



DEPARTMENT OF GLOBAL HEALTH

UNIVERSITY *of* WASHINGTON

Introduction to Health Technology Assessment

Lou Garrison, PhD

Professor, Departments of Pharmacy, Global
Health, and Health Services

University of Washington



UW Medicine
SCHOOL OF MEDICINE



SCHOOL OF PUBLIC HEALTH
UNIVERSITY *of* WASHINGTON

Technology

- **Definition:** The application of scientific or other organized knowledge – including any tool, technique, product, process, method, organization or system – to practical tasks.
- In health care, technology includes: drugs; diagnostics, indicators and reagents; devices, equipment and supplies; medical and surgical procedures; support systems; and organizational and managerial systems used in prevention, screening, diagnosis, treatment and rehabilitation.

What is HTA? Some Definitions

- 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 ... 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).

Technology Assessment

- The field of technology assessment has developed as an aid to policy making about health care technology.
- Technology assessment exists to provide information to policy makers in order to inform decisions about the adoption and diffusion of health care technology.
 - The hope is that technology assessment will make decisions much more rational and much less subjective
 - The reality is that appointed or elected decision-makers use a broad mix of evidence, experience, emotion and bias to make decisions.

Health Technology Assessment (HTA)

- The structured analysis of health care technologies performed for the purpose of providing input into regulatory, coverage/formulary, and reimbursement policy decisions
- HTA is itself considered to be a health technology: it is a process technology for making certain types of resource allocation decisions and can exist in more and less sophisticated versions

Micro-level and Macro-level HTA

- “Micro-level” HTA
 - focuses on technologies such as drugs and devices that are considered to be incremental to the health system
 - aimed at developing clinical practice guidelines or the way in which individual technologies are combined within a delivery system to manage patients efficiently
- “Macro-level HTA”
 - focuses on elements of the architecture or framework of health system in general, such as the number, types, and mix of health care facilities and health workers in the system
 - “Priority-setting” can be viewed as a type of macro-level HTA.

Priority-Setting (1)

- **Priority-setting** is the process by which resources are allocated in health, i.e. deciding how to organise the healthcare system and what healthcare interventions to pay for.
- Priority-setting is always happening in practice, whether decisions are being made explicitly by the policymaker/payer (e.g. Ministry of Health defines an essential drugs list through a transparent and scientific process), or implicitly elsewhere in the health system (e.g. clinicians prescribing drugs that generate the greatest personal profit)

Priority-Setting (2)

- Explicit, deliberative priority-setting should ideally involve systematically summarising information about the clinical, social, economic and ethical issues relating to the organisation of the healthcare system and use of healthcare interventions.
 - This involves encompassing both procedural principles (e.g. transparency, minimising interference from vested interests, involving local stakeholders in decision-making), and applying technical methods / analytic tools appropriate to the level of decision being made (e.g. operations research; HTA to assess cost-effectiveness of individual interventions).

Priority-Setting Products

- **Priority-setting products** are the outputs of explicit, deliberative priority-setting processes. Examples of such products might include:
- Systematic literature reviews and meta-analysis (e.g. Cochrane reviews)
- Developing or adapting clinical guidelines, including cost-effectiveness and budget impact considerations
- Evidence-informed clinical quality indicators
- HTA analyses (e.g. cost-effectiveness analysis, budget impact analysis)
- Redesigning basic package / essential drugs list
- Operational and health systems research

The Need for Technology Assessment

- Technology assessment in health care has developed in response to the needs of the system to understand the consequences of technological change in health care.
- Policymakers became less content with being asked to trust the benefit, risk, and cost of technology.
- Important examples of technology that did not work, were overused, or were unsafe came to light.

Examples:

- Gastric Freezing (1963-4)
 - Developed by a surgeon to treat peptic ulcer disease.
 - 1963 – 15,000 procedures performed and many deaths
 - 1964 – RCT showed no benefit and the potential for harm
- CT Scan (1972)
 - Effective technology that was/is overused.
 - Because of images that had never been seen, radiologists began to use the technology widely.
 - Much use in the late 1970s and early 1980s was deemed inappropriate as it was used in situations where little benefit could be expected.

Examples:

- Lung Volume Reduction Surgery (1990s)
 - Developed by a surgeon to treat end stage lung disease.
 - 1998-1999 – 3,000+ procedures performed and reimbursed, some indication of high death rates
 - 2003 – Large RCT showed no benefit with the exception of a small sub-group of patients and the potential for great harm.
 - 2003 – CEA showed the procedure was not cost-effective.
 - Use was dramatically affected.

The Need for Technology Assessment

- Depending solely on health professionals to assure the benefits, risks, and judicious use of precious medical resources is insufficient as a strategy for the appropriate use of health care technologies
- Today – technological change in health care is extremely rapid – computers, biotechnology, nanotechnology, etc.
- “The capacity to innovate and develop new health care technologies has outstripped our ability to assess them in order to make rational decisions about their use.”
- In the absence of adequate assessments, suboptimal decisions may be made, leading to inefficiencies, marginal effectiveness, and sometimes great harm to patients.

Banta and Luce. Health Care Technology and its Assessment: An International Perspective. Oxford Medical Publications. 1993

Essential Elements of a Technology and Outcomes Assessment Initiative

1. Administrative independence
2. Dedicated funding
3. Production of objective and timely research
4. Use of reliable methods
5. Widespread dissemination
6. A governance and organizational structure that lend it legitimacy

Key principles for the improved conduct of health technology assessments for resource allocation decisions

Michael F. Drummond

University of York

J. Sanford Schwartz

University of Pennsylvania

Bengt Jönsson

Stockholm School of Economics

Bryan R. Luce

United BioSource Corporation

Peter J. Neumann

Tufts University

Uwe Siebert

University of Health Sciences

Sean D. Sullivan

University of Washington

15 Principles of HTA

1. The Goal and Scope of the HTA Should Be Explicit and Relevant to Its Use
2. HTA Should Be an Unbiased and Transparent Exercise
3. HTA Should Include All Relevant Technologies
4. A Clear System for Setting Priorities for HTA Should Exist
5. HTA Should Incorporate Appropriate Methods for Assessing Costs and Benefits
6. HTAs Should Consider a Wide Range of Evidence and Outcomes
7. A Full Societal Perspective Should Be Considered When Undertaking HTAs
8. HTAs Should Explicitly Characterize Uncertainty Surrounding Estimates

15 Principles of HTA

9. HTAs Should Consider and Address Issues of Generalizability and Transferability
10. Those Conducting HTAs Should Actively Engage All Key Stakeholder Groups
11. Those Undertaking HTAs Should Actively Seek All Available Data
12. The Implementation of HTA Findings Needs to Be Monitored
13. HTA Should Be Timely
14. HTA Findings Need to Be Communicated Appropriately to Different Decision Makers
15. The Link Between HTA Findings and Decision-Making Processes Needs to Be Transparent and Clearly Defined

HTA – Key Processes/Functions

- Scoping – Identifying and monitoring pre-approval products that will require assessment and appraisal.
- Topic Selection – Post-approval, prioritizing products for assessment and appraisal
- Assessment – Mfrs submit evidence, organization undertakes systematic assessment of the evidence (clinical, economic, budgetary)
- Appraisal – Decision-making committee considers evidence from assessment, input from stakeholders and makes a recommendation for funding/implementation
- Funding/Implementation – Decision by the budget holder to reimburse/cover a product with or without parameters.

Another Separation of HTA Functions

- 1. Marketing approval (“Registration”)**—usually for drugs and devices, an assessment of benefit-risk balance based on clinical trial or other data
- 2. Coverage**—inclusion as a covered service in health plan benefit package
- 3. Reimbursement**—establishes plan payment level, perhaps considering “value of money” or budget impact, or via internal (therapeutic) reference pricing or via external (international reference pricing)
- 4. Clinical guidelines**—use HTA information use to support clinical guidelines in disease areas.

Key Messages about Health Technology Assessment (HTA)

- **Evolution**—HTA is not new, but it has nearly 30 years of history—an evolutionary one.
- **Globalization**—HTA is being applied in more and more countries, and the number of competent practitioners is growing--globally.
- **Variety**—How HTA is used varies markedly, but depends on incentives to use the information.
- **Challenge**—HTA operates in the political sphere and its role and performance in any given country will depend on how it is institutionalized and organized.

HTA as an Economic Good

- The process of HTA can be thought of as a “technology.”
 - As such, one can ask, whether it is **“technically” efficient**, obtaining maximum output given the resources used.
- The output of the process is “information”—a “public” good, in economic jargon. Indeed—a global public good
 - One can also ask whether the the production is **“economically” efficient**, i.e., is it technically efficient, being produced a minimum cost, and in the right quantity?
- Public goods create incentive to be a “free-rider”

Economics says: “public goods” will be undersupplied by private markets. Incentives like patents and subsidies are needed.

Health Technology Assessment: Principle vs. Practice

- In principle, not just about pharmaceuticals
 - In practice, **drugs** have been the focus
- In principle, not just about costs
 - In practice, it has been about **costs and cost-effectiveness (and budget impact)**
- In principle, it's a scientific approach to resource allocation
 - In practice, it's often about **politics**.

Final Observations

- The impact of HTA and cost-effectiveness information on health system resource allocation depends on:
 - **Incentives** to use the information
 - Insulation from **political influence**
(--or at least a fair and workable system of checks and balances)
- HTA is resource-intensive, and an appropriate initial focus for economic analysis may well be on macro-level HTA or other health system issues rather than on the very resource intensive use of “micro-level HTA”.

Important economic question to ask: What would be “efficient” HTA? From both a country’s and global perspective--Short-term (static) vs. long-term (dynamic)?

Thank you!



DEPARTMENT OF GLOBAL HEALTH

UNIVERSITY *of* WASHINGTON