

HEALTH TECHNOLOGY ASSESSMENT: FROM SUSTAINABILITY TO INNOVATION

PATRIZIA BELFIORE, ALESSANDRA SORRENTINI, ANTONIO ASCIONE
Parthenope University, Via Medina, 40 - Naples, Italy

ABSTRACT

Technological innovation has yielded truly remarkable advances in health care during the last five decades. The proliferation of health care technology and its expanding uses have contributed to burgeoning health care costs. The development, adoption, and diffusion of technology are increasingly influenced by a widening group of policy makers in the health care sector.

Health Technology Assessment (HTA) is a multiprofessional and multidisciplinary evaluation approach designed to assess health technology in the broadest sense of the term, from its instruments to the rearranging of its organizational structures. It is by now an established methodology at national and international levels that involves several medical disciplines thanks to its versatility.

Keywords: Health Technology Assessment, Innovation, Sustainability.

DOI: 10.19193/0393-6384_2020_1_64

Received February 20, 2019; Accepted November 20, 2019

Introduction

Italy spends significantly less on health than other European countries most directly comparable with ours and the current gaps show a trend that tends to grow over time. According to some experts, innovation will be the investment that will make the health system sustainable in the future, dispelling the conviction that innovation is generating additional costs. As known, the term innovation takes on different meanings - novelty, progress, improvement, technology - but it is worth pointing out that not everything that is new is innovative: to be so, innovation must be decisive in terms of "problemsolving", i.e. it must decisively contribute to solving the problem.

The most consolidated definition of innovation is that provided by Omachonu VK and Einspruch NG according to which "*Health care innovation can be defined as the introduction of a new concept, idea, service, process, or product aimed at improving treatment, diagnosis, education, prevention and research, and with the long-term goals*

of improving quality, safety, outcomes, efficiency and costs"⁽¹⁾. The more innovative a new technology, the more it needs an appropriate and rational process of dissemination, a route that cannot fail to take into account the issues of information and decision-making systems and then neglect the limited availability of financial resources.

The successful introduction of the positive dissemination process of an "innovation" is closely related to the existence of actual requirements^(2,3). First of all effectiveness, considered a precondition to be assessed not only in terms of benefits generated for individuals but of advantages for the community that will enjoy them. Conversely, requirements are the sense of acceptance by the operators working in the sector (their sharing with users that in turn will help to spread them) and especially the perception of usefulness in terms of the relationship between the system of benefits that the new technology will be able to generate and the availability of resources and services (the concept of cost-effectiveness)⁽⁴⁾

Ensuring appropriate care through the proper allocation of available resources is possible via the appropriate management of health care pathways. For years, the demand for medical services has been uninterrupted and progressively increasing as people - concerned about their health and well-informed about it - ask for well-performing and expensive treatments. It follows that the resources available appear increasingly unable to "keep pace", surely failing to adequately meet people's needs. In a short time a cultural devolution took place. The concept according to which "all effective treatments should be free" became that of Williams, according to which "all free treatments should be only those that proved cost-effective"^(5,6).

Clinical governance imposed new answers in terms of openness and accountability on the institutional and organizational model, which then led to new transparency obligations in organizational processes by involving the entire delivery system of health services, including clinical governance instruments. Following the consolidation of clinical governance, the idea took hold - and later became a conviction - of a principle according to which, and contrary to what happened for years, it was no longer possible to guarantee "everything to everybody" but, because of increasingly insufficient economic resources, it was necessary to offer the "best" to those who really need edit^(7,8).

The evolution of Health Technology Assessment

There are different definitions of TA and HTA

- Technology assessment (TA) is a category of policy studies, intended to provide decision makers with information about the possible impacts and consequences of a new technology or a significant change in an old technology. It is concerned with both direct and indirect or secondary consequences, both benefits and disbenefits, and with mapping the uncertainties involved in any government or private use or transfer of a technology. TA provides decisionmakers with an ordered set of analyzed policy options, and an understanding of their implications for the economy, the environment, and the social, political, and legal processes and institutions of society (Coates 1992).

- Technology assessment is a form of policy research that examines short- and long-term social consequences (for example, societal, economic, ethical, legal) of the application of technology. The

goal of technology assessment is to provide policy-makers with information on policy alternatives (Banta 1993).

- Health technology assessment considers the effectiveness, appropriateness and cost of technologies. It does this by asking four fundamental questions: Does the technology work, for whom, at what cost, and how does it compare with alternatives? (UK National Health Service R&D Health Technology Assessment Programme 2003)

- Health technology assessment ... is a structured analysis of a health technology, a set of related technologies, or a technology-related issue that is performed for the purpose of providing input to a policy decision (U.S. Congress, Office of Technology Assessment 1994).

- [HTA] is a multidisciplinary field of policy analysis. It studies the medical, social, ethical, and economic implications of development, diffusion, and use of health technology (International Network of Agencies for Health Technology Assessment 2002).

- HTA evaluates health technologies, based on available evidence, according to a systematic and scientific approach, with the aim of answering a specific policy question investigating all areas of assessment (clinical, organizational, economic, ethical) needed to make health policy decisions. In practical terms, to evaluate a technology, first of all it is necessary to "measure" it at a level of scientific evidence (verifying the supporting clinical testing quality, endpoint strength, choice of comparators) and then examine through empirical studies its therapeutic effect compared to the existing assistance to determine the ratio of incremental cost-effectiveness compared to the reference standard (technology used). According to Battista, in this manner the outcome of the assessment process will be able to provide decisionmakers with information about all the possible consequences⁽⁹⁾.

The essence of the HTA consists of the literature produced by the team that helped to create it, whether it is prepared in the form of a structured relationship or in a more streamlined format (mini HTA, little ticket HTA, guidelines, recommendations). In any case, the material produced should always provide answers to four specific questions: whether the technology works, who it is aimed at, if it is problemsolving and if it is cost-effective in the medium to long term⁽¹⁰⁾. HTA is therefore, in short, a multidisciplinary assessment aimed at preventing the delivery of ineffective, inappropriate

or unnecessary performance, limiting the expenditure and improving the overall quality of medical care. Such a “tool” is usually depicted as a moving boundary between science (knowledge) and decisionmaking (choices); a bridge between the acquisition of evidence (efficacy, safety, cost-effectiveness, organizational, social and ethical impact) and the resulting impact on three levels: macro (central government), medium (company/hospital), and micro (individual user/clinical practice). If HTA has the task to assess the technologies in terms of effectiveness and economic sustainability, Horizon Scanning (HS), has the apparently ancillary task to identify emerging technologies. HS is a process aimed at assessing a technology in the short time before it becomes customary, and represents an essential tool to filter the continuous demands to introduce innovative technologies. Therefore, HS can be, more than any other, the component that is assigned the task of transferring the results of basic research to clinical practice, checking early effectiveness, appropriateness and organizational impact and, at the same time, the efficiency and the economic and ethical impact⁽¹¹⁾. The HS analyst, identified as a “nexialist”, is assigned the role of making the two “worlds” communicate (research and clinical practice).

Therefore, HTA and HS, as assessment instruments, must be considered real filters between the need for health and innovative health technologies; the means by which to meet the needs of the community, and ensuring patients rapid access to the new potentially effective health technologies, together with the best cost/benefit ratio. HTA and the HS, in accordance with the “innovation” concept, are the tools that more than any other can give it value because they are able to verify the correspondence between sustainability, appropriateness and cost effectiveness of care and treatments. HTA and HS are measures of social value, in terms of benefits to the public health, “weighted” through economic benefits generated by treatments capable of slowing down the degeneration processes and to reducing the use of drugs, hospitalizations and surgeries⁽¹²⁻¹⁴⁾.

Over the years, HTA and HS objectives expanded so as to include clinical procedures and organizational and innovative management systems, but also prevention and health promotion programs. HTA and/or HS today, therefore, mean any form of knowledge applied to health care and every action aimed at improving a system performance. In par-

allel, information tools were expanded and refined for the assessment, with a growing emphasis on multidimensionality and multidisciplinary, especially with regard to innovations in the organizational field⁽¹⁵⁾.

Methodological developments make HTA a useful tool for the governance of technological innovation in health services and for the adoption of appropriate and effective clinical and organizational practices. However, to make this happen it is necessary to integrate the scientific assessment in government processes at different levels and in relation to the different operational stages, ranging from scheduling to the provision of services and benefits to citizens. With this in mind and considering the HTA peculiarities, it is understandable that this instrument may be suitable for reorganizing differentes sector of medical science with the rationalization of resources in accordance with performance effectiveness. The need for reorganization was born from the deep historical and social change that characterized the last few years and saw the NHS increasingly subjected to restrictions due to the scarcity of available economic resources^(16,17).

Conclusions

The Health Technolgoey Assessment (HTA) represents a powerful tool for linking the technical-scientific and decision-making spheres, actually made to determine, in an objective manner, which technologies are inefficient, when their use is appropriate and what they damage " quality-price ratio ". The variable and complex nature of health technologies, combined with the limited national budget, has given rise to the contrast between the need to provide cost-effective care and the enhancement of research and innovation to internal of hospital structures. It has become increasingly important to seek a balance between equitable and sustainable care on the one hand and the use of innovative health technologies on the other. In short, HTA manages to combine the needs of healthcare innovation and system sustainability.

References

- 1) Omachonu VK, Einspruch NG. Innovation in health-care delivery systems: a conceptual framework. *Innov J* 2010; 15: 1-20. 5.
- 2) Henshall C, Schuller T; HTAi Policy Forum. Health technology assessment, value-based decision making, and innovation. *Int J Technol Assess Health Care* 2013; 29: 353-9.
- 3) INAHTA-International Network of Agencies for Health Technology Assessment. Available at: <http://www.inahta.org>. Accessed 20 June 2011.
- 4) Trento Charter on Health Technology Assessment in Italy. Available at: <http://www.sihta.it/carta-di-trento>
- 5) Favaretti C, Cicchetti A, Guarrera G, Marchetti M, Ricciardi W. Health technology assessment in Italy. *Int J Tech Assess Health Care* 2009; 25(Suppl 1): 127-33.
- 6) Kristensen FB, Sigmund H, editors. Health technology assessment handbook copenhagen: Danish Centre for Health Technology Assessment, National Board of Health, Denmark, 2007.
- 7) Borowski HZ, Brehaut J, Hailey D. Looking evidence from health technology assessment to policy and decision making: the Alberta model. *Int J Tech Assess Health Care* 2007; 23: 155-61.
- 8) Battista RN. The evolving paradigm of Health Technology Assessment: reflections for the millennium. *Can Med Assoc J* 1999; 160: 1464-7
- 9) Cicchetti A, Marchetti M, editors. Manual health technology assessment. Roma: Il Pensiero Scientifico Ed, 2010.
- 10) Angelis, A., Lange, A., Kanavos, P.: Using health technology assessment to assess the value of new medicines: results of a systematic review and expert consultation across eight European countries. *Eur J Health Econ* 19, 123-152 (2018)
- 11) Nicod, E.: Why do health technology assessment coverage recommendations for the same drugs differ across settings? Applying a mixed methods framework to systematically compare orphan drug decisions in four European countries. *Eur J Health Econ* 18(6), 715-730 (2017)
- 12) Marsh, K., et al.: Multiple criteria decision analysis for health care decision making-emerging good practices: report 2 of the ISPOR MCDA emerging good practices task force. *Value Health* 19(2), 125-137 (2016)
- 13) Baltussen, R., et al.: Value assessment frameworks for HTA agencies: the organization of evidence-informed deliberative processes. *Value Health* 20, 256-260 (2017)
- 14) Wiseman, V., et al.: Using economic evidence to set healthcare priorities in low-income and lower-middle-income countries: a systematic review of methodological frameworks. *Health Econ* 25(S1), 140-161 (2016)
- 15) Angelis, A., Kanavos, P.: Multiple criteria decision analysis (MCDA) for evaluating new medicines in health technology assessment and beyond: the advance value framework. *Soc Sci Med* 188, 137-156 (2017)
- 16) Gallè, F., Di Onofrio, V., Romano Spica, V., Mastro-nuzzi, R., Russo Krauss, P., Belfiore, P., Buono, P., Liguori, G. (2017). Improving physical fitness and health status perception in community-dwelling older adults through a structured program for physical activity promotion in the city of Naples, Italy: A randomized controlled trial. *Geriatr Gerontol Int.*
- 17) Belfiore, P., Miele, A., Gallè, F., Liguori, G. (2017). Adapted physical exercise and stroke: a systematic review. *J Sports Med Phys Fitness. Minerva medica.* doi: 10.23736/S0022-4707.17.07749-0

Corresponding Author:

PATRIZIA BELFIORE

Parthenope University (Naples)

E mail: patrizia.belfiore@uniparthenope.it

(Italy)