

# INTEGRATING ETHICS IN HEALTH TECHNOLOGY ASSESSMENT: MANY WAYS TO ROME

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**Objectives:** The aim of this study was to identify and discuss appropriate approaches to integrate ethical inquiry in health technology assessment (HTA).

**Methods:** The key question is how ethics can be integrated in HTA. This is addressed in two steps: by investigating what it means to integrate ethics in HTA, and by assessing how suitable the various methods in ethics are to be integrated in HTA according to these meanings of integration.

**Results:** In the first step, we found that integrating ethics can mean that ethics is (a) subsumed under or (b) combined with other parts of the HTA process; that it can be (c) coordinated with other parts; or that (d) ethics actively interacts and changes other parts of the HTA process. For the second step, we found that the various methods in ethics have different merits with respect to the four conceptions of integration in HTA.

**Conclusions:** Traditional approaches in moral philosophy tend to be most suited to be subsumed or combined, while processual approaches being close to the HTA or implementation process appear to be most suited to coordinated and interactive types of integration. The article provides a guide for choosing the ethics approach that appears most appropriate for the goals and process of a particular HTA.

**Keyword:** Ethics, Values, Morals, Norms, Health Technology Assessment

Ethics has been identified as a key element in health technology assessment (HTA) since its inception in the 1970s (1;2). Early definitions of technology assessment include ethics: “Technology assessment is comprehensive in scope, examining impacts on social, ethical, legal, and other systems . . .” (3) and this also applies to more recent definitions of HTA (4–6). In addition, a wide variety of methods for addressing ethical issues in HTA are available. Some of these are specifically developed for HTA (7–9). The reasons for integrating ethics are also argued for (10). However, ethical issues are still not frequently addressed explicitly in HTA (9;11–13). Among the potential reasons for this are: (i) Existing approaches for ethical inquiry are not suitable for HTA. (ii) Technologies are often considered by HTA producers as being value-free. (iii) The only questions perceived as relevant in a HTA are technical and economical ones. (iv) Value issues may be acknowledged to be present at all levels in HTA, but ethics is not needed to address these issues. (v) It is practically difficult to integrate ethical considerations in HTA. (vi) HTA experts are not trained to make ethical assessments and there is too little expertise on ethics and HTA. (vii) Limited resources available to conduct ethical analyses (14).

Hence, we know that ethics is expected to be integrated in HTA, we know that it is possible to do so, and that there are many methods available, but that it is relatively rarely done. Therefore, the key question in this article is how to integrate ethics in HTA. That is, how can ethics as an explicit activity and a discipline with its various methods be part of HTA? This question will be addressed in two steps: first by exploring several meanings of integration, and then to investigate how existing approaches in ethics are suited to integrate ethics in HTA according to standard understandings of integration.

## WHAT DOES IT MEAN TO INTEGRATE ETHICAL INQUIRY IN HTA?

The word integrate stems from *integrare* (lat.), to incorporate parts in a whole, and is associated with *inter-agere* (lat.), that is, to interact. According to four ordinary conceptions of *integrate* (see e.g., Merriam Webster’s Dictionary), ethics can be integrated in HTA in at least the following ways:

- 1 To *subsume* something as part of something more comprehensive. Accordingly, ethics is a subsidiary activity, a sub-project of an HTA, resulting in a separate (subordinate) chapter in a HTA publication/report. Both the activity and the end result (chapter in report or published article) may be

less important in the subsequent decision making process. The assessment of ethical aspects of welfare technology may serve as one example of this (15). Another example is the Health Care Efficiency Programme (HTA) in the Netherlands. In the call for proposals for conducting HTAs, assessment of ethical aspects is seen as a separate task for which researchers should submit a separate application (16).

- 2 To *combine* (unite) parts or processes. Assessment of the ethical issues is a separate activity (project) on equal terms with the assessment of efficacy, effectiveness, safety, and efficiency. Ethics is an autonomous part of the HTA in its' own right. Its role in the decision making process is on the same footing as other parts of HTA. The assessment of bariatric treatment for obesity may be an example of this type of integration, for example, by Institute of Health Economics (IHE) in Canada (17). Another example may be the assessments of the 13-valent pneumococcal conjugated vaccine (18)
- 3 To *coordinate* parts or processes, for example, in horizontal or vertical integration. Ethics is still a separate part or process in HTA, but its role and importance may vary depending on the context, for example, the technology to be assessed, the patient group involved, the assessment of efficacy, effectiveness, and safety, etc. The role of ethics may be different in the assessment of whole genome sequencing of cell free fetal DNA in pregnant women's blood and the assessment of pulse oxymetry in anesthesiology. Results from the assessment of safety may influence the ethics assessment, and conversely, ethically controversial issues may direct the safety assessment. Although ethics is a defined and context sensitive part of HTA, it still is an autonomous activity. The content of the various parts of HTA may influence each other, but not the methods as such. Economists assess efficiency the way they find suitable, and ethicists define their core concepts and do ethics the way they think are the best, independent of the other disciplines. The assessment of non-invasive prenatal diagnosis (NIPD) in several countries may serve as an example of this perspective on integration.
- 4 *Interaction* (emergence, synergy): Constitutive interaction between ethics and other disciplines. The ethics assessment influences, is influenced by, re-defines and is re-defined by other parts and elements of HTA. For example, the selection of end-points is informed by and influenced by ethical concerns or patient perspectives. Economic evaluation may be redefined by ethical considerations of equity and non-discrimination, and ethical considerations may be informed and influenced by challenges with elaborating models in economics. While *coordination* involves mutual adjustments, *interaction* encompasses reciprocal re-definition. Assessment of cochlear implants in the Netherlands may serve as an example of this perspective on integration (19;20).

Hence, to integrate ethics in HTA has at least four different meanings. The two first forms of integration are related, while the two latter are substantially different from each other and from the others. In practice, the choice of integrative approach depends on the framing of the HTA agency and what type of HTA is to be performed. How then, do existing approaches for conducting ethics in HTA work with respect to these understandings of integration?

## INTEGRATING STANDARD ETHICS METHODS IN HTA

One way of integrating ethics in HTA is by applying one of the well-founded methods of moral philosophy and to implement this in the process of HTA. Below we present relevant existing approaches (methods, theories, positions) in ethics and assess

how suitable they are for integration in HTA according to the four identified meanings of integration. As few of the standard approaches have been explicitly used in HTAs, we cannot analyze empirical studies (e.g., in HTA reports), but have to rely on analyzing conceptual feasibility. Due to restricted space only the core characteristics of the methods are mentioned here, but a more elaborated description is given in the Supplementary Information.

## UTILITARIANISM

Utilitarianism is a form of consequentialism that aims at maximizing the total utility. It is at the core of HTA's analyses of effectiveness, safety, and cost-effectiveness, and as such inherent in HTA. However, the ethical nature of this may not be recognized and ethical aspects may not be explicitly addressed. Integrating equity concerns in cost-effectiveness analysis is one example. This does not mean that ethics is integrated in a subsumed manner, only that some ethical aspects can be included in other disciplines of HTA. Utilitarianism has not been integrated in HTA in any of the four listed manners. Because utilitarianism is the normative basis of HTA, the question of integrating it as a separate ethical discipline may appear nonsensical, as it would be like asking how to integrate something into itself. However, one can easily expand utilitarian analysis to other social implications than effectiveness, safety, and cost-effectiveness, for example, investigating the implications of screening for trisomy 21 on the attitudes toward persons with Down's syndrome.

## DEONTOLOGY

Deontology is the branch of ethics inferring right action from norms based on rationally justified duties. Such basic duties (imperatives) are to treat people equally and as ends in themselves. Deontology can be used both *subsumed* to and *combined* with other parts of the HTA process, as it can analyze a certain health technology (HT) in the light of a set of moral imperatives rooted in "basic" values/goods or to verify how moral imperatives could be pursued, fulfilled, respected in practical conditions, that is, with respect to the technology assessed. This could also be *coordinated* with other parts of the HTA process, for example, as it is done with several of the questions in EU-neHTA Core model's Ethical domain (F0002, F0008, F0009, F0014) (21). Deontological approaches may be less appropriate in an *interactive* approach, as the norms often are fixed and not open to negotiation.

## CASUISTRY

Casuistry is an approach in ethics for developing and justifying moral judgments with high affinity to medicine, law, and religion. The key is to find solutions to new and challenging cases based on similar cases where solutions exist. Casuistry can be used *subsumed* or *combined*, as it may be organized alongside

other inquiries of effectiveness, safety, and cost-effectiveness. It could be commissioned when researchers acknowledge that the healthcare technology may violate certain moral values, and acknowledge that this cannot be established through deductive argument. Casuistry can also be used in a *coordinate* way, adjusted to and adjusting to the other parts of the HTA process. Casuistry is a conservative method, in that it bases the handling of new cases on solved solutions. Hence, the background values and principles may not be challenged. It is, therefore, not obvious that casuistry can be used in an *interactive* manner.

### PRINCIPLISM

Principlism is an approach applying four important, but not absolute (*prima facie*), principles, that is, respect for *autonomy*, *beneficence*, *non-maleficence*, and *justice*. It may be necessary to infringe single principles when the principles conflict. Ethical assessments adopting Principlism are generally performed in a top-down manner. Ethical assessments usually result in a separate chapter in the HTA report and they just consist of identifying ethical issues through an independent work of comparison of some aspects of the use of a certain technology with the set of principles. Therefore, Principlism is predominantly used in a *subsumed/combined* manner. As the principles are fixed, it may be difficult to apply in an *interactive* manner. However, it may be argued that the interpretation of the principles may be subject to interaction, but this would be to stretch principlism, according to many adherents.

### DISCOURSE ETHICS

The central thesis of discourse ethics is that there is a “force of the better argument” driving toward consensus on certain norms and giving universal validity to some presuppositions of a moral discourse. It is based on impartial judgment and on arriving at consensus among those who are affected. Discourse ethics has not been explicitly used in HTA, but it inspires consensus oriented methods in deriving legitimacy of any particular rule. One example is the Interactive, participatory HTA approach (iHTA). Discourse ethics can be used through an “argumentative discourse” among the HTA experts and other stakeholders, where all (present and future) interests of each potential stakeholder are taken into account. Ethical assessments adopting discourse ethics will be performed in a bottom-up manner. Each stakeholders’ perspective would influence “argumentative discourse”, informing/(re)defining the overall HTA process. Used this way, discourse ethics would be implemented in a *coordinated* or *interactive* manner.

### WIDE REFLECTIVE EQUILIBRIUM

Wide reflective equilibrium (WRE) is a method of moral argumentation that starts with gathering existing judgments about a given case and identifies which moral principles are at stake

and that guide the judgments. Then it finds (potential) background theories that support the ethical principles and tries to obtain optimal coherence between judgments, principles, and background theories. WRE may not be efficient if used in a *subsumed* and *combined* manner, as this could generate tensions with other parts of the HTA, for example, if the analysis goes against what is found in the systematic review on outcomes or in the economic analysis. According to its process, WRE is more naturally used in a *coordinated* manner. As the reflective process also can alter principles, values, and background theories, WRE could be used *interactively*.

### INTEGRATING METHODS ESPECIALLY DEVELOPED FOR TECHNOLOGY ASSESSMENT

In addition to many methods, approaches, and positions in moral philosophy, several ethics approaches and methods have been directly developed and used for (health) technology assessment (7;8;13). Here we only give a short description of them to assess their integrative assets.

### SOCRATIC APPROACH

The Socratic approach aims at highlighting and addressing the overt and covert norms and values involved in the implementation, use, and assessment of a health technology (HT), as it sees science and technology as social activities governed by norms and values of various kinds (22;23). It sets out with identifying characteristics of the HT and its assessment, as well as the involved stakeholders. To guide the exposure and analysis of value issues involved with a HT, seven main questions and thirty-three explanatory and guiding questions are addressed. Not all of the questions are relevant for all technologies. The Socratic approach has been used for a variety of HTs, both in a *subsumed* or a *combined* manner, where ethical issues have been addressed independent of and isolated from the other parts of the HTA process, usually resulting in a separate chapter in the HTA report. In other projects, the ethics assessment has been *coordinated* with other parts of the HTA process, and has played a significant role in the HTA process as well as the forming of the report and its conclusions. The questions in the question list, as well as end-points, evidence level, and other value related issues, have then been discussed with stakeholders and participants of the expert groups, in an iterative process. In an ongoing project where non-invasive prenatal diagnosis (NIPD) is assessed, ethical issues have been highlighted at an early stage, and may (re)define the HTA objectives in an *interactive* manner.

### SOCIAL SHAPING OF TECHNOLOGY

Within the framework of science and technology studies (SST), technology is viewed as the product of societal processes within industry, research institutes, governmental bodies, and society

at large, rather than an independent artifact that has a certain, measurable impact on its target. Therefore, it is important to understand the engagement and strategies of various actors, and the way various problems are defined and resolved. Assessing the role, merit, and value of technology becomes crucial. If technology in fact is technology-in-context, then both technology and its context can be influenced or adjusted to improve the outcomes of using technology. SST has not been used *subsumed/combined* or *coordinated*, as it is *interactive* by nature. If it were to be used in these ways, it would not be truly SST. As SST takes the social context into account to shape the technology according to norms and values that are jointly elaborated, it involves relevant stakeholders in an interactive process. One reason that it is so seldom used, despite its obvious integrative (interactive) merits, may be that it is foreign to HTA rationality (see reasons 2–4 in the introduction), although well established in parliamentary technology assessment, (P)TA.

### CONSTRUCTIVE TECHNOLOGY ASSESSMENT

Constructive technology assessment (CTA) wants to narrow the gap between innovation and assessment by taking the socio-dynamic processes into account. The core of the approach is an assessed implement technology in society to improve the robustness of decisions about technology and to learn about and avoid possible harmful impacts. CTA includes four stages. First, a “socio-technical” map identifying the most relevant social actors involved. The second stage includes early and controlled experiments, through which unanticipated impacts can be identified. Third, a debate between the various actors involved is organized. Finally, a synthesis report is written aiming at letting societal aspects of innovation become additional design criteria. CTA has been adopted as an approach to technology assessment by public organizations. The CTA approach aims to provide a broad assessment at an early stage of technology development. Discussions between researchers, engineers, manufacturers, and future users are used in the development and diffusion of a technology to improve its (potential) effectiveness. In this way, the approach can be seen as a truly integrative method. As with SST, CTA has not been used *subsumed/combined* or *coordinated*, as it is *interactive* by nature. It is, however, seldom used in HTA for the same reasons as for SST.

### ETHICAL MATRIX

The objective of the ethical matrix (EM) is to facilitate ethical decisions in situations where different, and conflicting, interests are at stake. It seeks common sense reasonable and justifiable principles to guide our actions. It uses a matrix where the x-axis lists the principles modified from the principlist approach (autonomy, well-being, justice) and the y-axis expands the moral realm appropriate for the technology to assess, such as the stakeholders and their perspectives, interests, and values. EM has mainly been used for the assessment of food, for

example, genetically modified food, but it has also been used for the assessment of xeno-transplantation. It is argued that the EM is helpful for fact-finding in ethical debates relating to food ethics; but that it is much less helpful in for weighing the different ethical problems that it uncovers. EMs have been used *subsumed/combined* and *coordinated* for technology assessment outside health care. As the principles in EM are fairly fixed it is not suited for integration in the *interactive* sense. It may be argued that the principles that are part of the EM also are open for debate and refinement, and hence, that the method could be used in an *interactive* manner.

### EUNETHTA CORE MODEL

The European Network for Health Technology Assessment (EUnetHTA) Core Model is a standardized synthesis of available methods intended to address ethical considerations in the whole HTA process (21). It emphasizes the value-ladenness of technology and HTA, and intends to be practical, transferable, and to consider ethical issues already in the planning phase of the HTA. A range of ethical issues are identified using a question-based format, adapted from the Socratic method (22). An ethical analysis is based on a reflection on stakeholders’ interests, the purpose of the HTA, the characteristics of the specific technology, and the questions, as well as results from the domains of effectiveness, safety, and economy. The result of this analysis may be fed back to experts after stakeholder hearings. Conclusions are reported in a structured format to enhance both transparency of the argumentation and international transferability. This approach can be used both in a *subsumed/combined* and *coordinated* manner. The EUnetHTA Core Model has not been used in an *interactive* manner yet. However, there appear to be no major obstacles to use it interactively. Like the Socratic approach, the questions (and the underlying value issues) are not carved in stone.

### INTERACTIVE HTA

Interactive health technology assessment (iHTA) is a specific type of HTA which seeks the active participation and interaction of stakeholders in the process of evaluating a technology. It aims at agreement on what needs to be researched (relevance), how this can best be done (methodology), and how the results should be interpreted and acted upon (practical reason). As such, iHTA is a specific type of participatory evaluation, with a strong emphasis on social learning. The role of the researcher is to identify stakeholders, engage them in the evaluation process, and reconstruct the interpretative frames that they bring to bear on the technology. The aim is to build a research agenda which is considered relevant and feasible by all stakeholders and to foster ownership of the evaluation. iHTA is not suitable for a *subsumption* or *combined* type of integration, as it requires close interplay between stakeholders throughout the HTA process. It is very well suited for tight *coordination* of ethics in HTA,



**Table 1.** Assessment of Merits of Various Ethics Approaches According to Various Meanings of Integration

	Subsume/combine	Coordinate	Interactive
Utilitarianism	Somewhat applicable. Has not been applied explicitly	Applicable Has been used implicitly, but not explicitly	Somewhat applicable. Has been used implicitly
Deontology	Applicable Has been used in this way	Applicable Has been used in this way.	Not applicable Has not been used in this way
Casualty	Applicable Has been used in this way	Applicable Has been used in this way.	Not applicable
Principlism	Applicable. Has been used in this way	Not applicable Has not been used this way	Not applicable Has not been used in this way
Discourse ethics	Not applicable Has not been used in this way	Somewhat applicable Has not been used in this way	Applicable Has not been used in this way
Wide Reflective Equilibrium	Not applicable Has not been used in this way	Applicable Has been used in this way	Somewhat applicable Has not been used in this way
Axiological (Socratic, EUnethTA)	Applicable Has been used in this way	Applicable Has been used in this way	Somewhat applicable Presently being implemented this way
Social Shaping of Technology	Not applicable Has not been used in this way	Applicable Has been used in this way	Applicable Has not been used in this way
Constructive Technology Assessment	Not applicable Has not been used in this way	Not applicable Has not been used this way	Highly applicable Rarely used in this way
Interactive Health Technology Assessment (iHTA)	Not applicable Has not been used in this way	Highly applicable Rarely used in this way	Applicable Rarely used in this way
Ethical Matrix	Highly applicable Rarely used in this way (in health care)	Somewhat applicable Rarely used in this way (in health care)	Not applicable

*Note.* White fields indicate *not applicable*, light gray indicates *somewhat applicable*, gray indicates *applicable*, and dark gray indicates *highly applicable*. The text additionally indicates to what extent it has been used in this way and qualifies the four categories.

as ethical issues feed into other parts of the HTA process. As the name indicates iHTA is *interactive*. However, there may be limits to which aspects of HTA that are open for negotiation and (re)definition in the HTA process.

## COMPARISON

As the previous analysis indicates, the different approaches, have various assets with regard to integrating ethics in HTA. Most traditional and summative approaches are suitable for subordination and combination, and to some extent also for coordination, of ethics in HTA, but very few are merged in the HTA process and even fewer are expected to work in an interactive manner. Correspondingly, processual (formative) methods appear to be more suitable for interactive understandings of integration.

Table 1 compares the described approaches with respect to the identified interpretations of integration.

The table shows that no one approach appears to cover all aspects of integration equally well; hence, there is no “universal” method for integrating ethics in HTA. However, there are some

methods that appear to be less suitable for *subsumption* and *combination*, that is, processual approaches, and some are less suitable for an *interactive* conception of integration. Accordingly, it is important to select the approach which is suitable for the specific health technology to be assessed and the HTA context.

## DISCUSSION

This article has presented and assessed a wide range of positions, methods, and approaches for ethical inquiry in HTA, according to four conceptions of integration. There may of course be other conceptions of integration that may be relevant. However, this article covers the most ordinary conceptions. Moreover, it may also be argued that more interesting than how to integrate ethics in HTA is the question “which ethical theories/approaches are most suitable for which types of HTA?” This may well be the case, but to do so, one would need a way to categorize the different types of HTA, which may not be easy. Here, the different types of integration may become very fruitful.

It would, of course, have been much better to study how the various approaches in ethics have been integrated in HTA, but the empirical applications of the various methods are scarce. In fact there seem to be more methods than uses (9;23). Although we have referred to some applications of some of the methods, the outcome may be more dependent on the HTA context including the person who performed the ethical analysis, than the ethics method. Hence, we hope that this assessment can be of some value, as the methods have been assessed according their own merits.

We have not addressed all methods or approaches in ethics identified in the literature (13). Although we have addressed the most renown and the most frequently used methods, there may be many other methods that could be investigated as well. We very much welcome further studies, especially assessments based on empirical studies.

Other professionals may of course have presented and assessed the various ethics approaches in different manner. They may also find ways to implement and modify the existing methods extending the ways they can be integrated in HTA. We most welcome such approaches. Most of all we welcome more examples of ethics integrated in HTA. We also admit that we may have preferences toward more coordinated and interactive modes of integration, as we think they may be more effective in highlighting the values involved in implementing health technology and pay more attention to stakeholders' perspectives, especially patients.

There may be many reasons why the interactive integration of ethics is not widespread. One reason can be that this may disturb or even threaten traditional and well-established HTA procedures. HTA may become less rigorous and predictable when used interactively. The power of framing the aim, process, and the output of the HTA may change hands. Hence, the reason that ethics is not used interactively in HTA may not be due to the various approaches in ethics, but in HTA itself. However, with the increasing assessment of complex health technologies, having more wide-reaching implications (24), interactive assessments may become more suitable.

### CONCLUSION: HOW TO INTEGRATE ETHICS IN HTA

The various approaches in HTA have different merits with respect to various conceptions of *integration* in HTA, that is, whether we think of integration as subsumption, combination, coordination, or interactive processes. Traditional approaches in moral philosophy, that have been performed independent of or abstracted from the practical context, tend to be most suited to be subsumed or combined, while processual approaches, that depend on being close to the process, appear to be most suited to coordinated and combined types of integration. Hence, depending on how the goals of the HTA and how the HTA process is planned, the most suitable ethics approach can be selected. For assessments that aim at framing and forming technology implementation, SST, CTA, and iHTA seem more suitable than

assessments that aim at more independent and distanced assessment of a health technology. Here deontology, casuistry, principlism, and axiological approaches appear to be more appropriate.

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### SUPPLEMENTARY MATERIAL

Supplementary File

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### CONFLICTS OF INTEREST

All the authors declare that they do not have conflicting interests with regards to this manuscript.

### REFERENCES

1. Banta HD. Foreword. *Poiesis Prax.* 2004;2:93-95.
2. Banta HD, Perry S. A history of ISTAHC. A personal perspective on its first 10 years. *International Society of Technology Assessment in Health Care. Int J Technol Assess Health Care.* 1997;13:430-453; discussion 54-62.
3. Office of Technology Assessment (OTA). *Development of medical technologies: Opportunities for assessment.* Washington, DC: United States Congress; 1976.
4. Liberati A, Sheldon TA, Banta HD. EUR-ASSES Project Subgroup. Report on methodology: Methodological guidance for the conduct of health technology assessment. *Int J Technol Assess Health Care.* 1997;13:186-219.
5. Jonsson E, Banta HD, Henshall C, et al. Summary report of the ECHTA/ECAHI project. European Collaboration for Health Technology Assessment/Assessment of Health Interventions. *Int J Technol Assess Health Care.* 2002;18:218-237.
6. International Network of Agencies for Health Technology Assessment. *Technology assessment.* Alberta, Canada: HTA Resources: International Network of Agencies for Health Technology Assessment; 2011.
7. Burls A, Caron L, Cleret de Langavant G, et al. Tackling ethical issues in health technology assessment: A proposed framework. *Int J Technol Assess Health Care.* 2011;27:230-237. doi: 10.1017/S0266462311000250.
8. Saarni SI, Braunack-Mayer A, Hofmann B, et al. Different methods for ethical analysis in health technology assessment: An empirical study. *Int J Technol Assess Health Care.* 2011;27(4):305-312. doi: 10.1017/S0266462311000444.
9. Droste S, Dintsios C-M, Gerber A, et al. *Integrating ethical issues in HTAs: More methods than applications?* 7th Annual Meeting HTAi RDS Conference Center Dublin, Ireland, 2010.

10. Hofmann BM. Why ethics should be part of health technology assessment. *Int J Technol Assess Health Care*. 2008;24:423-429. doi: 10.1017/S0266462308080550.
11. Lavis J, Wilson M, Grimshaw J, et al. *Towards optimally packaged and relevance assessed health technology assessments*. Report Submitted to the Canadian Agency for Drugs and Technologies in Healthcare. Hamilton, Ontario: McMaster University Program in Policy Decision-Making; 2007.
12. DeJean D, Giacomini M, Schwartz L, et al. Ethics in Canadian health technology assessment: A descriptive review. *Int J Technol Assess Health Care*. 2009;25:463-469. doi: 10.1017/s0266462309990390.
13. Assasi N, Schwartz L, Tarride JE, et al. Methodological guidance documents for evaluation of ethical considerations in health technology assessment: A systematic review. *Exp Rev Pharmacoecon Outcomes Res*. 2014;14:203-220. doi: 10.1586/14737167.2014.894464.
14. ten Have H. Ethical perspectives on health technology assessment. *Int J Technol Assess Health Care*. 2004;20:71-76.
15. Hofmann B. Ethical challenges with welfare technology: A review of the literature. *Sci Eng Ethics*. 2013;19:389-406. doi: 10.1007/s11948-011-9348-1.
16. Zon M. Nederlandse organisatie voor gezondheidsonderzoek en zorginnovatie. Informatiebrochure DoelmatigheidsOnderzoek. Subsidieronde. 2012. Den Haag, 2010. Available via: [http://www.zonmw.nl/uploads/tx\\_vipublicaties/Brochure\\_2012\\_binnenwerk.pdf](http://www.zonmw.nl/uploads/tx_vipublicaties/Brochure_2012_binnenwerk.pdf) (accessed January 22, 2015).
17. Hofmann B. *Ethical aspects of bariatric treatment of adult obesity*. Alberta, Canada: Institute of Health Economics; 2011.
18. Kheiraoui F, de Waure C, Specchia M, et al. The 13-valent pneumococcal conjugated vaccine introduction in subjects aged > 50 years: The result of a Health Technology Assessment: Flavia Kheiraoui. *Eur J Public Health*. 2013;23(Suppl 1). doi: 10.1093/eurpub/ckt124.117.
19. Reuzel RP, van der Wilt GJ, ten Have HA, et al. Reducing normative bias in health technology assessment: Interactive evaluation and casuistry. *Med Health Care Philos*. 1999;2:255-263.
20. Reuzel RP, van der Wilt GJ, ten Have HA, et al. Interactive technology assessment and wide reflective equilibrium. *J Med Philos*. 2001;26:245-261. doi: 10.1076/jmep.26.3.245.3015.
21. Lampe K, Makela M, Garrido MV, et al. The HTA core model: A novel method for producing and reporting health technology assessments. *Int J Technol Assess Health Care*. 2009;25(Suppl 2):9-20. doi: 10.1017/S0266462309990638.
22. Hofmann B. Toward a procedure for integrating moral issues in health technology assessment. *Int J Technol Assess Health Care*. 2005;21:312-318.
23. Hofmann B, Droste S, Oortwijn W, et al. Harmonization of ethics in health technology assessment: A revision of the Socratic approach. *Int J Technol Assess Health Care*. 2014;30:3-9. doi: 10.1017/S0266462313000688.
24. Petticrew M, Anderson L, Elder R, et al. Complex interventions and their implications for systematic reviews: A pragmatic approach. *J Clin Epidemiol*. 2013;66:1209-1214. doi: 10.1016/j.jclinepi.2013.06.004.