Health technology assessment as a tool for decision making at central and local levels

Seminar I1

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Conflict of interest

- Conflict of interest: nothing to disclose

Learning Objectives

After the seminar, the participant should be able to:

- appraise the different HTA approaches and their advantages and disadvantages
- apply an evaluation of a new technology at local level
- describe the monitoring of the impact of the introduction of a new technology in clinical practice

Control questions

- HTA is a key element in market access / pricing & reimbursement processes
- HTA always includes cost-effectiveness
- The clinical information in HTA is the least context dependent information

What is Healthcare Technology ?

- **Healthcare technology** is defined as prevention and rehabilitation, vaccines, pharmaceuticals and devices, medical and surgical procedures, and the *systems* within which health is protected and maintained

INAHTA

HTA aim

The aim of HTA is to inform the formulation of safe, effective, health policies that are patient focused and seek to achieve best value

HTA must always be firmly rooted in research and the scientific method

Source: EUnetHTA
www.eunethta.eu

HTA definition

***HTA* is a multidisciplinary process that summarises information about the medical, social, economic and ethical issues related to the use of a health technology in a systematic, transparent, unbiased, robust manner**

Source: EUnetHTA
www.eunethta.eu

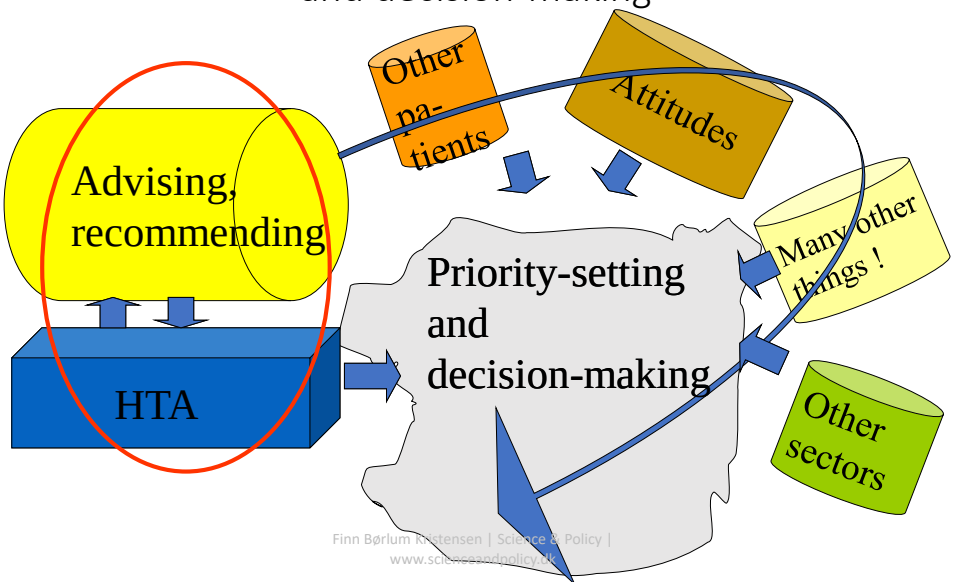
Policy question(s)

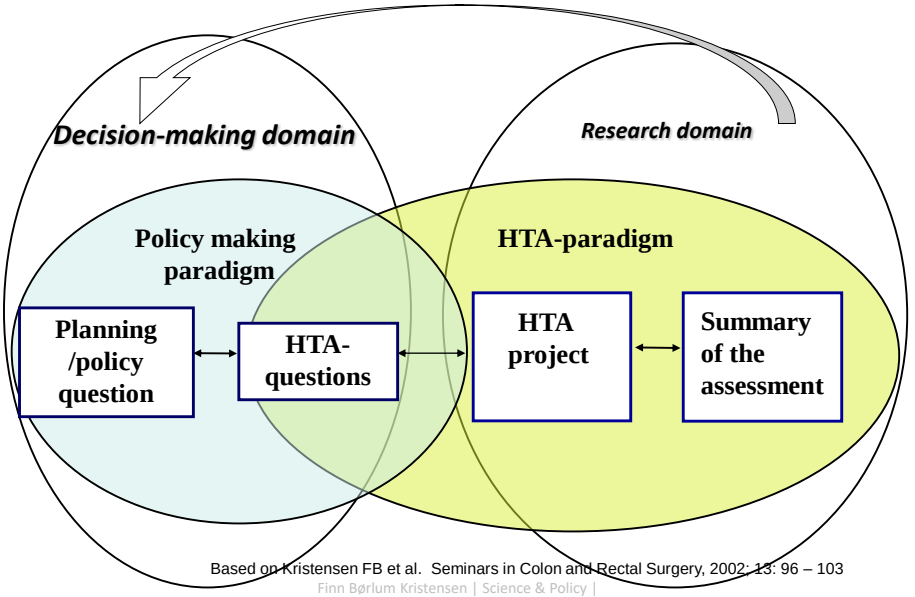
- An HTA programme needs a well functioning system of *identification* and *prioritisation* of topics
- Selected topics should be transformed into clearly defined policy questions of direct significance to policy-makers
- *Shared clarification process to ensure relevance of the HTA*

Various approaches to clarification of a decision problem

- A **deliberative process**
  - –policy basis for decisions prepared in an **administrative setting**
  - –traditional expert- and/or stakeholder-based **committee work**
- An **HTA**
- A clinical pathway
- A clinical practice guideline
- A systematic literature review, possibly a meta-analysis of clinical literature only
- An economic analysis
- A (primary) research project

HTA as an input to priority-setting and decision-making





Based on Kristensen FB et al. Seminars in Colon and Rectal Surgery, 2002; 13: 96 – 103

Which type of HTA ?

- HTA should be relevant, well-documented and timely in relation to decision and policy formulation
- If HTA is selected as tool for policy analysis, first clarify
  - decision problem
  - decision situation
  - strength of evidence base
  - where in life cycle of technology
  - time and resource frame

Scope of the HTA - "The four boxes"

Technology	Patient
➢ Area of application ➢ Effectiveness ➢ Risk assessment	➢ Psychological aspects ➢ Social aspects ➢ Ethical aspects
Organisation	**Economy**
➢ Structure ➢ Staff ➢ Environment	➢ Social and health economic appraisal ➢ Operational economic appraisal

Source:
Kristensen FB, Sigmund H (eds.) Danish HTA Handbook 2007
https://www.sst.dk/en/publications/2008/health-technology-assessment-handbook

Domains of HTA

• Developed by EUnetHTA within the HTA Core Model

• Identified in previous EU projects, particularly EUR-ASSESS and ECHTA/ECAHI

• Promote the wide scope and multidisciplinary nature of HTA

Health problem and current use of technology
Technical characteristics
Safety
Clinical effectiveness
Costs and economic evaluation
Ethical analysis
Organizational aspects
Patient and social aspects
Legal aspects

Source: EUnetHTA
www.eunethta.eu

Best available evidence

- The essential thing about evidence in HTA is that answers to the specific HTA questions are sought using the methods considered best for generating knowledge in the field in question

About the concepts of quantitative and qualitative research

- HTA is based on several scientific disciplines, namely health sciences, social science, natural science and the humanities. Each have their own theories and research strategies - with certain overlaps, e.g. statistical modeling or interview and questionnaire methods
- Traditionally, natural science is connected with a *quantitative* research approach and the humanities with *qualitative* research, whereas social and health sciences can be considered users of "both"

Scientific literature review in HTA

- assessment of clinical and epidemiological studies based on well known systematic methodology with checklists and evidence tables with grading
- assessment of qualitative studies, including the syntheses of qualitative studies

Formulation of focused questions

- A well-formulated question is crucial in establishing the best search strategy – the more precise the questions, the more precise the searches

- The questions asked must be
  - of limited number
  - clear in terms
  - clearly defined and
  - possible to answer

Useful advice and suggestions (1)

- Use a literature search protocol
- Formulate focused questions that can be answered with research results
- Involve an information specialist/librarian in literature searches
- Choose relevant databases and information sources (librarians can help)
- Draw up search strategies (with a separate strategy for each source)
- Evaluate searches
- Return repeatedly to the question so that the study doesn't "drift" away from focus

Useful advice and suggestions (2)

- Primarily select literature with the highest class of evidence
- Use the focused question when assessing whether the article is of relevance
- Use internationally recognised standards for the assessment of articles
- Use checklists in the review of the individual articles

PICO

A well-formulated clinical/epidemiological question on **effect** comprises four elements:

- The ***p***opulation – what kind of patients/individuals are involved?
- The ***i***ntervention – pharmaceutical, surgical method, etc.?
- The ***c***omparator intervention(s)?
- The ***o***utcome(s)/result(s) – which clinical or other endpoints?

Examples of well-formulated questions (1)

Effect

- Which postoperative complications (O) are observed after laparoscopic hysterectomy (I) compared with vaginal and abdominal hysterectomy (C) in women with benign gynaecological disease (P)?
- Which effect does the use of lifestyle consultations in general practice have on preventing the development of diseases associated with lifestyle?

Error in measurement and estimation of effects

- Error
  - Random error
  - Bias (systematic error)
    - information bias
    - selection bias
    - (confounding)

Hierarchy of scientific literature on interventions

1. Meta-analyses and systematic reviews of several RCTs (e.g. Cochrane reviews)
2. Randomised controlled trials (RCTs)
3. Non-randomised controlled trials
4. Cohort studies
5. Case-control studies
6. Descriptive studies, limited series
7. Position papers, non-systematic reviews, leading articles, expert opinions

General checklist structure in critical article review

1. Reliability of the article
   - Relevant problem
   - Assessment of method
   - Statistics
2. Overall assessment of the study quality
   - Can be graded using ++ / + / -
3. Description of the study
   - Population, intervention, comparator, outcome, effect
   - Summary of the study's key areas

The organisation

- The overall intention of an organisational analysis is to describe the organisational dimensions of the (new) technology and some of the most important conditions for its implementation and possible consequences for the organisational structure

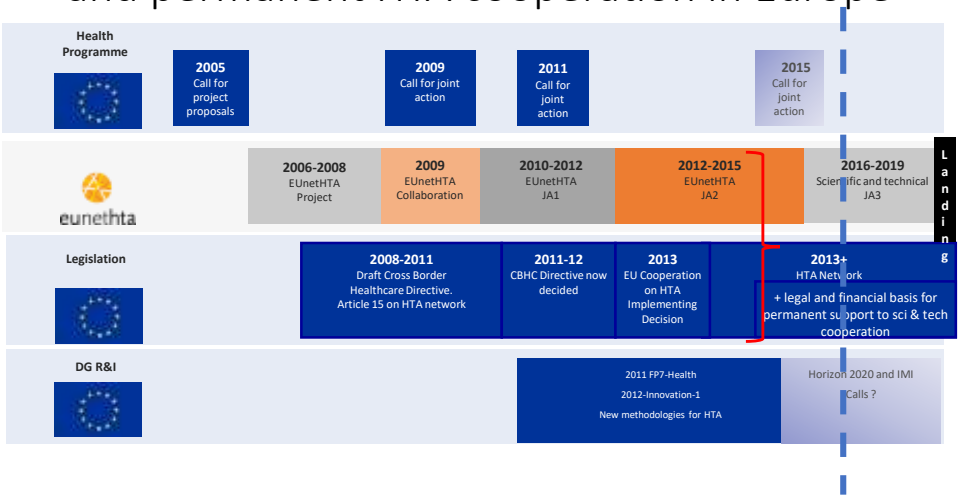
- It is based on the material available and considers uncertainties and various interpretation options

The organisation

- The study of organisational conditions in relation to an HTA can take place using both organisational and administrative analyses
- The administrative analyses use a managerial perspective
- The organisational analyses deal with changes in relation to the execution / production

European scientific and technical cooperation in HTA

The timeline of reaching a sustainable and permanent HTA cooperation in Europe



Source: EUnetHTA www.eunethta.eu

EUnetHTA practical tools for technology developers and assessors

- Origin: **HTA Core Model®**
- Target group: **assessors and technology developers**

Document	Link
HTA Core Model	**https://meka.thl.fi/htacore/BrowseModel.aspx** *(For **Assessment element tables** choose the respective link)*
Licence & Guiding Principles on Use	http://meka.thl.fi/htacore/documents/HTACoreModel_Licence_12Jan2016.pdf
Procedure Manuals for Rapid REAs	http://meka.thl.fi/htacore/documents/WP5_ProcedureManual_RapidREAofPharmaceuticals.pdf
EUnetHTA Evidence **Submission Template**	http://eunethta.eu/outputs/eunethta-evidence-submission-template

Source: EUnetHTA www.eunethta.eu

The Domains of the HTA Core Model® - assessing dimensions of value

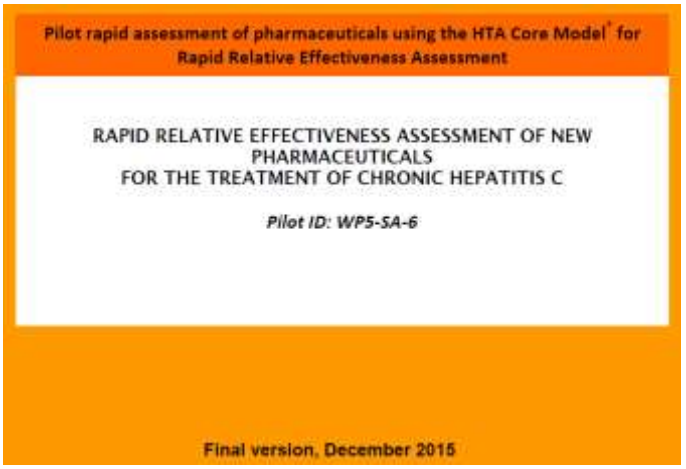
SCOPE	HTA Core Model DOMAINS
Rapid REA	1. Health problem and current use of technology
Rapid REA	2. Description and technical characteristics
Rapid REA	3. Safety
Rapid REA	4. Clinical effectiveness
Comprehensive/ Full HTA	5. Costs and economic evaluation
Comprehensive/ Full HTA	6. Ethical analysis
Comprehensive/ Full HTA	7. Organisational aspects
Comprehensive/ Full HTA	8. Patient and social aspects
Comprehensive/ Full HTA	9. Legal aspects

Source: EUnetHTA www.eunethta.eu

LEGO® the non-scientific analogue of the HTA Core Model®

The HTA Core Model for Relative Effectiveness Assessment (REA)

Example of HTA at central levels



Source: EUnetHTA www.eunethta.eu

HTA Core Model® for Rapid REA

Checklist for potential ethical, organizational, patient, social and legal aspects

1. Ethical	
1.1. Does the introduction of the new technology and its potential use/non-use instead of the defined, existing comparator(s) give rise to any new ethical issues?	Yes/No
If answered with 'yes', please provide a short statement explaining why. *Example:* Routine introduction of prenatal genetic screening tests, which could lead to pregnancy termination, may cause ethical issues for the couple as well as for the health-care provider.	
1.2. Does comparing the new technology to the defined, existing comparators point to any differences that may be ethically relevant?	Yes/No
If answered with 'yes', please provide a short statement explaining why. *Example:* The sponsor claims that its product is superior, but has decided to limit the amount of the new medicine, which means that it has to be rationed and not all patients who need it can receive it. The comparator is freely available.	

Source: EUnetHTA
www.eunethta.eu

Organisational

2. Organisational	
2.1. Does the introduction of the new technology and its potential use/non-use instead of the defined, existing comparator(s) require organisational changes?	Yes/No
If answered with 'yes', please provide a short statement explaining why. *Example:* The new intervention requires the establishment of specialised centres for administration.	
2.2. Does comparing the new technology to the defined, existing comparator(s) point to any differences that may be organisationally relevant?	Yes/No
If answered with 'yes', please provide a short statement explaining why. *Example:* The new technology will replace a surgical intervention, which may lead to excess capacity in relevant areas.	

Source: EUnetHTA
www.eunethta.eu

Patient and Social

3. **Social**	
3.1. Does the introduction of the new technology and its potential use/non-use instead of the defined, existing comparator(s) give rise to any new social issues?	Yes/No
If answered with 'yes', please provide a short statement explaining why. *Example:* A new technology allows patients to return to the workplace, but since the technology can be seen by co-workers, it may lead to stigmatisation.	
3.2. Does comparing the new technology to the defined, existing comparator(s) point to any differences that may be socially relevant?	Yes/No
If answered with 'yes', please provide a short statement explaining why. *Example:* A technology, which is widely used by persons with abuse problems, colours the tongue blue, thus, immediately identifying the user. Comparators do not have this property.	

Source: EUnetHTA www.eunethta.eu

Rapid REA and Submission template in JA2

Activity/ Activity steps	Status
HTA Core Model for Rapid REA	**Rapid REA assessments 6 - Strand A (pharmaceuticals) ; 6 – Strand B (other technologies)** **12 pilot rapid assessments finalised and published by December 2015**
National reports using pilot rapid REAs	**Survey results and continuous monitoring** published on http://www.eunethta.eu/national-uptake Currently **50+ cases of national use** of pilot rapid REAs by EUnetHTA member organisations
Submission file template	The Submission file template has been piloted in Strand A (4 pilots) and Strand B (2 pilots) and is **now published**
Procedure Manual, templates	**Procedure Manual and standardised templates** have been developed

Source: EUnetHTA www.eunethta.eu

Rapid REA and Submission template in JA2

5.4 Individual study results (clinical outcomes)

Uses: Pharmaceuticals and medical devices		
Description: This section is used to record the clinical outcomes of each study used as evidence in this submission. The section records direct comparisons of study data. Indirect comparisons are included in the synthesis of evidence and conclusions (sections 5.10 and 5.11).		
Contents: relevant endpoints, definition of endpoint, methods of data collection and analysis, study results (including assessment measure, time point, n with event, n without event, mean, standard deviation, difference, confidence interval, p value).		
HTA CORE model domain	**HTA CORE model topic**	**HTA CORE model Assessment Elements**
Clinical effectiveness	Mortality Morbidity Function Health related quality of life Patient satisfaction	D0001 (mandatory REA); D0005 (mandatory REA); D0006 (mandatory REA); D0011(mandatory REA); D0014; D0016 (non-mandatory REA); D0012 (mandatory REA); D0013 (mandatory REA); D0017 (non-mandatory REA)
Related EUnetHTA guidelines: Endpoints used for relative effectiveness assessment of pharmaceuticals: clinical endpoints http://www.eunethta.eu/sites/5026.fedimbo.belgium.be/files/Clinical%20endpoints.pdf Endpoints used for relative effectiveness assessment of pharmaceuticals: composite endpoints http://www.eunethta.eu/sites/5026.fedimbo.belgium.be/files/Composite%20endpoints.pdf Endpoints used in relative effectiveness assessment of pharmaceuticals: surrogate endpoints http://www.eunethta.eu/sites/5026.fedimbo.belgium.be/files/Surrogate%20Endpoints.pdf Endpoints used for relative effectiveness assessment of pharmaceuticals: HRQOL and utility measures http://www.eunethta.eu/sites/5026.fedimbo.belgium.be/files/Health-related%20quality%20of%20life.pdf		

General notes on using and adapting this section: Agencies may wish to identify whether the company should focus on particular outcomes when reporting study outcomes. The evidence submission template currently reflects those included in the HTA CORE model REA application: mortality, morbidity, function, health-related quality of life and patient satisfaction. Agencies who want to appraise a companies' network meta-analysis should request this section as well.			
HTA CORE model reference	**Question:**	**In short form**	**Adaptation notes**
	Describe the relevant endpoints, including the definition of the endpoint, methods of data collection and methods of analysis.	Y	A table is provided to facilitate completion. In the short form the company is requested only to provide a definition of the endpoint and methods of analysis.
	If any outcomes, studies or study arms are excluded from the summary of clinical outcomes provide a justification for their exclusion.		A table is provided to facilitate completion.
D0001, D0005	Provide a summary of the study results for each relevant	Y	Example tables are provided for dichotomous data

Source: EUnetHTA
www.eunethta.eu

Rapid REA and Submission template in JA2

4.1 Requirements to use the technology

Uses: Pharmaceuticals and medical devices			
Description: This section describes resources and personnel that are needed in order to be able to use the technology.			
Contents: Associated technologies (pharmaceuticals, medical devices and procedure); restrictions applied to the authorisation, concomitant treatments, concomitant tests, monitoring and investigations, facilities, equipment and supplies required.			
HTA CORE model domain	**HTA CORE model topic**	**HTA CORE model Assessment Elements**	
Description and characteristics of the technology	Investments and tools required to use the technology	A0020 (REA mandatory); B0008 (REA non-mandatory); B0009 (REA non-mandatory)	
Related EUnetHTA guidelines:			

HTA CORE model reference	Question:	In short form	Adaptation guide
A0020 B0008 B0009	State whether using the technology requires another technology: • Pharmaceutical • Medical device • Procedure		
A0020	Special conditions attached to the regulatory authorisation:		Companies are asked to reference relevant sections of the SPC, EPAR or user manual.
	• conditions relating to settings for use e.g. inpatient or outpatient, presence of resuscitation facilities	Y	
	• restrictions on professionals who can use or may prescribe the technology	Y	
	• conditions relating to clinical management e.g. patient monitoring, diagnosis, management and concomitant treatments	Y	
B0009	Describe the treatments (e.g. for side-effects) that may be required by patients using the technology.		
B0009	Describe the tests, investigations and monitoring required by patients using the technology.		
B0008	Describe the facilities required to use the technology.	Y	Only included in the short form version of the evidence submission template for medical devices.
B0009	Describe the equipment required to use the technology	Y	
B0009	Describe the supplies required to use the technology.	Y	

Source: EUnetHTA
www.eunethta.eu

Control questions

- HTA is a key element in market access / pricing & reimbursement processes
  Yes, increasingly
- HTA always includes cost-effectiveness
  No
- The clinical information in HTA is the least context dependent information
  Yes, with caution

Take home messages

- Access to innovation is increasingly channeled through HTA
- HTA information needs to be adapted into context
- A strategic systems approach (national <-> regional <-> local) is needed