



Health Technology Assessment: The context, Practices and Challenges- A Mini Review

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ABSTRACT: Health Technology Assessment (HTA) is an important multidisciplinary process for health policymakers and decision-makers to evaluate a range of health technologies, medical devices, and pharmaceuticals to enable the efficiency with finite healthcare budgets. It aids the effectiveness and fairness in decision making. HTA is a mechanism to introduce a value for money in the healthcare system. HTA methods are evolving, and their applications are diverse. This review introduces fundamental aspects and issues of dynamic concept of HTA.

KEYWORDS: Evidence-based decision making, Health Technology Assessment, HTA methods, Hospital based HTA, Health policy.

INTRODUCTION

Although novel interventions and new technologies are incessantly being developed, their impacts and implications on health and health systems are not always very clear. HTA is the “multidisciplinary field of policy analysis that studies medical, social, ethical, and economic implications of the development, diffusion, and use of health technologies” [1]. It evaluates the characteristics of health technologies systematically including both their direct and indirect consequences. Such multidisciplinary assessment is immensely useful in the decision-making process in health care at the policy level.

Based on a literature review, a conceptual framework that captures the context, practices and challenges of HTA was developed. Evidence was collected through a review of published competent authority websites. The main objectives of this paper are, to understand the different facets of the concept of HTA, recognize multiplicity of approaches employed by different HTA bodies and to study the role and challenges of HTA within the healthcare system.

METHODS

A rapid review on HTA was carried out using the databases Medline, PubMed, Biomed central, Science Direct, and google scholar. Relevant websites and reports were looked up. The search was conducted during July- September 2022. The search strategy for scientific literature consisted of free text and MeSH terms related to keywords, namely, HTA, evidence-based decision making, HTA methods, hospital based HTA and health policy. For overview of challenges and the way forward, both the literature review and the expert opinion were obtained.

BACKGROUND AND HISTORY OF HTA

The HTA was systematically originated in the United States (U.S.) Office of Technology Assessment (OTA) [2] which published its first report on the subject in year 1976 [3]. The OTA examined the possibilities for the novel concept of HTA, concentrating on efficacy, safety, and cost-effectiveness [4] [5] [6]. The early reports of OTA on efficacy and safety enlightened the U.S. Congress to develop the National Center for Health Care Technology (NCHCT) which was the first national agency in the world to deal with HTA [2].

Consensus development and launch of conferences related to HTA too were pioneered in the U.S. through the NCHCT in 1977 [7]. NCHCT was among the first organizations to advise the U.S. Medicare program on technologies it would cover. NCHCT carried out systematic reviews on selected health technologies, developed methodologies in prioritizing them, and identified emerging health technologies suitable for assessment. Institute of Medicine (IOM) of the National Academy of Sciences decided to develop



a national Council on Health Care Technology which paved way to form the Committee for Evaluating Medical Technologies in Clinical Use. The committee lead to publish the book 'Assessing Medical Technologies' which defined HTA in a novel scope [Banta 2003].

Researchers in Europe were motivated with the similar factors like high expenditures for health care, and the appearance of new technologies, and the need of rationalizing health care moved towards formal HTA [9]. The European Commission has further promoted HTA by policy level approach [10].

Current day HTA comprises of multiple operational features and practices, which are applied in different manners in various settings [11]. The context and structure of HTA systems depends on health system priorities and shaped by culture, values, and preferences of each nation [12]. HTA is essentially a concept with multiple facets and may vary in its focus and methods, scope, governance, and impact on system decisions [13] [14] [15]. Taking into consideration these variations, it is important to study the different HTA parameters that can influence the way HTA systems are set up, operate, and are integrated within national policies. These variations make HTA processes unique, resulting in different levels of use, implementation and impact on the decision-making process and final coverage decision.

HTA; THE CONTEXT, ROLE AND PRACTICES

Role of HTA in health policy and decision-making

HTA could have an advisory, a regulatory or a coordinating role in the decision-making process, based on the objective and type of assessment at hand [16] [17]. It is concerned with the medical, organizational, economic, and societal consequences of implementing technology and interventions in health system.

The increasing relevance of HTA has reshaped the way clinical pharmaceuticals are designed and entered market [18].

HTA is being transformed, as part of its development in some countries, beyond the supportive role for macro-level policy making to a management tool for healthcare facilities and providers [19].

The development of science and technology and changing role of vulnerable people in the public and policy sphere are highlighted by academics as challenges faced by HTA [20].

HTA has been emphasized as an important instrument to guide health policy in rational decision making and in planning resource allocation [21]. Health policy makers rely on HTA in pricing and reimbursement processes, with better guarantee for greater value for payers' money [22]. World Health Organization [23] and Global Development Agencies [24] are some leading organizations encouraging and recommending HTA as a tool for priority-setting for resource allocation in health care.

The exact influence of HTA reports on the decision-making process in the health sector has not been fully studied due to barriers such as lack of valid designs, methods, and assessment tools [25].

A National HTA strategy aims to establish a solid evidence-based foundation for decision making for the introduction and utilization of health technologies at all levels in the health care system and to ensure that HTA will be an integral to routine decision making for planning and operational policy within it [26] [27]. Many HTA agencies in developed countries have mechanisms in place for seeking input from public in their processes.

The multifaceted nature of HTA warrants approaches such as multicriteria decision analysis [MCDA] to help minimize the potential conflicts within HTA data enabling assessment of several decision criteria simultaneously [28]. A combination of HTA with MCDA is expected not only to facilitate rational policy decision-making but also to enhance the legitimacy of policy decisions by improving the transparency and inclusiveness of the process.

Health Technology assessment and evidence-based Medicine (EBM)

Evidence of safety, efficacy, patient-reported outcomes, real-world effectiveness, cost, and cost-effectiveness are among the properties of an intervention or technology assessed in HTA [29]. EBM has been defined as the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients [30]. The movement of EBM, led by clinicians and clinical epidemiologists look to link evidence to medicine for improved quality and effectiveness in patient care. The implications related introduction of new treatment strategies are evaluated thorough HTA approach, with a special attention on sustainability and social factors associated with its implementation [31]).



The practice of EBM depends on the strength of evidence and strength of recommendation and is based on analysis of both evidence and outcome. The HTA process could be considered as an extension of the EBM process with the addition of analysis of cost/effectiveness and appropriateness [32].

Hospital Based Health Technology Assessment

Hospital Based Health Technology Assessment (HB-HTA) was implemented in Poland as a new policy to ensure a more practical and contextualized assessment related to the use of specific medical procedures and devices. The process of the implementation and further development of HB-HTA was studied and it was concluded that strengthening the autonomy of hospitals and enhancing decision-making space were crucial factors to its success [33].

In 2007, Health Technology Assessment International (HTAi) adopted a conceptual model with the aim of reducing the variability of organizational solutions about HTA in hospitals, which identified four different categories: Ambassador Model, Mini-HTA, HTA Unit Model and Internal Committee. The classification was based on the focus of action and organizational complexity [34].

In Ambassador model physicians are recognized as opinion leaders to act like ‘ambassadors’ of the HTA message focused on clinical practice. Ambassador model has been reportedly practiced in countries such as Canada [35] and Sweden [36].

Mini-HTA is performed through a check list with questions regarding the prerequisites for and consequences of health technologies [37]. Mini-HTA in hospitals is found to balance the need for quality and depth with the limited time and resources for assessment [38]. The value of the mini-HTA had been demonstrated in South African public hospitals where it was used to develop a customized tool to support decision making with purchasing the medical devices [39].

The establishment of hospital based HTA units is seen as a strategy to improve the relevance and timeliness of HTA recommendations [40]. HTA Unit’s scope is to provide sound evidence on technology acquisition issues while formulate locally appropriate policy recommendations [41]. Based on the level of formalization or specialization and the degree of integration with the environment, different types of hospital based HTA units are identified; the independent group, the integrated-specialized units, the standalone units, and the integrated-essential units [42].

The internal committee in HTA usually consists of an ad hoc multidisciplinary group which represents multiple perspectives and in charge of reviewing evidence and making recommendations to the organization [43].

CHALLENGES

The quality of the evidence used in HTA reports is of utmost importance for accurate decision-making processes and their legitimacy. The mismatch between characteristics of the evidence used in recommendation reports and relevant mandates is problematic in decision-making processes which starkly highlights the need of in-depth studies on the factors that influence the type of evidence used in decision-making processes in order to contribute to the development of better practices and policies [44].

While role of HTA in policy making is being increasingly established in European Union countries, there are doubts still whether the currently adopted methodological framework for HTA does not fully encounter the challenges rising from different types of health technologies, such as medical devices [45].

Medicinal products dedicated to treat rare diseases are eligible to receive an orphan designation by regulators, which are then referred to as Orphan Medicinal Products (OMPs), and benefit from incentives that allow expedited authorization with more limited evidence than other commonly used medicinal products [46]. However, as their reimbursement often depends on HTA recommendations, patients’ automatic access to the treatments is limited. When economic evaluation is used in HTA, OMPs often fail to meet standard cost-effectiveness criteria due to their high acquisition costs and the uncertain evidence-based produced, and so would fail to gain recommendation for coverage [47] [48].

It is reported that 80% of HTA bodies all over the world are in high income countries and most of them are European [49]. Most developing countries and resource-limited settings lack HTA systems [50]. Models that are relevant and applicable in high-income countries are less likely to succeed in economically nonstable settings. It was revealed that resource-constrained contexts in the Global face common barriers in strengthening and developing HTA systems such as, minimal HTA expertise, weak health data infrastructure, rising healthcare costs, fragmented healthcare systems and increase in non-communicable diseases [51].

A major challenge for HTA in the future would be bridging the gap between evidence and health policy and practice which necessitates a mechanism to hold decision makers accountable for making use of evidence [2].



WAY FORWARD

The globalization and wider dissemination of HTA efforts have helped curb some of the challenges of HTA, such as the research wastage due to duplication of effort [53].

There were concerns raised during the recent Covid 19 pandemic that despite the huge efforts to synthesize evidence base, there was no guarantee that the attention paid by political leaders globally, to the evidence reports produced were adequate [54]. However, a growing interest in the use of real-world data (RWD) in HTAs is observed by researchers. The RWD gathered in administrative databases and repositories are recognized as the potential sources of real time evidence that can be used in HTAs [55]. The need to build research capacity to deal with RWD is a likely focus for HTA researchers in the future for them to be able to capitalize on the potential of RWD to inform modern healthcare decision making.

CONCLUSION

The systematic use of evidence to inform healthcare decisions via HTA has gained increased recognition worldwide. HTA has become a standard policy tool that inform decision makers in managing the entry and use of pharmaceuticals, medical devices, and medical technologies within health systems. Amidst ever increasing popularity of HTA, the attempts to comprehensive synthesis of good practices in HTA seems inadequate. The inequal distribution of HTA facilities among nations and resulting poor decision-making processes shouts the need for alternative mechanisms to support resource poor settings in the purview.

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Cite this Article: Mallawarachchi S.M.N.S.M., Maduragoda A.P., Shemko Mike, Panapitiya P.W.C. (2022). Health Technology Assessment: The context, Practices and Challenges- A Mini Review. International Journal of Current Science Research and Review, 5(9), 3788-3794