सत्यमेव जयते

IIHMR UNIVERSITY

Institute of Health Management Research , Jaipur

Summer Training at Department of Health Research, Ministry of Health & Family Welfare
Government of India, New Delhi

Topic: Health Technology Assessment In India

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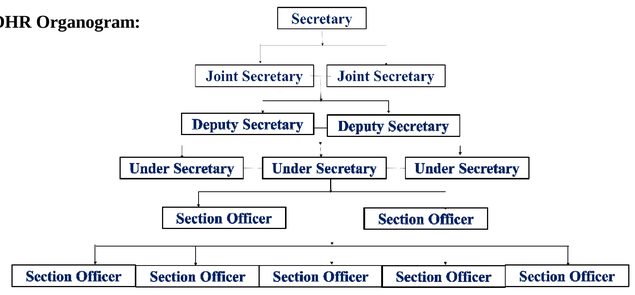
About the Organization: Department of Health Research was created under the Ministry of Health & Family Welfare. It was launched on 5th October 2007 by the Ministry for Science & Technology and Earth Science in a function presided over by the MoHFW, in the presence, inter-alia, of the Minister of State for Health & Family Welfare. The Government of India is committed to extend healthcare services to its billion population as part of India's UHC goal. The Medical Technology Assessment Board to be set as a part of DHR, MoHFW Welfare aims to reduce the cost, expenditure on medical equipment, overall cost of medical treatment, reduction in out of pocket expenditure of patients and streamline the medical reimbursement procedures for effective implementation of the UHP.

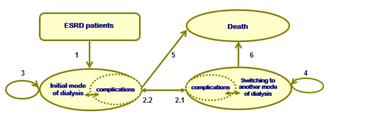
DHR Organogram:



Activities:

Practical Exercise and Case Studies During Training:
An Exercise was given on The Economic Evaluation of Palliative Management versus Peritoneal Dialysis and Hemodialysis for End-stage Renal Disease to Do the following:
1: Statistics for economic modeling
2: Constructing Markov Model
3: Constructing a Probabilistic Model.
4: Constructing an acceptability curve
5: Designing a PICO using a case study on Drug Eluting Stents
Findings:

Schematic diagram of Markov model for dialysis
States of the model in the represented by the ovals, transitions between states represented by the arrows



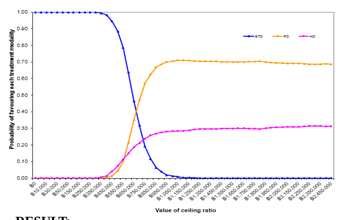
A case study was given to identify the type of Economic Evaluation under review:
Treatment of multiplemyeloma include autologous stem cell transplantation (ASCT) along with high dose chemotherapy (HDC). To estimate incremental cost perquality adjusted life year gained (QALY) with se ofASCT along with HDC as compare to conventional chemotherapy (CC) alone in treatment of multiple myeloma. A combination of decision tree and markov model was used to undertake the analysis. IC and effects of ASCT were compared against the baseline scenario of CC in patient of multiple myeloma. A life time study horizon was used and future costs and consequence were discounted at 5%. Consequences were valued in terms of QALYs. Incremental cost per QALY gained using ASCT as against CC for treatment og multiple myeloma was estimated using both a health system and societal perspective. The cost of providing ASCT with HDC formultiple myeloma patients was INR 500631, while the cost of CC alone was INR 159775. In the long run. Cost per patient per year for ASCT and CC arms was estimated to be INR 119740 and INR 111565 respectively. The number of QALYs lived per patient in case of ASCT and HDC alone were found to be 4.1 and 3.5 years respectively

Type of Study	Cost Utility Analysis
Perspective	Health System Perspective
Time Horizon	Life Time
Intervention	ASCT+HDC
Comparator	ASCT+HDC/ Chemotherapy
Target Population	Multiple Myeloma Patient (11 year old girls)
Outcome	Increase in QALYs
Audience to use the result	Punjab State

PROBABLISTIC MODELING (Refer Exercise)

Year of following up(each cycle)	Interval (year)	Probability of survival (from time zero)	Probability of survival (during each cycle)	Probability of dying during the cycle	Annual mortality rate (during the cycle)	Yearly (transitional) probability of dying
0		1.000				
1	1	0.839	0.839	0.161	0.18	0.161
5	4	0.618	0.944	0.056	0.06	0.042
10	5	0.530	0.748	0.252	0.06	0.056
	10		0.530	0.470	0.079	0.029

Estimating transitional prob using conventional approach				Estimating transitional prob applying exponential approach			
Checking	S(t)	Cumulative Survival		Checking	S(t)	Cumulative Survival	
0		1		0		1	
1	0.161	0.839	TRUE	1	0.029	0.971	
2	0.042	0.804		2	0.029	0.944	
3	0.042	0.771		3	0.029	0.917	
4	0.042	0.739		4	0.029	0.891	
5	0.042	0.708	TRUE	5	0.029	0.866	
6	0.056	0.668		6	0.029	0.840	
7	0.056	0.630		7	0.029	0.816	
8	0.056	0.595		8	0.029	0.793	
9	0.056	0.561		9	0.029	0.770	
10	0.056	0.530	TRUE	10	0.029	0.748	
11	0.056	0.500		11	0.029	0.727	



RESULT:
Using the government perspective, the total program cost of palliative care was 72,000 Baht, accounting for 32% of the program cost from a societal perspective (224,000 Baht). The palliative care option yielded 0.34 life-year (LY), or 0.20 QALY. These costs and outcomes of palliative care were equivalent for all age groups. Compared with providing PD as the first-line treatment, the introduction of HD offered more health benefits, LYs saved, and QALYs gained, and was more costly for all age groups. Given the effects of discounting on long-term costs, it is noteworthy that the lifetime costs derived from the model with unadjusted survival and the model with adjusted survival were similar. Both for models with adjusted and nonadjusted survival, the incremental costs of providing the "PD first" option ranged from 466,000 Baht per LY saved or 667,000 Baht per QALY gained for patient aged 20 years to 497,000 Baht per LY or 700,000 Baht per QALY gained for patient aged 70 years using a societal perspective.

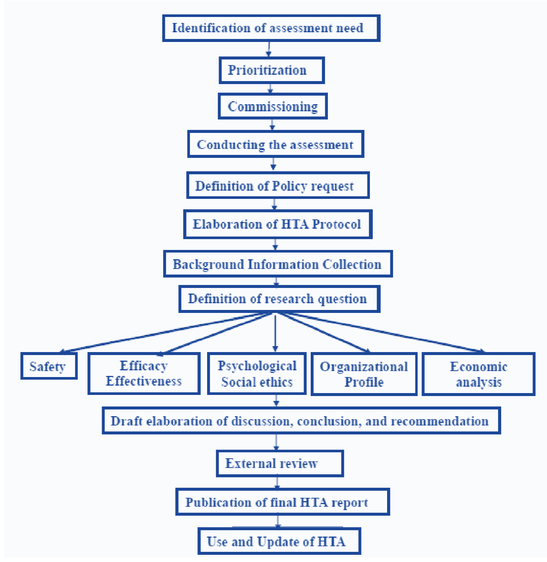
INTRODUCTION: Technological advancement has remarkably affected the health care setting in a variety of areas to improve health care delivery and patient outcomes. Health technology assessment is the tool or "any process of examining and reporting properties of a medical technology used in health care setting, i.e., safety, efficacy, feasibility, and cost effectiveness, to examine and access medical properties in order to inform decision and policy maker. Its main purpose is to inform technology-related policy-making in health care

BACKGROUND: The need to establish a Medical Technology Assessment Board (MTAB) was recommended by 12th Plan Working Group on Health Research and, also by the Planning Commission (Now NITI Aayog) in its 12th Plan document on Social Sector. Department of Health Research, therefore, intends to setup a Medical Technology Assessment Board (MTAB) for evaluation of appropriateness and cost effectiveness of available and new health technologies in the country as part of research governance mandate of the Department.

AIM:
- To Understand and Learn the functioning of Department of Health Research.
- To Develop a mechanism to conduct a HTA study in India

OBJECTIVE:
- To understand the HTA process.
- To do the Economic Evaluation Modeling in India For HTA studies.

GENERAL OVER VIEW OF HTA PROCESS :



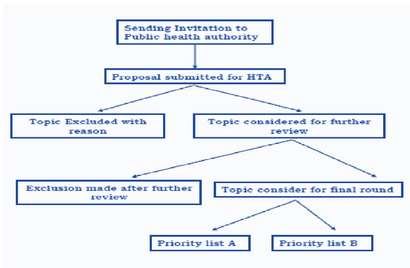
GENERAL OVERVIEW OF SELECTION AND PRIORITIZATION OF TOPICS FOR HTA

STEP 1: The suggested topics are added to data base. In the first stage all topic are review by the expert committee to ensure it fits the mandate.
STEP 2: Topics that meet the mandate are filtered for appropriateness using a set criteria.
Criteria for assessment of appropriateness of a topic:

Criterion	Definition and Weight	Score	Score Definition
Duplication of effort	Is another organization undertaking a review or considering a review on the same topic? 30	3	No duplication foreseen
		2	Partial duplication is possible, which may allow brokering or collaboration
		1	Another organization is considering this topic
		0	Another organization is currently working on this topic
Need	How important is the policy, purchasing, or practice decision for which this evidence is needed? 40	3	Decision with substantial impact on patient care
		2	Decision with moderate impact on patient care
		1	Decision with limited impact on patient care
		0	No decision to be made in the foreseeable future, or decision with no impact on patient care
Stage of diffusion	Is the technology available in 30	3	Currently approved or in use in Canada
		2	Currently not approved or used in Canada, but likely to be approved or used in the next year
		1	Currently not approved or used, and unlikely to be approved or used in the next year
		0	Currently not approved or used and will not be considered for approval or use in the next year (i.e., not approved in any other countries)

GENERAL TOPIC PRIORITIZATION CRITERIA: A scoping brief will be prepared for all topics on the priority list. It will outline the policy issues and provide an overview of the existing evidence. A systematic review, meta-analysis, evidence based guidance, and primary study if needed will be done.

FLOW CHART FOR TOPIC PRIORITIZATION

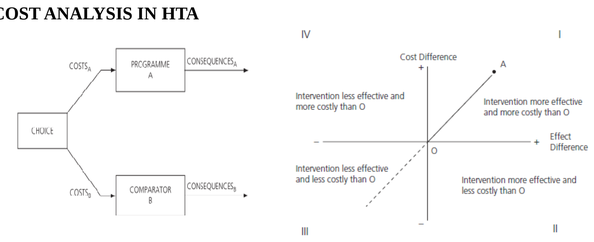


CRITERIA FOR SCORING AND TOPIC PRIORITIZATION

Criterion	Definition and Weight	Score	Score Definition
Clinical Impact	Potential for the technology to have an impact on patient-related health outcomes (benefits and harms) 25	3	Major potential improvement in clinical outcomes
		2	Moderate potential improvement in clinical outcomes
		1	Little potential improvement in clinical outcomes
		0	No expected change in clinical outcomes
Budget Impact	Impact of the technology on health care spending 25	3	Major cost savings or expense (> $50 M)
		2	moderate cost savings or expense (> $10 M to $50 M)
		1	Limited cost savings or expense ($1 M to $10 M)
		0	No cost savings or expense (< $1 M)
Population impact	The size of the population that would be affected by the technology 15	3	Affects 5% or more
		2	Affects from 1% to < 5%
		1	Affects from 0.05% to < 1%
		0	Affects < 0.05%
Jurisdictional interest	The number[a] of provincial, territorial, or federal programs with a CADTH customer (such as hospital, regional health authority, or Ministry of Health) facing a decision on the technology, and which could use the HTA to inform a decision or change 20	3	Interest from ≥ 7 jurisdictions
		2	Interest from 5 or 6 jurisdictions
		1	Interest from 2 to 4 provincial jurisdictions
		0	Interest from < 2 jurisdictions
Equity	The technology has the potential to introduce, increase, or decrease equity in health status 15	3	Major potential to affect equity in health status
		2	Moderate potential to affect equity in health status
		1	Minor potential to affect equity in health status
		0	Will not affect equity in health status

The scoping brief will be used to score the topics under consideration. Weighted scores will be calculated and used to rank the topics.. The ranked list will be shared with the committees, and other relevant groups and will be posted on the website.
The final decision about the HTA topics to be undertaken will be done based on the ranked list, the resource needs for the topics will be written on those topics that require an HTA with recommendations. Topics not initiated as an HTA may be considered for an alternative such as Rapid Response, or remain on the list for the next prioritization cycle.

COST ANALYSIS IN HTA



INCREMENTAL COST EFFECTIVENESS RATIO:
The incremental cost effectiveness ratio (ICER) is a statistical tool used in cost effectiveness analysis to summarise the cost effectiveness of a health intervention. It is the difference in cost between two possible intervention divided by the difference in their effect. It can be estimated as: ICER = (C1-C0)/(E1-E0)
Where C1 and E1 are the cost and effect in the intervention group and where C0 and E0 are the cost and effect in the control group.

CONCLUSION:
- Success of HTA study in Indian context will contribute towards the UHC. It will help government identify the lagged area in health system accordingly it will help in the budget allotment.
- It will bring down the out-of-pocket expenditure which at present is 80% in India.
- It will formalize the health care accessibility in rural and urban setting.
- HTA findings will play an advisory role in policy decisions.

LITERATURE SUMMERY:
The increasing costs of healthcare intervention, their formal assessment is a must in current health policy in India. There is insufficient resources to provide all health care seekers in all circumstances with the best possible healthcare. With the increasing aging population and technological development in healthcare is producing even increasing demand on health resources. There is an increasing demand of using HTA information however, in an study it was found that there are various methodological flaws with HTA studies and a serious attention needed to be given to the quality of reporting and the use of HTA information in the decision making and this problem could be tackled by a standard guideline. As countries strive to deliver UHC, the decision process becomes very important and the country faces complex choices in deciding how to invest their health budget to meet the priority health needs.
It has been seen that the involvement of HTA in health care is increasing with greater transparency, and increasing involvement of stakeholder in HTA. Although some stakeholder may oppose HTA due to inherent interest, Prime movers in healthcare seek to maintain incentive to develop new technologies and healthcare product and services provider seeks short term return on their investment. Companies seek to increase profit through increased sales of the product at high price.
The most crucial obstacle in Indian context is presence of 71% private healthcare market. The government is planning to increase its healthcare expending from 1% of GDP to 3%. The Planning commission constitute a high-level expert group on Universal health coverage with a mandate of developing a framework for providing easily accessible and affordable healthcare to the Indian population. The new reforms when implemented are expected to have far reaching impact on the health system, including pharmaceutical and reimbursement mechanism in India and hence the need for resource allocation mechanism such as HTA.

Suggestion:
- Government should recommend the inclusion of the study of HTA at college level.
- Government Should expand the capacity building and should include health NGOs.
- An HTA Sensitization programme should be conducted to increase public awareness.
- Government should socialize the HTA work and Media should be included.

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