Technology assessment tools for managers health care

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Outline

• Definitions
• Current scenario of health care
• Need for economic and social benefit
• Tools relating to outcome assessment
• Tools relating to Quality of life
• Tools relating to cost effectiveness
• Requirement for Regulation and enforcement body
• Role of
Health Scenerio

- Spend 6% of GDP
- 75% in private sector
- Large out of pocket expenditure
- Predominantly rural 1/3 below poverty line
- Cultural changes Joint family system giving rise to nuclear families
- Epidemiological transition
- Technological changes
- strengthening of the public Health system
Emerging Needs and their assessment

- As The National Population Commission in India has estimated that the population of the elderly (age group 60 years and above) is expected to grow from 71 million in 2001 to 173 million by 2026.

Assistive and Enabling Technology encompasses a wide range of devices and services used to help older individuals.

- Diabetes, Cardiovascular diseases
Indian scenario

• The Indian healthcare market is estimated to cost US$ 35 billion is witnessing expansion of the private and the public sector Currently,
• The market for medical technology in India is rapidly expanding.
• It is nascent with limited indigenous manufacturing - imports constituting over 75%
WHY? - Historical Notes

Total expenditure on health 1960-90 (% GDP) OECD

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Health Technology
Definition

The set of techniques, drugs, equipment and procedures used by health professionals in delivering medical care to individuals and the systems by which such care is delivered (Office of technology assessment US congress 1976)
Health technology assessment (HTA)

- Health technology assessment is a structured analysis of a health technology, or a set of related technologies, or a technology related issues that is performed for the purpose of providing input into a policy decision. 


Based on Scientific evidence

Consider the Complexity of socio economic aspects
Health technology assessment

- Multidisciplinary field of policy analysis
- Systematic evaluation of various aspects of technology
- New and existing technology
- Applicable in health promotion, prevention, diagnosis, treatment and rehabilitation
Scope

Pharmaceuticals
Biological products
Health system development at different levels
Manpower
Equipments
Objectives of technology assessment

- To contribute to improvement of decision making at different levels of health system to formulate policies on choice of adoption of new technology or continuation of new technology.

- Improve the efficiency of the health care delivery system in terms of costs and outcome
Those involved

- Health care provider institutions
- Health care payers
- Health care product manufacturers
- Physicians
- Patients
Those involved

- National/state/regional agencies
- Regulatory agencies
- Investors
- Ventured capitol companies
- Insurance companies
- TPAs
Activities

- Payment/reimbursement of health insurance
- Private public mix of availability of technologies
- Introduction of new services in the health system
- National policy formulation
- Clinical practice guidelines
- Setting research priorities
Evolutionary stages of a technology

- Virtual edge
- Cutting edge
- Leading edge
- Standard edge
- Trailing edge
Technology life cycle

- Phase I investigation
- Phase II promotion
- Phase III Acceptance and utilization
- Phase IV Decline
- Phase V Obsolescence
Timing of HTA

- Futuristic
- Experimental
- Investigational
- Established
- Obsolete
Tools for HTA

- Assessing evidence of effectiveness
- Economic aspects: cost of acquisition, charging, cost recovery, benefits
- Ethical and social consequences
- Factors speeding or impending development and diffusion
- Impact on health care policies
- Factors affecting variation in use
- Legal and regulatory aspects
Perspectives and view points

- Patient
- Provider
- Third party payer
- Employer
- Manufacturer
- Society
Problems of adoption

- Accepted often without evaluation
- Often over supplied than the need of the population
- Often used beyond the original use
- The new technology replaces the old technology although the clinical outcome is the same and the cost is high
- Induced demand created by the market demand since the patients are not aware of the implications
Factors contributing to adoption

- Outcome assessment of effectiveness/cure
- Economics, Cost, and Cost effectiveness considerations
- Return on investment
- Social aspects
- Cultural aspects
Hierarchy of Epidemiological Study designs for assessment of outcomes of interventions

- Case studies
- Case series
- Cross sectional studies
- Cohort studies
- Case control studies
- Randomized controlled clinical trials
Outcome/effectiveness measurement for choice of technologies

- No Cured
- No Life years saved
- No of QUALYs (Quality Adjusted life Years) gained
- No of DALYS (Disability adjusted life years) saved
Spectrum of Creation of evidence for outcome assessment

- Literature review
- Cochrane Review
- Expert consensus judgment
- Standardized evaluation criteria
- Meta analysis
- Analysis modeling
- Randomized controlled trials
Economic Basis of choice of technologies

- Costing
- Cost minimization
- Cost effectiveness
- Cost benefit
- Cost utility
- Extra cost for the extra outcome difference can be the basis of choice
Economic Analysis

- It consists of identifying, quantifying, and comparing the costs and consequences of alternatives for a given time horizon viewed from a particular perspective.
Cost components

- Direct medical
- Direct non medical
- Indirect
- Intangible
Ethical basis

- Beneficence: balance benefits against risks
- Non Malfeasance: Avoid causation of harm
- Respect for Autonomy: Respect the decision making capacity
- Justice: Fairness in distribution
Sociological basis

- Interference with life death reproduction etc
- Resource pressure
- Equity Considerations Whose is life to be saved
- Depends Believes Religion and Culture
Financing policies favouring healthcare technologies

- Developing appropriate payment mechanisms
- User Charges
- Free services for the poor
- Insurance policies
- Reimbursement mechanisms
Clinical pathways and their modification by newer technologies

Every clinical decision is a financial decision.

Definition of clinical pathway: A written statement of care normally provided to a defined type of patient.

Agreed to by all the members of the health team.

As newer technologies are developed, pathways are modified.
Changes in the health system

- As the process of managed care strengthens, Standardization/protocols will evolve and reputed hospitals would provide the benchmark for quality rating as well as fixing the tariff.
- Accreditation of the best institutions is expected to follow
Technology needs of remote and vulnerable populations

- Ex tribal populations where access and limited infrastructures are major problems in the optimum utilization of technologies
- In the initial stages only private sector may have access
- Disasters and war situations
Some Agencies involved in technology assessment

- International Society for technology assessment
- National Institute for Health and Clinical Excellence (NICE), via the Single Technology Appraisal (STA) process, the Multiple Technology Appraisal (MTA) process or the Evaluation Pathway Programme (EPP), England and Wales
- Scottish Medicines Consortium (SMC), Scotland
- All Wales Medicines Strategy Group (AWMSG), Wales
- National Centre for Pharmaco economics (NCPE), Republic of Ireland
- Dental and Pharmaceutical Benefits Agency (TLV), Sweden
- Canadian Agency for Drugs and Technologies in Health (CADTH) / Common Drug Review (CDR), Canada
- Pharmaceutical Benefits Advisory Committee (PBAC), Australia
- Federal Joint Committee (GBA), Germany
WHAT?

Technology Assessment

Science

Decision-making
WHAT?

RN Battista et al., 1998
WHAT?

RN Battista et al., 1999
Some success stories

- Introduction of MRI in Canada
- Introduction of CT scanners in Sweden
- Preoperative routine testing in Sweden
- Introduction of lithotripsy in France
- Introduction of neonatal intensive care units in Netherlands
Ineffective or Harmful After Being Widely Diffused

- Autologous bone marrow transplant with high-dose chemotherapy for advanced breast cancer
- Colectomy to treat epilepsy
- Diethylstilbestrol (DES) to improve pregnancy outcomes
- Electronic fetal monitoring during labor without access to fetal scalp sampling
- Mammary artery ligation for coronary artery disease
- Episiotomy (routine or liberal) for birth
- Extracranial-intracranial bypass to reduce risk of ischemic stroke
- Gastric bubble for morbid obesity
- Gastric freezing for peptic ulcer disease
- Hormone replacement therapy for healthy menopausal women
- Hydralazine for chronic heart failure
- Intermittent positive pressure breathing
Optic nerve decompression surgery for nonarteritic anterior ischemic optic neuropathy
Quinidine for suppressing recurrences of atrial fibrillation
Radiation therapy for acne
Sleeping face down for healthy babies
Supplemental oxygen for healthy premature babies
Thalidomide for sedation in pregnant women
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Sleeping face down for healthy babies
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Thalidomide for sedation in pregnant women
Thymic irradiation in healthy children
Triparanol (MER-29) for cholesterol reduction
Conclusions

- Technology assessment plays an important role in adoption and diffusion of technologies
- Need for regulatory mechanisms to take care of the needs of all
- Advocacy and legislative mechanisms are needed to popularize the most cost effective and caring technologies
- The financing mechanism should take care of vulnerable populations with inability to pay
Thank you