Overview of “Health Technology Assessment” and its role in decision making

ARCH Initiative HTA Workshop
April, 2014
Francis Ruiz
NICE International

© NICE 2014
7.1.3 Total health expenditure per capita and GDP per capita, 2009 (or nearest year)

Health spending per capita (USD PPP)

GDP per capita (USD PPP)

USA

Private expenditure on health

Source: OECD Health Data 2011; WHO Global Health Expenditure Database.

StatLink  http://dx.doi.org/10.1787/888932526084

StatLink  http://dx.doi.org/10.1787/888932526046
How much is enough?
"The NHS, just like every other healthcare system in the world—public or private—has to set priorities and make choices. The issue is not whether there are choices to be made, but how those choices are made. There is not a service in the world, defence, education or health, where this is not the case."

UK Parliamentary Health Committee
Health systems everywhere are under pressure...

- Burden of chronic disease and ageing populations
- Users’ expectations and the promise of universal coverage
- Growth in technologies – expanding marketplace
- Finite budgets and financial pressures

Policy and practice
Payers’ responses

- Accumulating debt
- (Arbitrary) price cuts
- Divergence between coverage (in principle) and access
- Cost-shifting to service users and their families
- Price negotiations
- Risk sharing and Value-Based Pricing
- ‘Institutionalising’ technology adoption decisions: Health Technology Assessment agencies
- A combination of the above…
What is Health Technology Assessment?

- **Health Technology**: “The drugs, devices, and medical and surgical procedures used in health care, and the organisational and supportive systems within which such care is provided”\(^a\)
  - Contraceptives; dialysis machines; mastectomy; screening for cancer; intensive care unit

- **Health Technology Assessment**: “a multi-disciplinary field of policy analysis, which studies the medical, social, ethical and economic implications of development, diffusion and use of health technology.”\(^b\)


\(^b\): International Network of Agencies for Health Technology Assessment (INAHTA)
HTA as a “tool”

- Evidence-based policy making and Health Technology Assessment (HTA) can assist policy makers to:
  - effectively prioritise health interventions and services
  - improve their quality
  - make consistent decisions
  - reduce inappropriate variation
  - signal ‘value’ to industry
  - inform the selection of indicators to assess performance and incentivise providers

- BUT…not a ‘cure all’ for all system inefficiencies and problems
Milestones in HTA evolution

• Establishment of Office for Technology Assessment, USA – 1972
• Emergence of Health Economics as a discipline – Kenneth Arrow – 1963; USA, UK, 1970s and 1980s
• Evidence Based Medicine movement – McMaster’s, Canada, 1980s
• Cochrane Collaboration – UK, 1992
• Australian model makes economic evaluation a mandatory requirement – 1990s (PBAC)
Evidence Based Medicine

• “EBM is the conscientious, explicit and judicious use of current best evidence in making decisions about patient care”
  – individual clinical expertise
  – best available external clinical evidence from systematic research
Dimensions of HTA

- Comparative clinical effectiveness
- Comparative cost-effectiveness
- Service delivery organisation aspects
- Legal framework
- Ethical, social implications – equity, fairness and other societal norms
HTA audiences

- Policy-makers - payers
- Medical products developers – industry
- Healthcare professionals
- Academic community - researchers
- General public: taxpayers; insured population
- Patients and their families
# Process matters!

<table>
<thead>
<tr>
<th>Principles</th>
<th>Putting them into practice...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independence</td>
<td>“Arm’s length” from government, payers, industry and professional groups; strong and enforced conflict of interest policies</td>
</tr>
<tr>
<td>Transparency</td>
<td>Meetings open to the public; material placed on the web; decision criteria and rationale for individual decisions made public</td>
</tr>
<tr>
<td>Inclusiveness</td>
<td>Wide and genuine consultation with stakeholders; willingness to change decision in light of new evidence</td>
</tr>
<tr>
<td>Scientific basis</td>
<td>Strong, scientific methods and reliance on critically appraised evidence and information</td>
</tr>
<tr>
<td>Timeliness</td>
<td>Decisions produced in reasonable timeframe; minimise delays in publishing decisions</td>
</tr>
<tr>
<td>Consistency</td>
<td>Same technical and process rules applied to all cases</td>
</tr>
<tr>
<td>Legal framework</td>
<td>Reference in country’s legal framework; institutional role in informing coverage and payment decisions</td>
</tr>
<tr>
<td>Regular review</td>
<td>Regular updating of decisions and of methods</td>
</tr>
</tbody>
</table>
Guidelines and HTA not a panacea

• Using a NICE evidence-based model (methods and process) to derive and regularly update an exhaustive and fully explicit list of services and technologies will be:
  – Resource intensive esp. to keep up-to-date
  – Methodologically challenging: calibration of the threshold to avoid crowding out
  – Evidentiary and informationally impossible: need ICER for all services and technologies: e.g. “cost per QALY / DALY” for one extra nurse per clinic?
  – Politically sensitive and ethically problematic…
Priority-Setting in Health
Building institutions for smarter public spending

A report of the Center for Global Development’s Priority-Setting Institutions for Global Health Working Group

Amanda Glassman and Kalipso Chalkidou, Co-chairs
Inertial, implicit and ad hoc resource allocation can result in low value and inequity versus
Competing interests in an ad hoc process drive these perverse choices.

Battle between disease and intervention-specific programmes, NCDs and health systems strengthening.

Blood-pressure-related disease is a global health priority.

Mental health problems will be the number one health priority for the world in the near future and workplaces must play their part in tackling it, a conference has heard.
A CGD report recommends the creation and development of both domestic and global priority-setting systems, to accomplish this…

**The proposal**

A global consortium or network to provide sustained technical and consultative support to both low- and middle-income countries (LMIC) governments and global funders.

**Underlying principles**

- Scientifically rigorous
- Independent
- Timely
- Flexible
- Sustainable
- Collaborative
- Non bureaucratic

The need, demand, and supply of HTA / evidence-based priority setting is different in every country:

**Need for HTA:**
What policy decisions will be informed by HTA?

**Demand for HTA**
Who (departments, institutions) will be using the outputs of HTA?

**Supply of HTA**
Who (departments, institutions) will be conducting HTA and running the HTA process?
HTA-related activities - ARCH

- General awareness raising and capacity building
- Specific technical training in rapid reviews, economics and costing, BoD...
- Gaps assessment (data, people, institutions)
- Cost of illness / burden of disease
- Cost effectiveness analyses and ROI models/forecasting and microsimulation

Peer-to-peer learning and sharing
HTA and Tobacco Control

Examples
NICE….what is it?

The National Institute for Health and Care Excellence (NICE) provides national guidance and advice to improve health and social care

We do this by:

- Producing **evidence-based guidance** and advice for health, public health and social care practitioners.
- Developing **quality standards and performance metrics** for those providing and commissioning health, public health and social care services;
- Providing a **range of information services** for commissioners, practitioners and managers across the spectrum of health and social care.
NICE Public health guidance: Key stages

- Department of Health referral
- Stakeholders register interest
- Scope prepared
- Evidence reviewed
- Draft guidance prepared
- Consultation on draft guidance
- Fieldwork (optional)
- Finalising the guidance
- Publication, dissemination, implementation
“A cohort simulation model was designed to estimate the costs and quality-adjusted life years (QALYs) associated with smoking cessation. The model was designed to compare different smoking cessation interventions to determine their incremental cost-effectiveness.”
Markov process

- Considers cohort of current smokers
- Each year they become
  - Current smokers
  - Former smokers
  - Die
- Health outcomes and resource use driven by smoking status
The economic model

- Smokers and former smokers each have a risk of developing a number of smoking attributable conditions & death
  - CVD, MI, COPD, lung cancer
- Healthcare resource use, QOL/utility and productivity also dependent on smoking status
- Majority of data derived from previous analyses (Flack, Taylor, Trueman)
Findings (1)

• Taking into account also the published literature and previous cost effectiveness analyses….

• “Overall, brief advice, individual behavioural counselling, group behaviour therapy, pharmacotherapies, self-help materials, telephone counselling and quitlines were cost effective compared with no intervention….” Etc
Findings (2)

• But there were data gaps, and research recommendations made:

• “More information is needed about both the cost-effectiveness of workplace interventions and their long-term effectiveness, particularly in the context of widespread smoking restrictions.”
In conclusion, the national ‘Stoptober’ mass media smoking cessation campaign featuring digital support appears to have provided excellent value for money as a life-saving public health intervention. Designing a national public health campaign with a clear behavioural target (making a serious quit attempt) using key psychological principles can yield a substantial return in terms of behaviour change and public health impact.
Microsimulation and forecasting models (1)

- Modelling future incidence and cost burden of smoking related diseases
- Can use to explore impact of possible national / subnational interventions e.g. increased tax on tobacco
- E.g. UK Health Forum approach →
- Two step process
  - Risk factor distribution analysis over time
  - Longitudinal analysis of individuals based on risk factor analysis using Monte Carlo simulation methods (uses random numbers)
- UKHF have developed models in obesity (over 80 countries)
- Preliminary tobacco model developed for Botswana (with support from the World Bank)
Microsimulation and forecasting models (2)

- Botswana model – data requirements:
  - Risk factor data – 3+ years tobacco prevalence
  - Incidence (or prevalence) data by age and sex
  - Mortality (age and sex)
  - Survival data for each disease
  - Population data (births and deaths etc)
  - Relative risk for each disease
  - Health costs (total costs by disease)

- Data included information from countries other than Botswana to fill in the gaps
Microsimulation and forecasting models (3)

- Botswana model – intervention analysed (a levy on tobacco) (Note WHO Framework on Tobacco Control recommending price and tax measures)
- Price elasticity = - 0.6 (10% increase in tobacco excise duty would result in a 6% reduction in smoking rates – in line with other countries)
- Other assumptions (e.g. smokers who smoke any amount have same risk of disease)
- Can estimate disease prevalence and costs avoided
  - Policy implications (positive health benefits, increased tax revenue, reduction in healthcare costs…)

NICE
Thanks to: HITAP, Tim Marsh (UKHF), Subhash Pokhrel (Brunel University) and Amanda Glassman (CGD)