HEALTH IMPACT ASSESSMENT

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A person's health status is largely determined by factors outside the control of the healthcare sector. While some of these are fixed, such as inheritance, many are environmental in the broadest sense of the term. These operate through such socioeconomic sectors as employment, education, housing and transport, which structure the health risks and opportunities of individuals. Typically the structuring is unequal—sometimes referred to as clustering of disadvantage—so that those who are less well placed socioeconomically also have worse health outcomes, contributing to socioeconomic inequalities in health.

The health impacts of these sectors can be influenced by interventions, whether or not these are primarily motivated by health considerations. For example, a policy or other intervention to improve educational status can raise the socioeconomic standard, thereby improving health. Such interventions have the potential to increase or decrease inequalities.

AIMS AND BASIC CONCEPTS OF HEALTH IMPACT ASSESSMENT

Health impact assessment (HIA) is concerned with the health of populations.[1] It generally attempts to predict the future health consequences—both positive and negative impacts—of an intervention such as a policy,[2] programme, or project[3] (hereafter collectively referred to as a "proposal").[1 4 5] There are several definitions of HIA in the literature; for example, "a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population and the distribution of effects within the population".[6] The overall aim when conducting an HIA is to influence decision making to minimise the harm and maximise the health benefit of proposals.[7] This might happen in three ways: (1) by raising the general awareness among decision makers that their actions affect health; (2) by informing decision makers of the likely specific impacts of particular decisions; and (3) by helping those potentially affected by decisions to participate in proposal formulation and to contribute to decision making.[5] A second important aim is similar, but focused towards reducing health inequalities.

HIAs may be retrospective, concurrent, or prospective. Most HIAs are prospective and aim to predict the health consequences of a proposal before it has been implemented. Some HIA practitioners also describe two other types of HIA. A concurrent HIA involves monitoring an intervention during implementation, and is useful when health impacts are expected but their nature and severity are uncertain, so that the work can be influenced as it progresses. A retrospective HIA takes place after the proposal has occurred. It differs from evaluation as it considers all health outcomes, not only those intended. A role is to provide evidence for future similar interventions. However, it can also be used to address health impacts that have occurred as a result of proposal implementation in order to mitigate any that are negative and enhance any that are positive.

An HIA can take place at any level, from local or regional to national or supranational. Proposals subject to HIA could originate and be developed within the private, public, or voluntary sector, but at the moment most HIAs are led by the public sector (health or local government).

The concept of health used in HIA is broader than merely the absence of disease, infirmity, or injury.[8] Ideally, it encompasses all aspects of physical, mental, and social health, including self-reported wellbeing, and considering positive health as well as the absence of illness. As a consequence, the determinants of health considered in HIA include not only occupational/environmental exposures and aspects of "lifestyle" such as smoking, but also the factors that might affect their presence—the "determinants of determinants".[9] For example, an HIA of a scheme to improve the road infrastructure for cyclists might consider its effects on physical activity, on risk of injury, and on the benefits of being able to gain access to, say, workplace, shops, and family members. Proposals relate not to particular individuals but to a locality or other

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population-level entity, so a framework is necessary that can integrate the individual focus with supra-individual ''upstream'' factors.[10]

As HIA aims to influence the development and implementation of proposals, it needs to be designed in a way that will be meaningful to decision makers, as well as to others who are likely to be affected by the proposal. In particular, it is important to remember that the task of decision makers is to weigh a large number of considerations, of which health may be only one. Considerations other than health include, for example, economic priorities, equity, discrimination, equal opportunities issues, community safety, etc. More generally, in planning an HIA it is crucial to ensure that it is structured in a way that has the potential to influence the decision making process.[5] It also needs to be conducted with *democracy* and the *ethical (that is, impartial and robust) use of evidence* as central principles, as well as using *equity* and *sustainable development* to judge the impacts of the proposal; these four criteria are the ''core values'' of HIA.[5 6] These values are particularly important when decision makers need to trade off benefits and disbenefits, or when the former accrue to one subgroup and the latter to another.

Depth of appraisal

The term ''health impact assessment'' is used for many different depths of appraisal, whose complexity varies, and using a wide range of resources. ''Desk-top'' appraisal is generally undertaken by an organisation's own officers to gain a picture of potential health impacts to inform proposal development. Rapid appraisal, also called ''mini'' HIA,[11] generally uses existing information and evidence that is already available or easily accessible, but usually also involves a half-day stakeholder appraisal workshop or other limited community or stakeholder participation. Although termed ''rapid'', preparing for the workshop and writing the subsequent report are labour intensive over a short time period, and the cost is not necessarily low when one takes participants' time into account.[12]

Comprehensive (or ''maxi''[11]) HIA involves the collection of new data. This may include a comprehensive literature review, greater participation of local residents such as through a survey, and/or a primary study of health effects of the same proposal elsewhere. For a concurrent HIA, the impacts of the proposal are studied as it is implemented. It is resource intensive, requiring a significant time commitment from a number of people over a prolonged time.[13]

The depth of HIA undertaken depends on:

- The timescale of the proposal
- The resources available for the HIA
- The potential importance of the proposal or of the health effects.

An HIA cannot be started until a proposal is firm enough to appraise, but recommendations from an HIA cannot affect decisions already taken before the report is written. Resources include not only funding, but also time, staff, expertise, and community development. For example, if a good quality, up-to-date systematic review is available of all the relevant scientific evidence on a subject, a ''rapid'' or ''mini'' HIA may be easily undertaken. In a more comprehensive appraisal, the existence of such a review allows a greater proportion of resources to be directed towards other components of the HIA process, such as community participation.

STAGES OF HIA

The HIA process comprises six main stages: screening; scoping; appraisal (also called risk assessment); formulation of recommendations and preparation of the report; submission of the report and recommendations to decision-makers; and monitoring and evaluation.[14 15]

The first stage is *screening*. Its main purpose is to filter out proposals that do not require HIA because the proposal has a minimal impact on health or inequalities, or because there is little likelihood of being able to influence decisions. Screening should be a systematic process using a set of criteria, which are often listed in a ''screening tool'', against which proposals are assessed. Screening permits targeting of scarce resources towards proposals that will benefit from further assessment. For proposals that are selected, the screening results provide a useful basis for the rest of the HIA. ''Desk-top appraisal'' is similar in process to screening but without the function of selection.[16] The Netherlands has considerable experience of screening of national policies for health impacts.[17]

The second stage of HIA is *scoping*. This sets the boundaries for the HIA (that is, the HIA's Terms of Reference). Scoping defines:

- Which elements or aspects of the proposal are to be assessed
- What aspects of the proposal are non-negotiable
- The aims and objectives of the HIA
- Timescale
- A common understanding of ''health'', determinants of health, and inequalities
- Potential health impacts of concern
- The geographical area covered
- The populations/communities affected by proposal implementation, and any vulnerable, marginalised, or disadvantaged groups
- What will be included in the community profile of the population/community (see below)
- Stakeholders for the HIA and the nature of their involvement
- Decision-making forum(s) to influence
- Background information for the HIA, including the evidence base, HIAs of similar proposals that have been done, and specific local conditions affecting proposal implementation
- Methods to be used for the appraisal/risk assessment
- Management arrangements, work programme, resources (human, financial, and material) available and those required
- Arrangements for monitoring and evaluation of the HIA and its outcomes.

Appraisal or *risk assessment*, the third stage, is where the potential or actual impacts on health of a proposal are identified. It includes a community profile describing the demographics and health status of the affected population(s), and identification of existing inequalities and of excluded or vulnerable groups who may be at increased risk either inherently or as a result of the proposal. This stage defines the length of the process (for example, ''rapid'', ''comprehensive''). Many different methods can be used, for example, modelling and stakeholder workshops. The choice of method(s) is determined partly by the model of HIA being used, but is also constrained by factors such as timescale and resources available.

The fourth and fifth stages of the HIA process involve the *preparation of the report and recommendations* and then *submission of the report and recommendations to decision-makers*. It is essential that this occurs within the decision-makers' timeframe, meeting deadlines for any consultation period or scheduled meetings. Involvement of decision-makers in the HIA process through membership of the steering group and/or participation in appropriate methods used during appraisal, for example, interviews, or stakeholder workshops increases the likelihood of the findings of the HIA being considered relevant to the decision-making process, a prerequisite to acceptance of recommendations. In some HIAs, the submission of the report is accompanied by a presentation at the decision-making forum. However, even when decision-makers are committed to an assessment of potential health impacts, the results of an HIA are only one of many sets of factors that will influence their decision(s).

Although the primary audience for the report and recommendations is the decision-makers about a particular proposal, it is also important to communicate the main contents of the report and recommendations to all stakeholders, especially those who have participated in the process.

The output of the HIA needs to be appropriate for the target audiences in its content, language, and format (for example, web, printed newsletter, poster), and presentation of the communication should be designed according to the needs of stakeholders and their preferred way of accessing information. Access to the full report and recommendations should always be provided to stakeholders if dissemination has been mainly in summary form.

Monitoring and evaluation is the sixth stage of HIA.[18] There are different aspects, including (1) evaluation of the process of HIA (process evaluation), (2) monitoring the acceptance and implementation of recommendations (impact evaluation), and (3) monitoring and evaluation of indicators and health outcomes after the proposal has been implemented (outcome evaluation). In the EHIA and New Zealand models, consent is given to allow the project to go ahead, and monitoring is performed to ensure compliance with the conditions attached to that consent,[19] but most guidance refers to monitoring of health determinants, outcomes, or indicators.

Process evaluation of HIA is important as a source of learning, as part of the drive towards quality improvement, and as a mechanism of quality assurance. Even where impact evaluation shows acceptance of recommendations and amendments to a proposal, mechanisms for monitoring the implementation of recommendations are important: it is imprudent to assume that because a recommendation has been accepted it will be implemented. For example, lack of resources, or a change in political direction may further alter decisions.

Outcome evaluation is fraught with difficulties. If an HIA persuades decision-makers to make substantial modifications to a proposal or to select a particular option—or not to implement a proposal at all—the anticipated impacts of the initial proposal cannot be monitored to examine the accuracy of the predictions. Many predicted health effects cannot be monitored using only routine data. Even when data are available, random fluctuations could mask achievable changes in health outcomes, because only a small proportion of any relevant health outcomes can usually be attributed to a change resulting from a project, programme, or policy.

EVIDENCE

Evidence used in HIA includes published literature, local data, and stakeholder experience. Community and other stakeholders' participation can be encouraged through focus groups, workshops, or surveys, and/or through direct involvement on the steering group. The last also aids understanding if published evidence conflicts with stakeholder experience. Recommendations in the HIA report should be evidence based, with the source of evidence explicit.

Literature searching and involving technical experts

Both quantitative and qualitative evidence are important in HIA. The quality of the research and the ability of a particular research design to answer a given question are more important than the "hierarchy of evidence" used in clinical practice.[26]

Synthesising the evidence for HIA has a number of difficulties: usually the evidence on the effects of interventions and on the reversibility of impacts is sparse; the evidence base is diverse, utilising studies from different disciplines and a wide range of designs; a range of individuals from different backgrounds and with varying priorities, concerns, and prior beliefs is involved; decision-makers need recommendations even if the quality of the evidence is inadequate; and timescales are typically tight.[26] Much useful information is available only as "grey" literature—reports not published in scientific journals. This presents problems of identifying that such reports exist, obtaining copies, and assessing the rigour of the work.

"Off-the-shelf" reviews conducted proactively by technical experts on topics frequently the subject of HIA (for example, regeneration[27] and transport[21]) can enable local expertise to concentrate on local concerns and community participation.[9 20] Readily available evidence reviews, available via the internet,[28] can expedite robust local HIA.[29] Use of existing expert reviews can also facilitate separation of the technical work of HIA from the political processes of policy development and decision-making.[9]

The role of quantification

When choosing outcomes to examine in an HIA it should be remembered that what is important may not be measurable,[20] and that which is measured routinely or can be measured may be unimportant.[20] For example, community severance is a recognised adverse effect of traffic, limiting access to goods, services, and social networks, and impeding independent mobility,[21] but there is no simple or routine measure of such severance, so no quantified assessment of severance can be made at baseline nor quantified estimates made of the effects of proposals. Quantified assessments are necessary for economic appraisal or for other explicit trade-offs: some decision-makers may give more weight to those outcomes that can be measured (such as traffic levels or estimates of deaths caused by injuries) than to a qualitative statement ("access to healthcare will be impeded").

The reduction in risk attributable to a *fall* in a given exposure *consequent on a proposal*—that is, the *achievable* reduction may be small, even if the burden of disease[22] (attributable risk) from the same exposure is high.[9] Where cause and effect are well established, a proxy measure can be used instead of the eventual health outcomes; for example, monitoring air pollution rather than admissions for or mortality from cardiorespiratory diseases. The health impacts can then be modelled.[13]

Assessing impacts on inequalities

Assessing impact on inequalities in health is integral to most models of HIA. The more common approach considers impacts on specific excluded or vulnerable groups. However, it is also important to consider a possible gradient of effects or susceptibility across the whole population (for example, by income, occupational social class, or educational level). In most cases, potentially vulnerable groups, defined by age, gender, ethnicity, ethnicity, deprivation, or other disadvantage, can be postulated. Such groups are characterised (for example, the number of people and their location) during profiling.

Whether inequalities represent inequity is a matter of judgement. ''Inequality'' refers to objective differences, but inequity conveys unjust differences.[23] The former can in principle be measured, whereas the latter is harder to assess. For example, differing educational attainment can be monitored objectively, but whether or not it represents inequity includes elements of judgement and viewpoint. Subtle differences in opportunity, such as quality of teaching and parental support, which could indicate inequity, are much harder to determine; if the only difference is due to the students' own efforts, opinions may vary as to whether this represents inequity. Inequalities can also be advocated; for example, providing more resources per capita in areas of higher need to reduce inequity.

Proposals may impact on equity in four ways:

- No differential effects—for example, the same *percentage* increase in mortality is anticipated among affluent and deprived groups, thereby exacerbating existing inequalities in *absolute* terms.
- Differential individual susceptibility, such as the greater risk from air pollution for people with severe cardiorespiratory disease—for quantifiable effects, different exposure-effect estimates may sometimes be available.[24]
- Differential aggregate susceptibility because of a larger population of susceptible individuals; for example, cardiorespiratory diseases are more common in less affluent and less educated groups.
- Differential exposure—for example, air pollution in London is correlated with deprivation, so the predicted falls due to intervention are greatest in the most deprived areas.[25] For air pollution, the groups most susceptible to exposure have the highest baseline exposure, and falls in pollution may therefore cause reductions in health inequalities.

Estimating effects on inequalities and vulnerable or excluded groups requires the same processes as for the whole population, but the effects are described or quantified after stratifying the population into those subgroups; it uses the relevant prevalence of risk factors, effects of exposure, and changes in exposure for each of the subgroups. The effects are then compared with the effect on the population as a whole or with other subgroups.

PEOPLE INVOLVED IN HIA

The *stakeholders* in an HIA are the people involved in or affected by proposal development and implementation. Stakeholders come from public, voluntary, and private sectors. They include affected communities. It is important to identify and include as many stakeholders as possible to enhance ownership of the process,[30] but participation can be constrained by the timescale and other resources available for an HIA. *Key informants* are stakeholders whose roles, and/or standing in a community, mean that they have knowledge, experience, or information of particular relevance to the proposal.

Assessors are the practitioners who perform the appraisal, formulate the recommendations, and prepare the report. They may be experienced in conducting HIA, but frequently these tasks are undertaken by health service public health or local authority staff who have little practical experience of HIA. A steering and/or management group often oversees the process and outputs of an HIA. It should comprise representatives from key stakeholder organisations; ideally representatives from the affected community should also be involved. The HIA report, with its recommendations, is aimed at *decision-makers*. They may be involved in the process of HIA, and in some instances they may be on the steering group. In large or complex proposals, there may be more than one group of decision-makers.

One of the values underlying HIA is community involvement as full and active stakeholders (see above). For some HIAs, practitioners will link into existing consultations with the community to avoid ''consultation fatigue''. Community participation can be difficult to attain, particularly when trying to ensure that views or participants are representative (especially from ''hard-to-reach'' groups), but it is important to obtain the perspectives of at least some of the community affected.

Some HIAs are undertaken without community involvement. For proposal development, this is valid when officers are at an early stage, or when public consultation has already occurred and the results are included as components of the appraisal/risk assessment. HIAs have been led by a community in some cases. Increasingly, there are examples where the public and voluntary sectors have worked in equal partnership with the community on HIA; for example, Belfast Healthy Cities Community HIA process.

Formulating recommendations and writing the report need integration of the scientific evidence, local data, and evidence from potentially affected communities. Involvement of community members in the scoping stage is likely to ensure that issues of concern to the community are considered as part of the technical review and may aid acceptance of technical evidence by the community. Both the published scientific evidence and that from the community should be summarised in a form that is usable by all stakeholders. The recommendations in the report should be explicitly evidence based. The report should be delivered to decision-makers, and other stakeholders, in a format and using language considered to be most appropriate for that audience.

CONCLUSIONS

HIA has the potential to inform decision making directly, and also indirectly by increasing decision makers' understanding of the wider determinants of health. Although few HIAs have included formal evaluation, those process and impact evaluations that have been reported have showed a positive effect on decisions. For example, HIAs resulted in changes to the content of the London Mayor's Strategies, and raised officials' and politicians' awareness of the links between decisions in their sector and health.[31]

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Additional references are available on the *OEM* website (www.occenvmed.com/supplemental)

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QUESTIONS (SEE ANSWERS ON P 835)

(1) Health impact assessment:
- (a) Aims to maximise health benefits
- (b) Should not involve decision-makers in the process
- (c) Is most often used on healthcare proposals
- (d) Should also include assessment of impacts on inequalities
- (e) Is commissioned most often by the private sector

(2) In health impact assessment:
- (a) Unquantifiable health outcomes are ignored
- (b) Poor health is more easily measured than good health
- (c) Achievable risk reduction and attributable risk are the same
- (d) Consultation with stakeholders is a legal requirement
- (e) "Consultation fatigue" is not an issue

(3) Proposals that influence determinants of health:
- (a) Seldom affect health
- (b) Generally affect health inequalities
- (c) Generally produce health impacts that can be measured
- (d) Are often developed for reasons other than health
- (e) Are most often developed by the healthcare sector

(4) Underlying values of HIA include:
- (a) Evaluation
- (b) Democracy
- (c) Sustainability
- (d) Ethical use of evidence
- (e) Equity

(5) Vulnerable populations:
   (a) Include children, minority ethnic groups, and low income households
   (b) Often have different exposure to hazards compared with the general population
   (c) May have different susceptibility to a given exposure than the general population
   (d) Are seldom represented on HIA steering groups
   (e) Are statutory consultees in HIA

(6) "Stakeholders":
   (a) Include only those with a direct financial interest in the proposal
   (b) Is a synonym for "decision-makers"
   (c) Exclude individuals working within the private sector
   (d) Include members of affected communities
   (e) Are defined by law