Ethics-based decision-making and health impact assessment

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SUMMARY

To compare the use of health impact assessment (HIA) and the decision-making triangle (DMT) framework for evidence-informed, ethics-based decision-making and consider implications for practice. We compared HIA and the DMT approach with reference to: their use of evidence and theory; their application of ethical principles or values; and how they aid decision-making. A good fit between the HIA and DMT approaches was found. Ways in which they could be of benefit to each other were identified. The DMT approach and HIA are highly compatible: they are rooted in largely shared ethical principles or values; both involve appropriate use of evidence and theory; and both are concerned with enhancing the quality of decision-making in the interests of population health. The DMT approach and HIA are of potential value to each other: established HIA methods and tools can be of practical help in using the DMT approach; and the DMT framework provides insights to how HIA methods and processes could be improved and the vision of ‘impacts that matter’ widened.

Key words: ethics; health impact assessment; evidence; values

INTRODUCTION

The concept of evidence-based policy and practice in the fields of public health and health improvement has attracted increasing attention over the past two decades. However, it has come to be challenged with increasing understanding of the limitations of available evidence in the face of the complexity of health and wellbeing, their determinants, interactions between interventions designed to improve health, and the process of public health decision-making. In essence, two shifts in focus have been advocated: a shift in thinking from ‘evidence-based’ to ‘evidence-informed’; and a shift in emphasis from evidence to decision-making (Tannahill, 2008). That advocacy has emerged at a time of growing interest in public health ethics (Nuffield Council on Bioethics, 2007).

Combining the above themes, the ‘decision-making triangle, DMT’, presented in its latest form as Figure 1, is a framework for ethics-based, evidence-informed decision-making in the interlinked fields of public health, health promotion and health improvement (Tannahill, 2008). It gives primacy to a set of ethical principles, building on the established biomedical ethical principles of beneficence, non-maleficence, justice and respect for autonomy (Beauchamp and Childress, 2001), incorporating widely accepted principles of health promotion and highlighting the principle of accountability. Evidence, supplemented and complemented by plausible theory as appropriate, is used to inform considered judgements as to the extent to which a given action or package of actions would satisfy these principles. An overview is taken across the ethical principles, and trade-
offs between them are weighed up as necessary. The particular set of 10 principles in Figure 1, used throughout this paper and described in detail elsewhere (Tannahill, 2008), is that adopted by NHS Health Scotland (Scotland’s national health improvement agency). It is envisaged, however, that decision-making agencies would agree their particular set of ethical principles, reflecting their own areas of responsibility and values.

The DMT approach reflects the following flow of thinking.

(1) Health organizations and policy-makers have to make decisions about how to protect and improve population health and reduce health inequalities in acceptable and desirable ways.

(2) In making such decisions they should apply principles that reflect their purpose and values—a set of ethical principles.

(3) In applying these principles they should make appropriate use of available evidence and plausible theory.

The values underpinning organizations’ decisions and activities are often implicit. Where explicit values have been articulated, systematic ways may be lacking to use them as part of decision-making. The DMT is a framework for applying ethical principles explicitly.

Health impact assessment (HIA) is another growing area of public health work that reflects the wide range of influences on health and the complexity of decision-making of relevance to health. It has been defined as ‘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 those effects within the population’ (World Health Organisation Regional Office for Europe, 1999). HIA can be applied to proposed policies, plans, strategies or projects in any sector. It aims to improve these proposals by predicting both positive and negative impacts on health and wellbeing, whether intended or unintentional, in order that negative impacts may be mitigated and positive impacts enhanced (Scott-Samuel et al., 2001; Douglas, 2009). It involves attempting to identify and assess all the likely health impacts, especially those that are unintended and have not previously been considered. The definition above makes it clear that HIA is concerned not only with aggregate health impacts but also with their distribution across the population, including impacts on vulnerable groups of people. HIAs involve stakeholders, so that their views and values may be taken into account (Harris et al., 2007). Health organizations may apply HIA to their own proposals [e.g. (Abrahams and Pennington, 2008; London Health Commission, 2008; Snowden and Cooke, 2009)], but HIAs often involve agencies out with the health sector that have responsibility for the

**Fig. 1:** The Decision Making Triangle, DMT. [Adapted from Tannahill (Tannahill, 2008).]
plan/policy being assessed [e.g. (Swedish National Institute of Public Health, 2005; National Association of County and City Health Officials, 2008; Herriot and Williams, 2010)]. Depending on various considerations, including the magnitude and complexity of a proposal, HIAs may range from a simple screening exercise involving a group of stakeholders to a much more detailed piece of work requiring collation and interpretation of a large volume of different sources of evidence. Whatever the scale, the principles of the approach remain the same (Metcalfe et al., 2009). Many sources of guidance are now available to support those doing HIA (Mindell et al., 2008).

**Purpose of this paper**

This paper explores the ‘fit’ between the DMT approach and HIA under three headings:

(i) Using evidence and theory.
(ii) Applying ethical principles or values.
(iii) Aiding decision-making.

Drawing on these discussions, it considers how methods used within HIA may support the DMT approach; and implications of, and possibilities arising from, the latter for the practice of HIA. The paper draws on our general experience and relevant published literature, rather than being based on empirical observation of particular examples of use of the DMT or HIA.

**Using evidence and theory**

The DMT approach is rooted in a broad interpretation of ‘evidence’, in two senses. First, in terms of what the evidence relates to: the approach incorporates evidence on health and wellbeing, on determinants of health and wellbeing, and on possible actions’ positive and negative effects on health and wellbeing.

Second, regarding the types of evidence used: the approach acknowledges the place of evidence of various sorts from various sources, including, but going beyond, scientific evidence from studies high in the conventional hierarchy used in evidence-based medicine; and it supports the notions of ‘triangulation’ and ‘judicial review’ of assembled evidence (Tones, 1997). This fits well with the way evidence is viewed and used in HIA. There is now a growing literature on use of evidence in HIA, including ways to access relevant research evidence (Mindell et al., 2004, 2010), and methods of involving the public and communities (Chadderton et al., 2008; Cameron et al., 2010; Kwiatkowski, 2010). A detailed HIA will typically include at least three distinct types of evidence or intelligence: quantitative data to profile the relevant populations; findings from research on the impacts of similar interventions; and consultation with stakeholders. All these sources are considered in forming a judgement about the likely impacts and making recommendations to improve the impacts. The process allows research findings to be considered in terms of their applicability to the local context.

The DMT explicitly acknowledges the place of theory in decision-making. In this context the term is used in a broad and relatively informal way, rather than in the narrow sense of formal scientific theory. The drawing of a distinction between theory and evidence in the DMT should not be taken to imply that the two are utterly separate. Theoretical considerations will generally be rooted, albeit with varying degrees of directness, in some body of evidence (broadly defined as above). The reason for making the distinction is to emphasize the desirability in decision-making of not being driven entirely by inevitably limited directly applicable scientific evidence. The fundamental premise is that theoretical considerations, based for instance on experience and indirect scientific evidence, are important in making considered judgements relating to improving and protecting health—for example in considering the potential for harm to arise from a proposed action, or the potential to do more good by complementing a strongly scientific evidence-based intervention with other actions that lack a robust direct evidence base. It is undoubtedly necessary to seek to minimize the risk of harm and waste of resources through uncritical use of theory or ‘low level’ evidence. However, it can reasonably be argued that failure to supplement available evidence with theory would result in more losses than gains (Tannahill, 2008). Again, this thinking is consistent with the approach taken by HIAs in identifying or suggesting causal pathways by which actions might impact negatively or positively on health. It is suggested that referring explicitly to appropriate use of theory as well as evidence (even allowing for the blurring between the terms) would help emphasize the broad intelligence base of HIA and the legitimacy of going beyond available directly relevant scientific evidence. The case for this
is arguably especially strong when it comes to considering the potential for serious harmful impacts of a proposed action or actions.

**Applying ethical principles or values**

Just as a set of ethical principles is integral to the DMT, HIA is underpinned by a number of values. The seminal Gothenburg consensus paper identified four values governing HIA, ‘in addition to promoting the maximum health of the population’: democracy, equity, sustainable development and ethical use of evidence (WHO Regional Office for Europe, 1999). The International Association for Impact Assessment (IAIA) (International Association for Impact Assessment, 2006) revisited these and set out the following five values as ‘guiding principles’ for HIA.

(i) democracy;
(ii) equity;
(iii) sustainable development;
(iv) ethical use of evidence;
(v) comprehensive approach to health.

HIA is most fundamentally concerned with the principles *do good* and *do not harm*. These are not explicitly recognized as values in the IAIA paper, but the Gothenburg paper’s reference to four values ‘in addition to promoting the maximum health of the population’ implied that doing good in health terms was viewed as a value, not only a purpose. HIA provides a well-established approach to identifying both positive and negative impacts that may arise from a proposal. This is a systematic way to identify both ‘good’ and ‘harm’, including those that are unintended and may otherwise be missed. Methods used to screen for impacts in HIA include the use of checklists, qualitative research with stakeholders and review of research literature. Figure 2 is an adaptation of a checklist used in a participatory exercise by a group of stakeholders to identify possible impacts (Douglas and Palmer, 2011). Based on findings, an HIA will include recommendations to enhance positive and mitigate negative impacts.

A crucial feature of the DMT is that, in line with the established biomedical ethical principles of beneficence and non-maleficence, *do good*
and *do not harm* are viewed not just as aims but as ethical principles—alongside the other identified principles rather than in a separate compartment. Thus, ethical principles are recognized as relating directly to outcomes and not just processes by which outcomes are achieved. This enables primacy to be given to ethical principles in the decision-making process.

The IAIA paper stated that, in adhering to the *democracy* value, HIA ‘should involve and engage the public, and inform and influence decision-makers’. The notions of democracy and public engagement and involvement can readily be linked to the principles of *respect, openness, participation* and *accountability* in Figure 1; and the DMT is designed to inform
and aid decision-makers. HIA makes explicit what impacts may arise and who will bear them. Often a proposal will have both positive and negative impacts on different groups of people. An HIA will present these clearly, often in a matrix format. Frequently, trade-offs have to be made between these impacts. An HIA does not reflect from the responsibility of decision-makers to make these (often difficult) trade-offs but should allow for transparency (openness) as the likely consequences have been made explicit. This also encourages documentation of the grounds on which decisions are made, contributing to accountability.

The equity value corresponds to the principle of fairness in Figure 1 (termed ‘equity’ in the original published account of the DMT). This is the value most discussed in literature about HIA, with debate about whether equity should be integral to all HIAs or separate equity or health inequalities impact assessment developed (Douglas and Scott-Samuel, 2001; Simpson et al., 2009). To fulfil the equity value, HIA must consider differential impacts between different population groups (with key attention to disadvantaged or vulnerable groups)—in line with the definition of HIA cited above. The English Department of Health ‘Acheson Report’ (Department of Health, 1998) on inequalities in health called for all policies likely to have a direct or indirect effect on health to be evaluated in terms of their impact on health inequalities, as part of HIA. That has not always happened (Harris-Roxas et al., 2004; Walker et al., 2005), and recent international and national health inequalities reports have called for strengthening consideration of equity in HIA, for health equity impact assessment, or for integrated (including equalities and health) impact assessment (Mahoney et al., 2004; Commission on Social Determinants of Health, 2008; Scottish Government, 2008).

If an HIA identifies potential unfair inequalities of impact, the proposals concerned can be reformulated in a way that prevents these from arising and so may prevent future health inequalities. More positively, HIA can seek to assess the likelihood that an intended positive impact on equality will be achieved. An HIA approach can support explicit consideration of equity, or fairness, in outcomes-focused health improvement efforts.

Sustainable development is directly represented in the sustainability principle in NHS Health Scotland’s version of the DMT. Many HIAs consider impacts on the physical environment that contribute to environmental sustainability. Done well, these may demonstrate the links between environmental sustainability, health and wellbeing; and some consider impacts on future generations. The description of sustainability associated with the DMT encompasses environmental sustainability plus two other aspects: the sustainability of policies, programmes or projects; and the sustainability of beneficial health and wellbeing impacts of such actions. Such thinking is of value to HIA. For example, evidence about the duration and timing of identified impacts should be looked for (some impacts may be short-lived or delayed), as is more commonly the case in Environmental Assessments. Evidence can also be sought relating to whether a policy under consideration is likely to be sustainable. The concept of sustainability can also be linked to considering cumulative impacts of multiple proposals/policies. This is commonly considered in Environmental Assessments but less often in HIA.

The question of ethical use of evidence lies at the heart of the DMT, which challenges a common, over-simplified assumption that ethical use of evidence means basing actions on ‘best evidence’ (of effectiveness or impact). Rather, the view is taken that an ethical imperative is ‘to make decisions based on the explicit application of ethical principles, using available evidence and theory appropriately to inform judgements’ (Tannahill, 2008). The use of different forms of evidence in HIA is discussed above. A more explicit articulation of values within HIA may help inform decision-making.

A comprehensive approach to health is inherent to the DMT approach which, like HIA, involves taking account of likely (positive—do good, and negative—do not harm) impacts on both ill-health and wellbeing; entails a broad view of the determinants of health; and relates to health in populations, not just individuals. Also, the breadth of the ethical principles in Figure 1 reflects a comprehensive approach to health.

The ethical principles shown in Figure 1 include a number that are not explicitly included in the HIA values or not fully covered by them.

Respect is referred to above in the context of the democracy value in HIA. In the DMT
approach it includes: respect for autonomy (limited, for example, by recognition of a lack of right to be free to do harm to others); respect for diversity (linked to the principle/value of fairness/equity); and fostering respect for self and others. Seen in this light, the principle (like most of the others shown in Figure 1) is directly relevant to both outcomes/impacts and processes, and it is accordingly suggested that the dimensions identified here are of potential relevance to HIA in widening the view of desirable (and undesirable) impacts and not just influencing the way HIAs are done (see also next paragraph).

Empowerment is a well-established principle of health promotion. HIAs seek to capture and take into account views of stakeholders and informants though various participatory methods such as workshops, focus group discussions and interviews, although some have questioned whether most HIAs can achieve meaningful participation (Parry and Wright, 2003). Particular attention should be paid to gathering views of people who are disadvantaged or may find it harder to be heard. Involving people in this way can afford them respect and may in itself be empowering—and pro-democracy—by enhancing their opportunity to influence decisions that affect them. In the context of the DMT, it can be seen not only as a principle to guide how organizations go about their business but also as a legitimate ‘intermediate’ outcome contributing to better health—and as a component of good health and thus an important outcome in its own right.

The DMT approach as developed within NHS Health Scotland includes consideration of the extent to which a possible intervention will promote social responsibility among organizations in the public, private and third sectors, and among communities, groups and individuals—as an ethically desirable goal and as an intermediate outcome. It is also concerned with the organization’s demonstrating social responsibility in its own actions. Similarly, HIAs by their very nature help foster, and provide a means of demonstrating, social responsibility.

In health improvement, participation is valued both as a means to better health and as a desirable end in itself. As can be seen from the discussions of democracy and empowerment above, most HIAs favours a participatory approach, involving a range of stakeholders. Many HIA resources describe methods for engaging vulnerable or disadvantaged groups [e.g. (Ministry of Health, 2007)]. Moreover, an impact assessment may consider the impact of a proposal on participation, as a ‘core protective factor’ for mental wellbeing (Cooke et al., 2010).

The ethical principle of openness is also central to HIA, which makes explicit what impacts may arise and who will bear them. Often a proposal will have both positive and negative impacts, and these may be borne by different groups of people. An HIA will seek to present these, and any trade-offs between impacts, clearly and transparently. HIAs also recognize a need for transparency about the strength of evidence and level of certainty of identified potential health impacts. Explicit application of a set of ethical principles using the DMT, including acknowledgement of any identified potential differential effects between population groups and of any judgements on trade-offs between groups or between principles, contributes directly to openness and thus also to accountability. The DMT is intended to enable consistent and explicit documentation as to how and why decisions are made. By recording the judgements made in applying each of the ethical principles in arriving at a given decision, the DMT facilitates understanding of decisions by those who did not make them. It also provides a platform for open and constructive dialogue between decision-makers and others, including people who disagree with decisions. That dialogue might, for example, reveal disagreement on the application or interpretation of the ethical principles, or on trade-offs, or even on the stated ethical principles.

Within the accountability principle, the DMT as currently used highlights seven types of governance: health, financial, staff, environmental, information, research and ethical. Relevant questions for decision-makers in these regards are as follows. Is the expected overall impact of a proposed action/initiative desirable (health governance)? Does it justify the financial, human and other resources required (financial governance, staff governance)? Are there any environmental implications (environmental governance)? Are there any potential direct or indirect adverse effects on staff (e.g. due to work/service overload), and, if so, how can these be avoided (staff governance)? Is information being collected, processed, stored and used appropriately (information governance)? Is any
research being conducted in accordance with re-
search governance requirements? Are the 
ethical principles satisfied sufficiently (ethical 
governance)? Such questions are also of re-
levance to those who conduct HIAs.

Figure 3 summarizes identified links between 
the ethical principles in Figure 1 and HIA 
values.

Aiding decision-making

Both HIA and the DMT are intended as aids to 
human decision-making, not mechanistic substi-
tutes for it. They offer systematic approaches to 
informing the application of reasoned judg-
ements in making decisions about what to do 
and what not to do, in the interests of health 
and wellbeing. They are both applicable to 
decision-making relating to policies, pro-
grammes and projects.

The output of an HIA is a report detailing 
what the impacts of a proposal are likely to be, 
and who will bear them (Douglas, 2009). As dis-
cussed above, the report should summarize ap-
propriate evidence/intelligence and present 
considered judgements about the consequences 
of all options considered. This makes impacts 
explicit, but decision-makers still have the re-
ponsibility to decide whether to adopt the 
proposal.

The DMT approach has its origins in a health 
organization making decisions about its own ac-
tivities. It is, however, translatable to other 
situations and sectors, deploying a set of ethical

![Fig. 3: Links between DMT ethical principles and HIA values. In addition: *the breadth of the ethical principles in figure reflects a comprehensive approach to health and the aim of promoting the maximum health of the population; **links between social responsibility and HIA are described in the text; ***the notion of ethical use of evidence was central to the DMT’s creation and design.](https://academic.oup.com/heapro/article-abstract/29/1/98/570577)
principles that duly reflects the purpose and values of the organization concerned. In contrast, HIA is often done across sectors, as a partnership involving health professionals and a non-health sector organization, and in such circumstances the organization concerned will consider the findings of HIA in the light of their own objectives and values. HIA is often done together with other impact assessments that may be underpinned by different values and involve different ways of using evidence.

Methods and tools commonly employed in HIA can also be of practical value in using the DMT. Checklists such as Figure 2 offer a systematic way to identify unintended and unanticipated impacts. Other methods include population profiling, literature reviews and qualitative methods to gather stakeholder views, and these too can be useful for exploring the extent to which a proposal satisfies a set of ethical principles in the DMT.

**CONCLUSIONS**

Five conclusions have been drawn from the discussions and findings in this paper.

1. There is a high degree of compatibility between the DMT approach and HIA. They are rooted in largely shared ethical principles or values; both involve appropriate use of evidence and theory; and both are concerned with enhancing the quality of decision-making in the interests of population health. HIA may be applied to decisions in all sectors; and although the DMT was created in the health sector, the approach is potentially applicable more widely.

2. HIA offers a ready-made vehicle for taking forward the DMT approach, using evidence and theory to inform the application of a set of agreed ethical/decision-making principles that are relevant to outcome or impact as well as process. The advantages of employing HIA are that approaches are well-established and support is available to those using it. It does not require new methods or tools, and guidance is available for a range of circumstances—though existing tools could usefully be adapted to fit the agreed set of principles, as suggested below. There is growing experience of HIA, with several hundred published papers (Anon, 2012) and a number of books on the subject [e.g. (Birley, 1995, 2011; British Medical Association, 1998; Kemm et al., 2004; Wismar, 2007)]. Quality standards (Fredsgaard et al., 2009; North American HIA Practice Standards Working Group, 2010) and evaluation guidance (Quigley and Taylor, 2004; Parry and Kemm, 2005) are available to assure and assess the quality of HIAs. As described above, HIAs may range from a short screening exercise to more detailed assessment, depending among other things on the nature of the proposal. However, if HIA methods are to support organizations in meeting a set of ethical principles such as that used illustratively in this paper, they need to be used more systematically than at present. This would include careful selection of proposals to be subjected to assessment as appropriate to the envisaged scale and significance of potential impacts.

3. The DMT approach offers insights of benefit to the further development of HIA. We suggest that HIA should be explicitly underpinned and guided by a defined set of ethical principles that reflect appropriate purpose and values. The set that features in the version of the DMT used in this paper is a useful pointer to the potential benefits of going beyond the currently documented values of HIA. Also, the DMT and its ethical/decision-making principles have implications for processes—for how organizations and people go about their business, and how HIA is carried out. The way HIA is conducted, including the involvement of stakeholders and the use of a range of intelligence types and sources, is as important as the findings. And existing HIA tools, such as the checklist presented as Figure 2, should be scrutinized in the light of the DMT and an agreed set of ethical principles. For example, principles such as participation may also be defined as impacts and included in the checklist of impacts to be assessed.

4. The DMT approach helps broaden thinking as to what an HIA can and should look at in terms of health-relevant ‘impacts that matter’. Ethical principles other than simply *do good* and *do not harm* are not just relevant to process or the way things are done.
but also represent health-relevant impacts in their own right. This is reflected in the checklist at Figure 2, which includes, for example, bullets for equality, participation and control, which reflect the principles of fairness, participation and respect.

(5) Recent authors have described a typology of different forms of HIA, which may be done for different purposes: to fulfil a mandatory requirement, as decision support, advocacy or as a way to support community engagement (Harris-Roxas and Harris, 2010). Articulating more fully the values or ethical principles underpinning HIA might help distinguish between the different models and further develop this typology.

CONFLICT OF INTEREST

A.T. devised the decision-making triangle featured in this paper and has promoted its use. M.J.D. has been extensively involved in developing and promoting health impact assessment. The views expressed in this paper do not necessarily reflect those of the authors’ former/current employing organizations.

REFERENCES


