Linking HTA to Clinical Research

Dr Máirín Ryan
HIQA & Health Technology Assessment (HTA)

The functions of the Authority include...

Health Act 2007

“To evaluate the clinical & cost-effectiveness of health technologies including drugs & provide advice arising out of the evaluation to the Minister & the Executive”

“To review & make recommendations as the Authority thinks fit in respect of the services, to ensure the best outcomes for the resources available...”

Independent advice to the Minister for Health and the HSE
Health Technologies

- Drugs
- Medical devices
- Diagnostics
- Surgical procedures

Organisational & support systems
Health Technology Assessment

HTA answers questions about a health technology including:

- What clinical benefits will it deliver?
- What effects will it have on patients?
- What impact will it have on the health service?
- How much will it cost?
- Is it good value for money?
Health Technology Assessment

HTA is a decision support tool

Science

Patient wishes

Industry claims

Multidisciplinary process, summarises relevant information related to use of health technology in a systematic, transparent, unbiased and robust manner
Production of HTA knowledge

- Clinical effectiveness
- Organisational implications
- Ethical implications
- Economic impact
- Safety
- Social aspects
- Legal implication
- Current technology
Assessment domains

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Assessment domains

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- Safety
- Social aspects
- Current technology
Why do we need HTA?

Limited resources

Unlimited ‘wants’ and new technologies

Choosing between which ‘wants’ we can ‘afford’ given our finite resources and budget

Fair & equitable allocation of resources for society

The best interests of the individual
Value-based Healthcare

achieving the best outcomes at the lowest cost

"the strategy that will fix healthcare"

HTAs by HIQA

Advice to the Minister

- Selective BCG vaccination
- National public access defibrillation programme
- ICT to support early warning and clinical handover
- Colorectal cancer screening
- HPV vaccination

Advice to the HSE

- Chronic disease self management
- Screening for atrial fibrillation in primary care
- Scheduled procedures referral thresholds
- Robotic surgery
- Breast cancer surveillance for high risk women
Topic selection

imminent decisions
who decides
what topics
what evidence

DECISION MAKERS
The process

1. Informing topic selection

2. Topic selection by decision makers

3. Topic prioritisation

4. HTA workplan
Prioritisation of HTA topics

- **Link to decision**
  - weak
  - moderate
  - strong

- **Economic**
  - Invasive ventilation
  - HPV DNA
  - Thrombectomy

- **Clinical**
  - Smoking cessation
  - PCR for MRSA detection
  - CDSM
"The evidence review should include both clinical and cost-effectiveness to ensure that the clinical guideline is based on best available evidence."

"Resource implications from an Irish health service perspective should be explicit and include equipment, staff, training etc."

NCEC/HIQA QA Criteria 2015
Research issues for HTA in Ireland

- Data availability
- Quality
- Applicability
Data availability for HTA in Ireland

- Epidemiology
- NCR, OHCAR (Out-of-hospital cardiac arrest)
- Clinical effectiveness and safety
- Peer reviewed publications
- Resource use
- HIPE, Clinical care pathways
- Unit costs
- HSE cost data, Cost of stroke study
- Quality of life
- Irish data awaited
Quality of data for HTA in Ireland

Data quality
- Administrative

Research study design
- Risk of bias
Applicability of data for HTA in Ireland

Diagram:
- Demographics
- Healthcare structure
- Care pathways
- Unit costs
Guidance on Budget Impact Analysis of Health Technologies in Ireland
16 July 2015
ENDPOINTS FOR RELATIVE EFFECTIVENESS ASSESSMENT (REA) OF PHARMACEUTICALS

Mara Parvovik
La Fiebre Aulenti de Saúde

Cesar Tuleur
Health Information and Quality Authority

Deva Wernher
Institute for Quality and Efficiency in Health Care

Marianne Wamp
Norwegian Knowledge Centre for the Health Services

Irina Csermely
Belgian Health Care Knowledge Centre, Hasselt University

Mathias Neyt
Belgian Health Care Knowledge Centre on behalf of ETNHTA
Using Prediction Intervals from Random-effects Meta-analyses in an Economic Model

Ciaran Teljeur, Michelle O'Neill, Patrick Moran, Linda Murphy, Patricia Harrington, Maire Ryan
Health Intervention and Quality Authority

Objectives: When incorporating treatment effect estimates derived from a random-effect meta-analysis it is tempting to use the confidence bounds to determine the potential range of treatment effect. However, prediction intervals reflect the potential effect of a technology rather than the more narrowly defined average treatment effect. Using a case study of robot-assisted radiotherapy, the study investigated the impact on cost-effectiveness analysis of using clinical effectiveness derived from random-effects meta-analyses presented as confidence bounds and prediction intervals, respectively.

Methods: To determine the cost-effectiveness of robot-assisted prostatectomy, an economic model was developed. The clinical effectiveness of robot-assisted surgery compared with open and conventional laparoscopic surgery was estimated using meta-analysis of peer-reviewed publications. Assuming treatment effect would vary across studies due to both sampling variability and differences between surgical teams, random-effects meta-analysis was used to pool effect estimates.

Results: Using the confidence bounds approach the mean and median ICER was €24,193 and €26,731/QALY (95% CI: €13,752 to €68,861/QALY), respectively. The prediction interval approach produced an equivalent mean and median ICER of €36,970 and €37,863/QALY (95% CI: €244 to €379,166/QALY), respectively. Using prediction intervals, there is a probability of 0.642 that robot-assisted surgery will result in a net reduction in QALYs.

Conclusions: Using prediction intervals rather than confidence bounds does not affect the point estimate of the treatment effect. In meta-analyses with significant heterogeneity, the use of prediction intervals will produce wider ranges of treatment effect, and hence result in greater uncertainty, but a better reflection of the effect of the technology.

Keywords: Meta-analysis, Statistics, Economic models, Treatment effectiveness, Prostatectomy
Economic evaluation of robot-assisted hysterectomy: a cost-minimisation analysis

C Teljeur, M O’Neill, PS Moran, P Harrington, M Flattery, L Murphy, M Ryan

Health Information and Quality Authority, Dublin, Ireland

Correspondence: C Teljeur, Health Information and Quality Authority, George’s Court, George’s Lane, Dublin 7, Ireland.

Email: cteljeur@hiqa.ie

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Effectiveness of systematic screening for the detection of atrial fibrillation (Review)

Moran PS, Flattery MJ, Teljeur C, Ryan M, Smith SM
Robot-assisted hysterectomy compared to open and laparoscopic approaches: systematic review and meta-analysis

Michelle O’Neill · Patrick S. Moran · Conor Teljeur · Orfhlaith E. O’Sullivan · Barry A. O’Reilly · Matt Hewitt · Martin Flattery · Máirín Ryan
HTA research outputs

Public Access Defibrillation Decision Analysis Model

- Patient experiences an OHCA
  - Patient receives treatment from either
    1) EMS (paramedic first responder and ambulance)
    2) Bystander CPR + EMS
    3) Bystander AED + EMS
  - Decision tree structure
  - Markov structure
- Patient dies at scene
- Patient brought to hospital
- Patient dies in emergency department (ED)
- Patient survives to hospital admission
- Patient dies in hospital
- Patient survives to discharge
- Year of life post-discharge
- Death
HTA and the research agenda

Focus on translational research and ensuring that research outputs drive improvements in outcomes and services e.g. HTA

Increasing realisation of the value of HTA by DoH and HSE and so HTA increasingly influencing decision making

Opportunity to translate clinical and health services research to outcomes for patients through HTA and National Clinical Guidelines
HTA and the research agenda

- Integral part of Health Services Research
- Dependent on availability of highly skilled researchers
- Dependent on availability of high quality research inputs (data)
- Dependent on availability of high quality research outputs (relevant studies)

Greater integration is required between decision makers, the HTA and research communities to ensure that the right data are available for the right analysis to support evidence-based decision making.
HTA in a highly functioning research environment is a key part of the solution to sustainable healthcare
Acknowledgement

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