Health technology assessment to inform allocation of healthcare resources

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Rising healthcare costs are increasingly associated with multiple factors, such as continuous innovation, rapid generation and incremental improvement of medical technologies, changes in societal values and increases in public expectations, leading to a difficult decision-making environment for investment in technologies. Formal assessment of health technologies could aid decisions about health resource allocation for the management of health technology (such as drugs and devices). Additionally, multiple criteria, such as societal values and patient preferences, should be included in the decision-making process of policy-makers. One way to include these criteria is to use multi-criteria decision analysis to support the assessment of health technologies, as it is deemed an efficient and effective methodology that has a sustainable impact on population health.

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Frameworks exist to assess the value of different medical devices and equipment to inform healthcare resource allocation.[1] Since the 1900s, there has been an increase in healthcare costs, continuous innovation, rapid generation and incremental improvement of medical technologies,[2] changes in societal values and an increase in public expectations, leading to a difficult decision-making environment for investment in technologies. However, health systems need to demonstrate value for investments, and ensure efficiency. This can be overcome by assessing technologies (Fig. 1) to eliminate low-value services and those that are (cost-) ineffective, by taking into consideration ethical, societal, organisational and legal issues within the limits of available resources in the country or local setting.

Recommendation

Decision-making in the allocation of healthcare resources is a continuous process from evidence generation to deliberation, and communication of the decision made. Health technology assessment (HTA) could play an important part in this process, whereby the available evidence is assessed to inform decision-makers about the most efficient use of resources.[3] HTA refers to the 'comprehensive, systematic evaluation of assumptions for, and consequences of, the application (initial and continued) of health technology … an in-depth scientific analysis forming the basis of policy, as a systematic process in planning and operational policy'.[4]

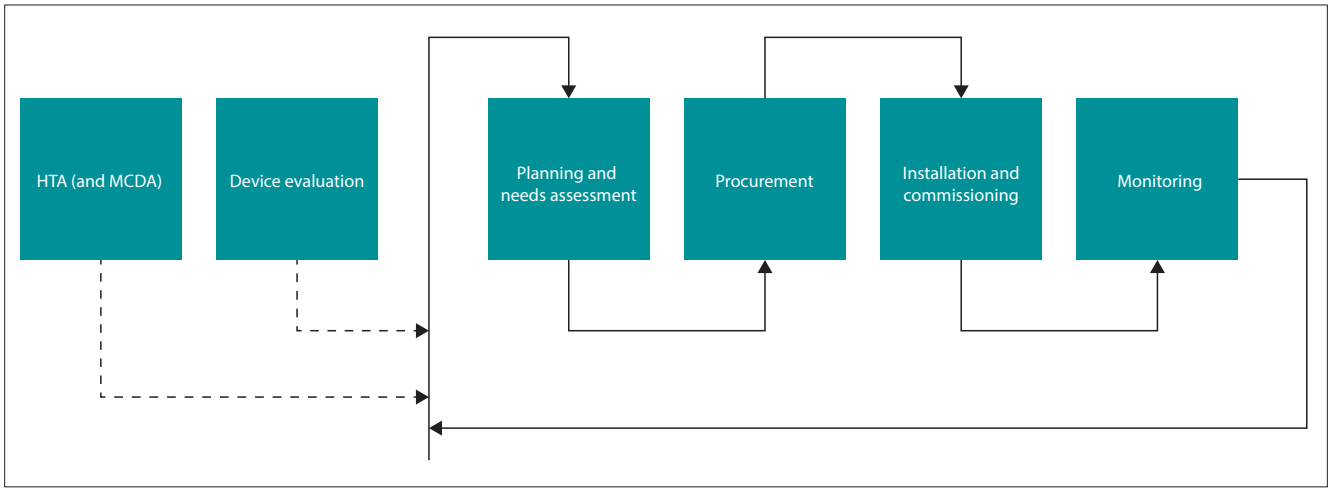

Fig. 1. Summary flow chart of standard procurement procedures. (HTA = health technology assessment; MCDA = multi-criteria decision analysis.)

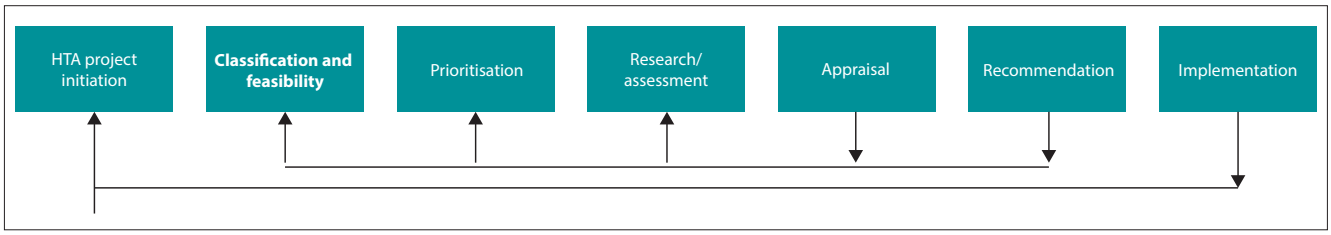

Fig. 2. Proposed health technology assessment (HTA) process.[4]

The HTA process (Fig. 2) incorporates a number of elements, e.g. scoping, engagement of key stakeholders throughout the process, etc., leading to effective decisions on resource allocation in healthcare. Additionally, 'multi-criteria decision analysis' (MCDA) can be used to support HTA, as it offers specific ways to consider comprehensive benefits to help individuals or groups[5] to inform decisions for different purposes, such as funding or reimbursement and coverage or procurement (Fig. 1). Furthermore, MCDA establishes the performance of interventions by depicting the relevant criteria as a performance matrix, and analysing them qualitatively or quantitatively to rank the different interventions.[6]

The following section describes a four-step approach to this process: (*i*) nomination of interventions/health problems; (*ii*) selection of certain interventions/health problems; (*iii*) HTA of interventions selected; and (*iv*) appraisal of interventions.

As a pre-step, selection of an expert panel takes place, to conduct the first and second steps. Participants of the consultation panel are identified and selected according to their professional expertise, and could include the following stakeholders: policy-makers, health professional associations, health professionals, academics, patient groups, civil society, industry, international organisations and the general public.

Step 1: The consultation panel, which now include diverse stakeholders, would at first decide on and rank the selection criteria relevant to the context of South Africa. The following criteria, which were also stated in the National Department of Health National Health Technology Strategy document,[4] have been found to also be used internationally:[7] burden of disease; severity of disease; size of population affected; effectiveness of the intervention/health problem; substantial variation in practice; potential to improve health benefit/patient outcomes; cost of the intervention/health problem; public or political demand; equity/ethical and social impact; and economic impact. Proposals on three interventions chosen in accordance with the selected criteria, together with necessary supportive documents, are requested from the members of the panel.

Step 2: If need arises, additional experts should be invited to the panel. The panel members would need to agree on a definition of each criterion, and establish a measurement value for each.

For example, the panel could decide to score the performance of each intervention on each criterion on an ordinal scale of 1 - 10 (or 1 - 5, depending on the number of criteria). All criteria could have the same or different weights. While selecting the interventions, it would be advisable to form a working group (WG) that excluded certain stakeholders, such as industry or policy-makers, who might have a potential conflict of interest.

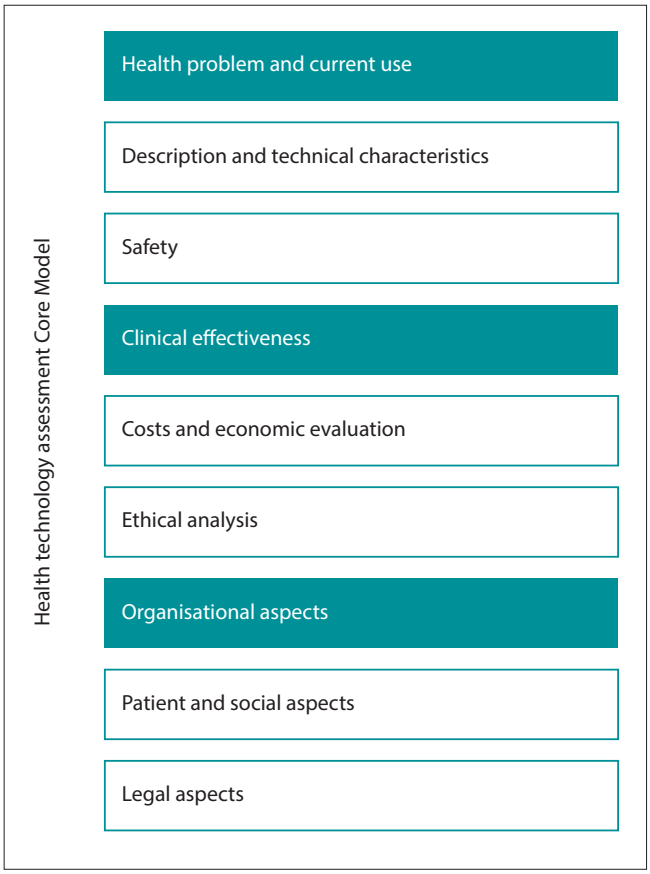

Fig. 3. Domains of the EUnetHTA [European network for Health Technology Assessment] Core Model.[8]

The WG would then review the nominated interventions/health problems against the selected criteria, and present them to the panel. On inspection and deliberation, a certain number of interventions/health problems would be chosen to be the subjects of detailed assessment.

Step 3: Fig. 3 represents the domains used in the EUnetHTA [European network for Health Technology Assessment] Core Model,[8] which was developed by the members for its members. The model provides a standard method for evidence synthesis to be presented in a structured and standardised format.[9]

The WG would use the principles of MCDA to score and assign weights to each domain, and thus select domains to assess the individual interventions. The WG would also look into the domains more closely and explore gaps in the information collated in step 2, which is examined in this step. Detailed assessments are carried out.

Step 4: Fig. 4 illustrates the four different steps leading to a HTA report. The results of the assessment are presented to the panel for appraisal. The appraisal criteria (clinical and cost effectiveness, budget impact, ease of implementation and ethical and social issues) would need to be agreed upon and used to decide on the interventions that would be recommended for the allocation of resources.

Fig. 5[10] depicts the integrated approach to decision-making, encompassing assessment, appraisal of the recommendations and the actual decision-making.

These steps would assist in rational decision-making in terms of allocation of healthcare resources in a more effective and efficient way, considering various criteria, which at the end would have sustainable impacts on the population.

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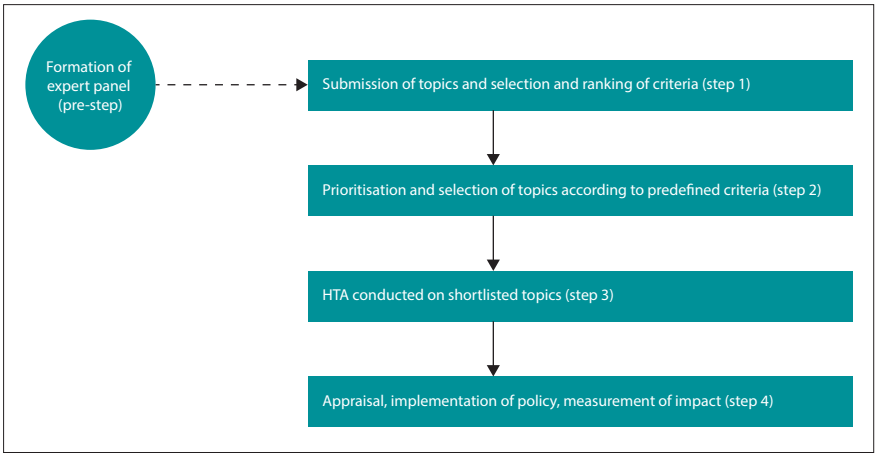

Fig. 4. Modified health technology assessment (HTA) process.

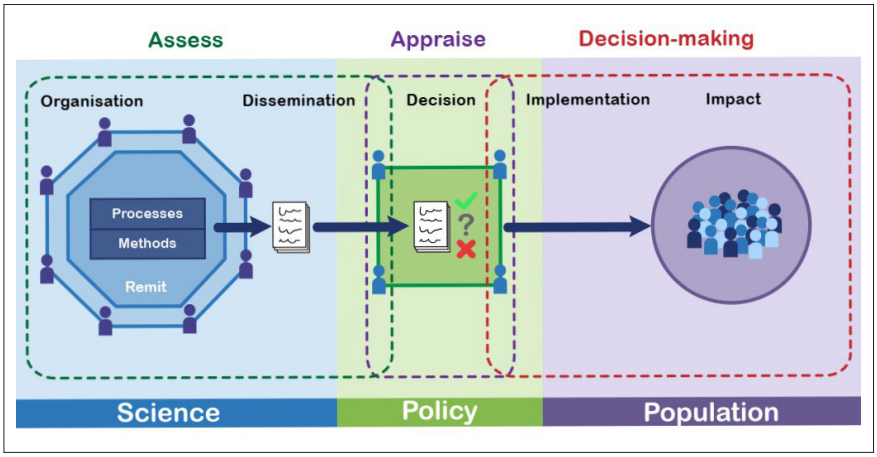

Fig. 5. Integrated approach to health technology decision-making.[10]

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