Tanaffos (2006) 5(3), 9-12

Health Technology Assessment: Lessons to Learn

Mubashar Sheikh [1], Ehsanullah Tarin [2]

[1] Representative for the World Health Organization in the Islamic Republic of Iran, [2] Health Policy and System Specialist, World Health Organization Representative Office in the Islamic Republic of Iran.

INTRODUCTION

In this paper we define and classify the health technologies in order to map its range of use in health care. Given the technology impacts on the performance of health systems, it is explored further, highlighting the importance of assessing it before selection, acquisition and use. Examples are presented from the developed countries where they have taken steps for the institutionalisation of health technology assessment (HTA). We also assess the new developments in this regard. The Iranian health system is also assessed, emphasising the importance of HTA particularly in the context of health sector reforms.

HEALTH TECHNOLOGY

Health technology is defined as "the devices, drugs, medical and surgical procedures and knowledge associated with their use in the prevention, diagnosis and treatment of diseases as well as in rehabilitation, and the organisational and supportive systems within which the care is provided" (1). Health technology encompasses a wide array of materials, gadgets, procedures and the associated knowledge classified into various categories as seen in figure 1 (2).

Correspondence to: Dr. Mubashar Sheikh
Address: World Health Organization Representative Office in the Islamic Republic of Iran, P.O.Box:14665-1565, Tehran-Iran.
Email address: mubashar@ira.emro.who.int
Received: 31 October 2006
Accepted: 23 December 2006

Furthermore, the existing technologies continue to be modified. For example, the 10th edition of "International Classification of Diseases" contains 10,000 disease categories, each having about 10 interventions for each. That is, for any new technology or the change occurring, one has to take stock of the existing 100,000 interventions (3).

The impact of new health technology on health systems

The technologies, including health technology that also encompasses medical technology are changing rapidly and the commercial interests are pushing for their introduction into the health systems. Added to this are the changing demography and epidemiology, and growing expectations of health care workers as well as patents and the general public. As a result, for example, about 50 new drugs are added to the existing inventory every year (ibid).

This proliferation of technology has outpaced the developments capacity of the health system particularly in the developing countries (to effectively select, deploy, support, manage and utilize it). As a result, while it contributes to increasing the cost of services and often impacting the peoples' access of patients to health services, and raises equity issues. It often puts a heavy burden on the national health systems and services, rather than bringing anticipated benefits. In this regard, it is useful to refer to the iceberg phenomenon of health technology. Accordingly, the purchase price clearly known to the buyers is merely the tip of the iceberg

relative to the other costs involved (figure 2) (4).

Policy-makers while deciding about a particular technology should take into view the other costs such as staff, maintenance, overheads etc. Therefore, investment decisions related to health technology are critical as they are generally irreversible, committing large amounts of money. Unfortunately, due to the weak economy in many countries, the hidden elements of the cost are often missed, leading to increasing constraints on the resources available to the health system. Such considerations make a case for evaluating the technologies prior to their selection purchase and acquisition.

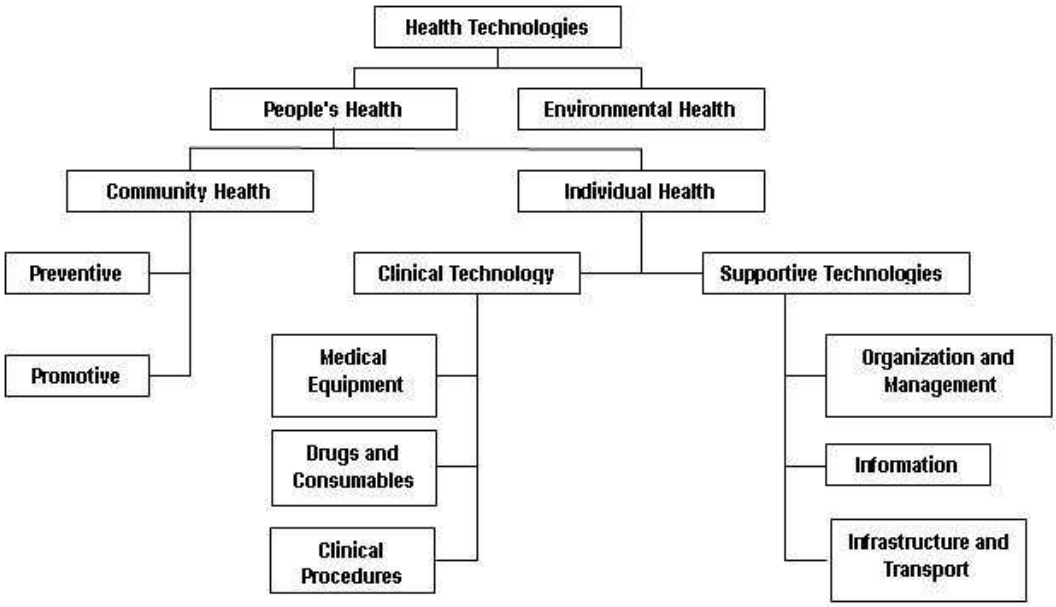

Figure 1. Categories of Health Technologies

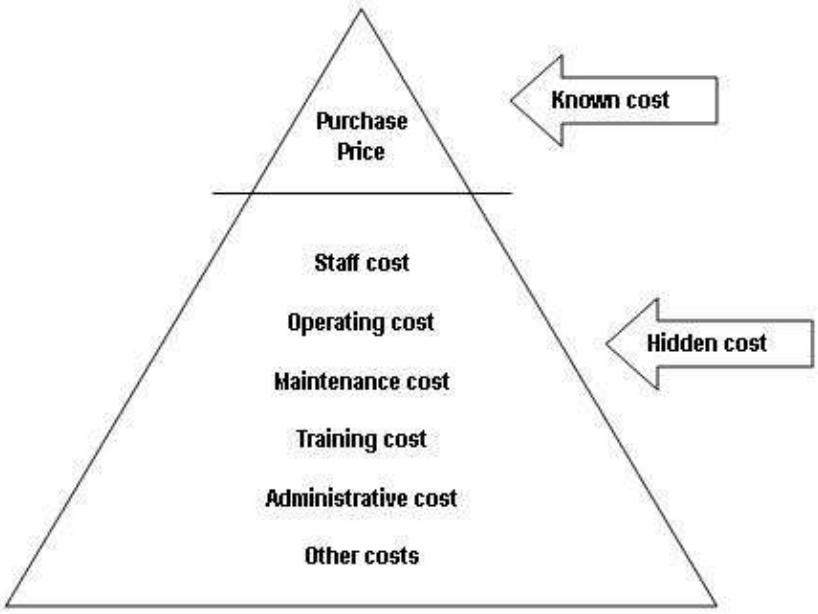

Figure 2. The known and hidden elements of the cost

Health technology assessment

The concept of health technology assessment (HTA) is not new; it can be traced to a Bayes's theorem published in 1763. The definition of HTA suggested (based on Baysian method) that HTA is "the explicit quantitative use of external evidence in the design, monitoring, analysis, interpretation, and reporting of a health technology assessment" (5). In recent years; however, HTA received much wider attention consequent to a statement by a US congressman who identified technology assessment as a form of policy research that assesses the impact of alternate courses of action, and presents findings (6). Since then, there has been increasing interest in HTA, due primarily to the technology explosion and a larger portion of the gross national product being spent on health care. Another reason was to reduce health expenditure to combat the increasing national debt (7).

HTA involves the evaluation of everything in the health system including the health systems per se, aiming to provide evidence on health technology informing policy-makers in their safety, effectiveness, ethics, impact of the quality of life, and cost-effectiveness (7). However, it is important to understand that HTA is not a mere research, rather it is distinguished by four features: contribution of scientific inquiry to policymaking, i.e. bridging between science and policy; interdisciplinary form in nature; contribution to decision making by integrating information from a variety of sources including generation of primary data; and transparency as evidenced by the dissemination and communication of information (6). The ultimate challenge of the exercise, as Stevens et al. 1999, (3) emphasise is to provide answers to the following queries:

- Which patients will benefit the most?
- What is the benefit and harm ratio?
- What value do the technologies offer for money?
- How affordable are they?
- Is it appropriate for them to be provided by a particular health system?

Institutionalization of health technology assessment

Many countries have institutionalized the health technology assessment; the most popular being the National Institute for Clinical Excellence in the United Kingdom set up in 1999. Its role is to provide guidance on the best practices to the patients, professionals and the public by appraising new technologies, produce or approve guidelines, and to contribute to improving the quality of care. This is an independent body, although its decisions are subject to appeal by the companies sponsoring a particular technology, professionals, departments of health etc. (8). Other examples are the Canadian Coordinating Office for Health Technology Assessment and the Health Technology Assessment International and others. In fact, currently there are over 40 such agencies organized in a global network of Agencies for Health Technology Assessment.

While HTA, per se, evaluates the existing and established technologies, horizon scanning is about the assessment of new emerging technologies early in their life cycle and involves: identification of new technologies; priority setting for assessment; assessment of the selected technologies; and dissemination of information to decision makers. But this process in not linear, instead it is iterative and the scanner has to go back and forth between different stages. While the Netherlands was among the first countries to have such an establishment, many countries in the world have such agencies often as part of the HTA institution (9).

The situation in Iran

Iran spends about 6.5% of its GDP on health, which is higher than the regional average, but in terms of health systems performance it lags behind many countries. For example, relative to other countries of the world with comparable income, Iran's IMR (Infant Mortality Rate) is slightly lower (figure 3)(10). The question arises why the input being made in the health system is not being transformed into a better performance? The initial results of a study on health technology assessment

conducted under a health sector reform project revealed that while the new health technologies are being selected and acquired, there are no robust mechanisms for their assessment (11). Although, the Office of the Deputy Minister for Food and Drugs has established a drug formulary for different levels of health care and a mechanism has been established for registering new drugs, in order to address issues highlighted by the study, it is suggested that Iran undertakes the following (4):

1. A comprehensive country situation analysis on health technology.
2. Formulate and adopt a National Health Technology Policy.
3. Develop a strategy and master plan for Health technology Policy implementation.
4. Establish a permanent structure for Health Technology Assessment.
5. Build a capacity for Health Technology Assessment.
6. Introduce into everyday practice Health Technology assessment, planning and management tools developed by the World Health Organization.

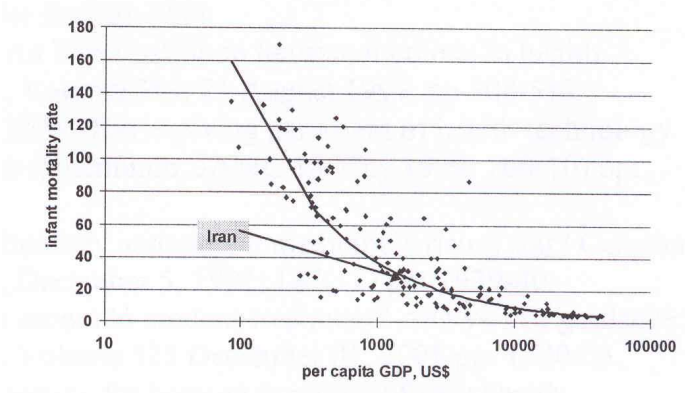

Figure 3. Global Trends in IMR, mid 1990s

As a result of advocacy, the Ministry of Health and Medical Education has taken some significant steps. A Health Technology Assessment Unit has been established in the Shaheed Beheshti University of Medical Sciences, while the Office of the Deputy Minister for Health Affairs is taking measures to join the move. However, for the Iranian health system it is still a long way to go to institute a system capable of providing an evidence-based appraisal of technologies before their introduction into the health care system.

REFERENCES

1. Office of Technology Assessment. Assessing the efficacy and safety of medical technologies, Government Printing Press, United Sates, Washington DC 1978.
2. Adapted from Issakov A. Health Technology Assessment, Report of a short terms consultancy conducted under Health Sector Reforms Project, National Health Sector Reform Unit, MOH&ME 2005.
3. Stevens A, Milne R, Lilford R, Gabbay J. Keeping pace with new technologies: systems needed to identify and evaluate them. ***BMJ*** 1999; 319 (7220): 1291.
4. Adapted from Issakov A. Health Technology Assessment, presentation made during a short terms consultancy conducted under Health Sector Reform Project, National Health Sector Reform Unit 2005.
5. Spiegelhalter DJ, Myles JP, Jones DR, Abrams KR. Methods in health service research. An introduction to bayesian methods in health technology assessment. ***BMJ*** 1999; 319 (7208): 508- 12.
6. Battista RN, Hodge MJ. The evolving paradigm of health technology assessment: reflections for the millennium. ***CMAJ*** 1999; 160 (10): 1464-7.
7. Huston P. Is health technology assessment medicine's rising star? ***CMAJ*** 1992; 147 (12): 1839- 41.
8. Raftery J. NICE: faster access to modern treatments? Analysis of guidance on health technologies. ***BMJ*** 2001; 323 (7324): 1300- 3.
9. Douw K, Vondeling H, Oortwijn W. Priority setting for horizon scanning of new health technologies in Denmark: views of health care stakeholders and health economists. ***Health Policy*** 2006; 76 (3): 334- 45.
10. The World Bank, quoted in Schieber G, Health Financing Reform in Iran: profile and possible next steps, Washington DC, USA 1999.
11. National Health Sector Reform Unit, The system for the selection and use of health technologies in the Iranian health system: an APW report prepared under Health Sector Reform Project 2006.