

To subscribe to *BMJ* go to:
<http://resources.bmj.com/bmj/subscribers>

Health impact assessment

Karen Lock

It is widely accepted that the health of a population is determined by a range of factors and that the greatest scope for improving the public's health lies outside the control of the NHS. Health impact assessment (HIA) has emerged to identify those activities and policies likely to have major impacts on the health of a population.

Health impact assessment

Health impact assessment is a means of evidence based policy making for improvement in health. It is a combination of methods whose aim is to assess the health consequences to a population of a policy, project, or programme that does not necessarily have health as its primary objective.¹

Health impact assessment is a multidisciplinary process within which a range of evidence about the health effects of a proposal is considered in a structured framework. It takes into account the opinions and expectations of those who may be affected by a proposed policy. Potential health impacts of a proposal are analysed and used to influence the decision making process.

Potential users

A health impact assessment is based on a broad model of health, which proposes that economic, political, social, psychological, and environmental factors determine population health (box 1). For the first time these wider determinants of health have been acknowledged by the UK government in the white paper *Saving Lives: Our Healthier Nation*.² This refers to the need to undertake health impact assessment of both national and local policies. Initially this will have greatest implication for those working in health improvement at a local level, particularly in health and local authorities. Assessment is, however, a flexible process that can be used by decision makers in all sectors for evaluating policy that may have an impact on health and wellbeing.

Development

The basic concepts of health impact assessment are not new and will be familiar to those working in public health. It can be seen as a development of public health practice since Victorian times aimed at creating healthy public policy. It builds on and brings together methods including policy appraisal, health consultation and advocacy, community development, evidence based health care, and environmental impact assessment.

Summary points

Health impact assessment is a structured method for assessing and improving the health consequences of projects and policies in the non-health sector

It is a multidisciplinary process combining a range of qualitative and quantitative evidence in a decision making framework

Applications include national policy appraisal, local urban planning, transport, and water and agricultural projects

Benefits include improved interagency collaboration and public participation

Limitations include a lack of agreed methods and gaps in the evidence base for health impacts

East Sussex,
Brighton, and Hove
Health Authority,
Lewes, East Sussex
BN7 2PB

Karen Lock
*specialist registrar in
public health*

klock@esbhhealth.
cix.co.uk

BMJ 2000;320:1395-8

Building healthy public policy was a key component of the Ottawa charter for health promotion.³ The concept includes policies designed specifically to promote health (for example, banning cigarette advertising) and policies not dealing directly with health but acknowledged to have a health impact (for example, transport, education, economics). Accepting a broad model of health suggests that virtually any area of public policy can have health impacts. Therefore, all policy development could be subjected to some method of health impact assessment.

In the United Kingdom the wider health implications of public policy have become increasingly important in public health.⁴ The Health for All by the Year 2000 programme (1977) and the WHO's healthy cities programme (1987) stimulated interest in the important part local authorities and communities can play in improving health, including urban regeneration strategies. More recently sustainable development plans by local authorities (local agenda 21) have further added to local policy initiatives, which have implications for improving population health.⁵ These initiatives have been strengthened by increased public awareness of environmental effects on health debated at international, national, and local levels since the 1992 earth summit.⁶ Currently the development of health improvement programmes has strengthened

Potential determinants of health considered in an HIA process

- Biological factors—for example, age, sex, genetics
- Preconceptual and in utero exposure—for example, maternal nutrition and health during pregnancy
- Personal behaviour and lifestyle—for example, diet, smoking, alcohol, exercise, risk taking
- Psychosocial environment—for example, family structure, community networks, culture, social exclusion
- Physical environment—for example, air, water, housing, transport, noise, waste disposal
- Socioeconomics—for example, employment, education
- Public services—for example, quality of, and access to, childcare, transport, shops, education, leisure, health, and social services
- Public policy—for example, economic, welfare, crime, transport, and health policies

local intersectoral working aimed at tackling the wider determinants of health and health inequalities.²

It is only recently that the UK government has explicitly acknowledged a need to assess how all public policy impacts on health. In 1995 the Department of Health published a discussion document, *Policy Appraisal and Health*, which investigated the importance of public policy as a determinant of health.⁷ This proposed a framework for assessing health impacts based on economic appraisal methods that had originally been designed to assess health services rather than social policy.

The principles of health impact assessment are similar to social impact assessment and environmental impact assessment (EIA).⁸ Initially it developed as a natural extension of these methods.⁹ Many countries, including the European Union and the United Kingdom, have a legal requirement to carry out environmental impact assessment. It has been argued that procedures for health impact assessment could be most easily introduced with the inclusion of health in existing processes for environmental assessment.⁹ In practice very few environmental assessments are carried out and they rarely consider human health. Health impact assessment has since been proposed

and developed as an independent tool for promoting public health in policies and projects.^{10 11}

A national policy framework for health impact assessment and healthy policy making has emerged with the current government. The three public health consultative documents for Scotland, Wales, and Northern Ireland and the English public health white paper have all referred to the requirement for health impact assessment of both national and local policies and projects.^{2 12-14} The independent inquiry into inequalities and health also proposed health impact assessment as a means of identifying and addressing the needs of vulnerable groups in health inequalities impact assessment.¹⁵ Since 1998 the Department of Health has supported the development of health impact assessment methods¹⁶ and local research, but progress on implementing such assessment of national policies has been slow.

In Europe, article 129 of the Maastricht treaty (1992) and article 152 of the Amsterdam treaty (1997) require the European Union to check that policy proposals do not have an adverse impact on health or create conditions that undermine health promotion. Little action has been taken to implement health impact assessment in policy making in the European Union, although there has been an independent assessment of the common agricultural policy.¹⁷

Methods of assessment

Those looking for an established analytical framework for considering health impacts will be disappointed. Currently there is neither an accepted gold standard nor even a simple, reliable, and evaluated method for carrying out health impact assessment. Only a few assessments have been completed and these used several approaches.

Health impact assessment should be thought of as a group of research activities being developed to identify health impacts of projects and policies both prospectively and retrospectively. It is a structured way of bringing together evaluation, partnership working, public consultation, and available evidence for more



From agricultural schemes to urban regeneration: health impact assessment offers a way of ensuring health is taken into account in policy making

explicit decision making. The general concepts can be illustrated by looking at a completed assessment, which uses a method that has already been piloted (box 2).¹⁸

Other applications

The first documented health impact assessment in the United Kingdom was undertaken as a submission to the public inquiry on the proposed second runway at Manchester airport.²⁰ It used a prospective method based on environmental impact assessment. The study was limited by a lack of quantitative data but still proved to be a powerful lobbying tool. It resulted in the implementation of changes to the planning proposals, including increased provision of public transport and noise reduction schemes. Other completed health impact assessments in the United Kingdom have focused on urban regeneration schemes and local transport policy.^{21–23}

In developing countries health impact assessment has been developed as a rapid appraisal tool for environmental development projects. The method is based on a more medical model of health and considers health impacts in five main disease categories: communicable disease, non-communicable disease, nutrition, injury, and mental disorder. The likelihood of specific health risks related to the project are considered and risk reduction strategies proposed.²⁴ For example, what will be the impact on diarrhoeal disease if waste water is used for local agricultural irrigation? Risk reduction might propose limiting the type of crops irrigated to those that are eaten cooked. Health impact assessment has been used in various projects including water resource developments and agricultural projects in Africa, Asia, and the Middle East.^{24–25} Guidelines and training have been developed by some international development organisations including the Asian Development Bank and the World Bank.^{26–27}

Health impact assessment of government policy has been implemented in Canada. The method (“tool kit”) developed for government departments in British Columbia uses a framework of questions to guide decision makers in considering factors influencing population health.²⁸ This was simplified to five key areas: social integration; employment and economy; education and skills; environment and safety; and programmes and services. Further development of this has been slowed by changes in political priorities.

Methodological difficulties

Several issues are unresolved in the methodology of health impact assessment. Although there is increasing agreement about the wide variety of factors that influence health (see box 1), the comparative importance of these varies across professional and public views. In order for assessment to be a valid tool, a shared definition of health is needed. This affects the ability to measure health impacts in various settings. At present, models measure health impacts in different ways. All use some checklist procedure, which uses the perceived determinants of health as markers for changes in health risks—for example, using employment levels as a marker for the status of community health. The difficulty with this is that causal pathways are so complex that it is not often possible to say if an outcome will definitely be good or bad for the health of a

Box 2: The International Astronomy and Space Exploration Centre, the Wirral

Project

A health impact assessment was undertaken on the proposed space centre in the Wirral using the Merseyside guidelines.^{18–19} The development encompasses research, manufacturing, education, and leisure facilities. It is part of the wider regeneration strategy in the area, including Wallasey Docklands, supported by the single regeneration budget.

Screening process

An interagency, multidisciplinary steering group was formed to determine the terms of reference and progress of the assessment. Representatives from public health, the project, and the local regeneration board determined the scope and methods and saw the work through. Initially a screening process was carried out on the whole Wallasey regeneration scheme to identify which part would be most usefully subject to an in-depth process. Screening used a checklist of criteria (including size and cost of the project and the population affected) to identify the project that may have the greatest impact on population health.¹⁸ This led to a decision to focus resources on the development of the space centre.

Semistructured framework for assessment

The most important part of a health impact assessment is identifying and collecting evidence for health impacts that a project might create. The main determinants of health (see box 1) were combined with the core elements of the proposed project for the space centre such as road building, transport plans, employment and training, civic design, and planned facilities. This formed a semistructured framework for assessment, which was used in both group brainstorming sessions and interviews with key informants in predicting potential health impacts. Informants included local community groups affected by the project, experts involved in the development, and professionals involved in service delivery locally.

Identification of main health issues

The qualitative information gained from informants allowed a picture of likely positive and negative health impacts to be built up, including areas of speculation and disagreement. Main issues identified included transport, design for safety and access, employment, education, and local affordability. This was then combined with evidence from other sources including literature reviews, routine data sources, a community health profile, and local community opinion surveys.

Prioritising health impacts

The evidence was used to prioritise health impacts. The assessment used a grid to subjectively estimate the measurability and certainty of impacts. The frequency, severity, and probability of each impact should be determined but the information to do this is often incomplete or unavailable. For example, it may be impossible to quantify with certainty how future regeneration of an area will affect local employment. In all completed assessments the lack of quantitative data for many impacts makes this stage the most difficult. Deciding the importance of each impact is a balance between objective evidence and subjective opinion and is obviously open to conflicts of interest between stakeholders' views.

Results of the process

The health impact assessment concluded that overall the development of the space centre should have a positive effect on health especially through stimulation of education, employment, public transport, and well designed leisure facilities. Recommendations were proposed for measures to reduce negative impacts, including the increased traffic and noise. These were presented to the wider regeneration steering group and were reported as acting as a catalyst to improve public health in the development. The final stage of an assessment is monitoring and evaluating the process and outcomes. It is essential to provide feedback to influence the continuing project or policy development.

population. Will a development such as the space centre which regenerates an area increase local employment? And if it does will this improve health? Such health indicators can potentially measure progress towards health improvement but this is not necessarily equivalent to a measure of health impact.

One of the major criticisms of health impact assessment is that methods of collecting and analysing

evidence are not sufficiently rigorous to withstand scrutiny and challenge. The current evidence base for many health determinants is inadequate for accurately informing a process of assessment. In completed studies the principal sources of evidence have come from literature reviews and qualitative methods. A range of data sources including economic, epidemiological, quantitative, and qualitative information should be routinely taken into account. However, often the most useful information is not being routinely collected. Seldom is there going to be the time or money available for collection of primary data. Although it may be preferable for decision makers to have a quantitative measure of health impact, the limitations of qualitative estimates may have to be accepted as the best evidence available. This may limit the strength of the recommendations an assessment can make both in terms of the certainty and size of an impact.

The future

Health impact assessment aims to influence the decision making process in an open, structured way. To do this it has to acknowledge that assessing and ranking evidence is not a wholly objective process and involves a series of value judgments. Political imperatives are likely to affect the outcome. The balance between objective evidence and subjective opinion should be explicitly recognised in reports of assessments. In evidence based medicine there is a weighted hierarchy of epidemiological evidence, with randomised controlled trials at the top. Obviously this is not useful in assessments where evidence comes from a range of quantitative and qualitative sources. There is a need for developing a new framework for gathering, interpreting, and prioritising evidence from different origins for evidence based policy making.

The findings of a health impact assessment are often limited by financial and time costs. The space centre example is a large in-depth project. There is a need for a balance between rigorous methods that require specialist skills and high levels of resources and those that can be used more easily and cheaply. The two approaches are not mutually exclusive and can be combined in a continuum of options for assessment, which includes preliminary project screening, rapid appraisal, and in-depth assessment.¹⁸ The decision of which method to use may relate to whatever will have most weight in influencing the decision making process in a timely way. Ultimately there will have to be a trade-off between costs and quality to make the impact assessment a realisable goal.

Health impact assessment has been hailed as one of the most important new processes in public health. Although this may be overstating the significance of a yet unevaluated process, its future development seems to be assured by the commitment of government to the principle of health assessment of public policy. However, those expecting a ready to use, validated tool kit for conducting assessments will be disappointed as methods are still in the process of being developed across the United Kingdom. Many methodological problems have still to be overcome, including how to measure health impacts and to attain a practical balance between resource costs and depth of analysis. Despite the incomplete nature of the process, many

NHS regions and health and local authorities have already adopted health impact assessment. It may be the means to improve attainment of healthy public policy, enhance intersectoral collaboration, and make more appropriate use of finite public resources in evidence based policy making.

I thank Dr Martin Birley, Dr Tim Dalgleish, and Dr Alex Scott Samuel for reading an early draft of the manuscript.

- 1 Scott Samuel A. Assessing how public policy impacts on health. *Healthlines* 1997;47:15-7.
- 2 Secretary of State for Health. *Saving lives: our healthier nation*. London: Stationery Office, 1999.
- 3 World Health Organisation. *The Ottawa charter: principles for health promotion*. Copenhagen: WHO regional office for Europe, 1986.
- 4 Ashton J, Seymour H. *The new public health*. Milton Keynes: Open University, 1988.
- 5 Department of Environment. *The strategy for sustainable development*. London: HMSO, 1994.
- 6 United Nations conference on environment and development. *The earth summit (agenda 21)*. Rio de Janeiro: United Nations, 1992.
- 7 Department of Health. *Policy appraisal and health: a guide for policy makers*. London: HMSO, 1995.
- 8 Vanclay F, Bronstein DA, eds. *Environmental and social impact assessment*. Chichester: Wiley, 1995.
- 9 Birley MH, Boland A, Davies L, Edwards RT, Glanville H, Ison E, et al. *Health and environmental impact assessment: an integrated approach*. London: Earthscan-BMA, 1998.
- 10 Ratner PA, Green LW, Frankish CJ, Chomick T, Larsen C. Setting the stage for health impact assessment. *J Public Health Policy* 1997;18:67-79.
- 11 Scott Samuel A. Health impact assessment—theory into practice. *J Epidemiol Community Health* 1998;52:704-5.
- 12 Secretary of State for Scotland. *Towards a healthier Scotland*. Edinburgh: Stationery Office, 1999.
- 13 Secretary of State for Wales. *Better health—better Wales*. London: Stationery Office, 1998.
- 14 Secretary of State for Northern Ireland. *Well into 2000*. Belfast: Department of Health and Social Services, 1997.
- 15 Acheson D. *Independent inquiry into inequalities in health*. London: Stationery Office, 1998.
- 16 Department of Health. *Health impact assessment*. Report of a methodology seminar. London: Stationery Office, 1999.
- 17 Dahlgren G, Nordgren P, Whitehead M, eds. *Health impact assessment of the EU common agricultural policy*. Stockholm: Swedish Institute of Public Health, 1996.
- 18 Scott Samuel A, Birley MH, Ardern K. *The Merseyside guidelines for health impact assessment*. Liverpool: Public Health Observatory, University of Liverpool, 1998.
- 19 Winters L. *Health impact assessment of the international astronomy and space exploration centre, Twelve Quays, Wirral*. Observatory report series No 43. Liverpool: Liverpool Public Health Observatory, 1998.
- 20 Will S, Ardern K, Spencely M, Watkins S. *A prospective health impact assessment of the proposed development of a second runway at Manchester international airport*. Manchester and Stockport Health Commissions, 1994. [Written submission to the Public inquiry.]
- 21 Winters L, Scott Samuel A. *Health impact assessment of the community safety projects, Huyton SRB area*. Observatory report series No 38. Liverpool: Liverpool Public Health Observatory, 1997.
- 22 Fleeman N. *Health impact assessment of the Southport drug prevention initiative*. Observatory report series No 39. Liverpool: Liverpool Public Health Observatory, 1997.
- 23 Fleeman N. *A prospective health impact assessment of the Merseyside integrated transport strategy (MERITS)*. Observatory report series No 45. Liverpool: Liverpool Public Health Observatory, 1999.
- 24 Birley MH. *The health impact of development projects*. London: HMSO, 1995.
- 25 Konradsen F, Chimbari M, Furu P, Birley MH, Christensen NO. The use of health impact assessments in water resource development: a case study from Zimbabwe. *Impact Assess* 1997;15:55-72.
- 26 Asian Development Bank. *Guidelines for the health impact assessment of development projects*. Environmental Paper No 11. Manila: ADB, 1992.
- 27 World Bank. *Health aspects of environmental impact assessment*. Environmental assessment sourcebook update 18. Washington DC: World Bank, 1997.
- 28 Population Health Resource Branch. *Health impact assessment toolkit: a resource for government analysts*. British Columbia: Ministry of Health, 1994. (Accepted 22 February 2000)

Correction

The value of DALY life: problems with ethics and validity of disability adjusted life years

Two errors occurred in this article by Arnesen and Nord (27 November 1999, pp 1423-5). In the figure, the numbers 0.67 and 0.33 were transposed, and in the section "The valuation procedure of the DALY approach" the words "for fairness" were omitted in the last sentence of the first paragraph, which should read "The method used in the global burden of disease project is a specific version of the person trade-off technique, which was originally developed to include concerns for fairness in the process of valuation."