Needs-led activity-based HTA
with support and quality control processes

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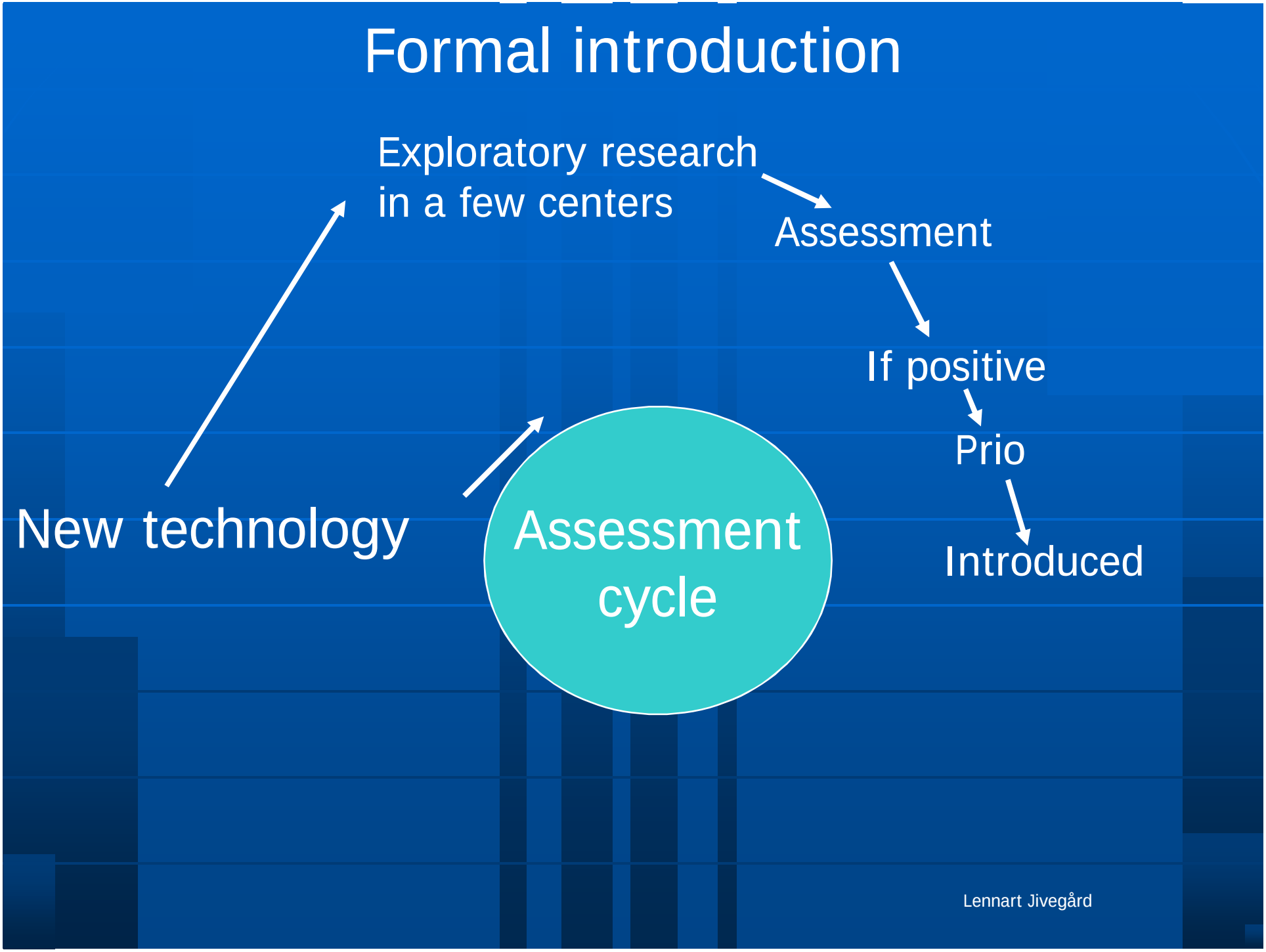
Background

- Commission by Region Västra Götaland, Sahlgrenska University Hospital and Sahlgrenska Academy
  -Do we need local/regional assessment of technologies?
- Region Västra Götaland 1,6 million people

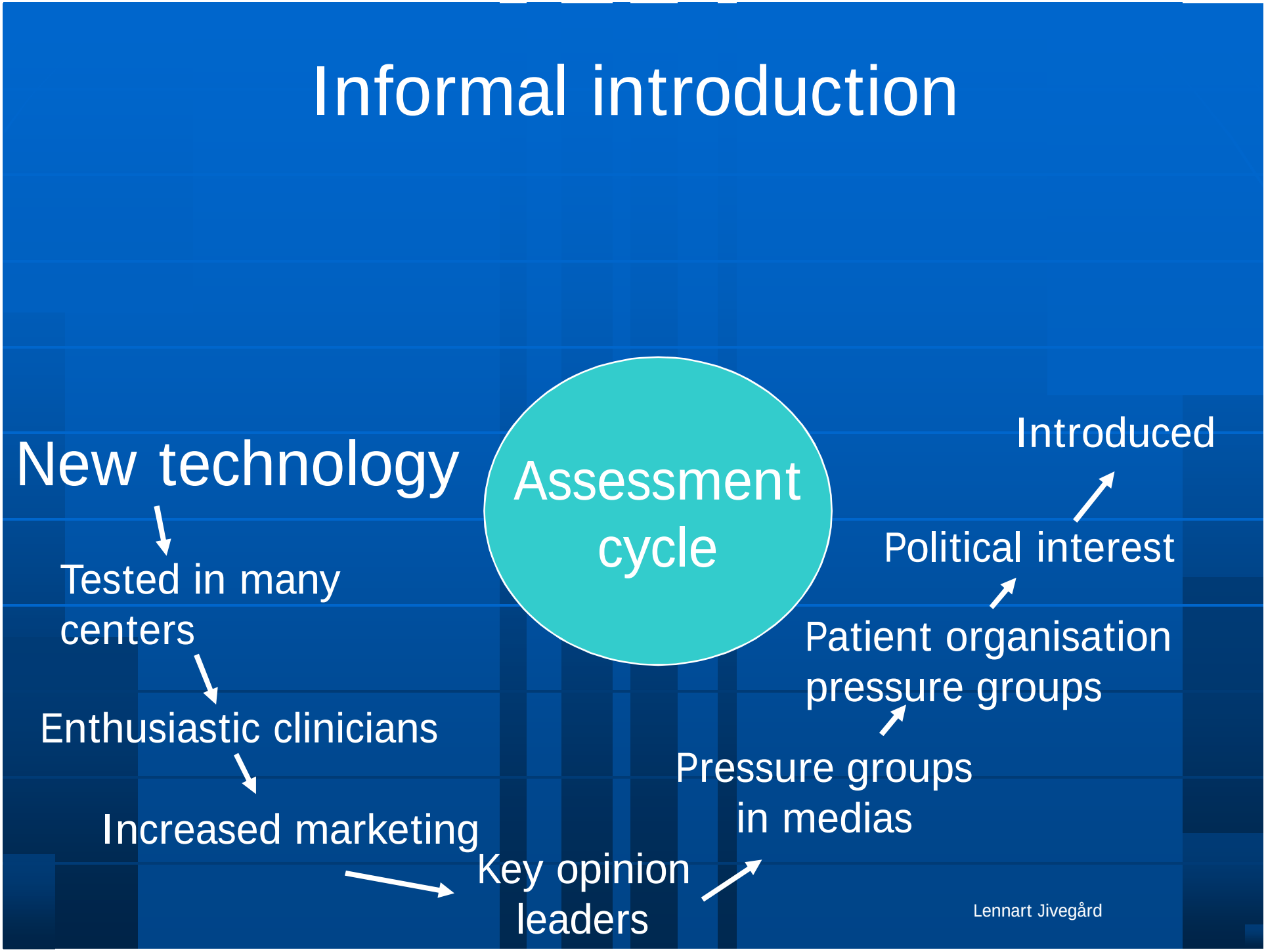
How are technologies introduced?

- Formal and informal introduction
- Informal introduction may give problems

Formal introduction



Informal introduction



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Decision-makers views

- Clinicians often negative to HTA
- Administration positive but rarely used it
- Formal and informal decision-makers
  -both groups often poor knowledge of HTA
  -relevant HTAs not available when needed
  -no defined pathway or accepted decision support tools
- Critical issue: How could we involve local clinicians = informal decision-makers?

Conclusions in commission

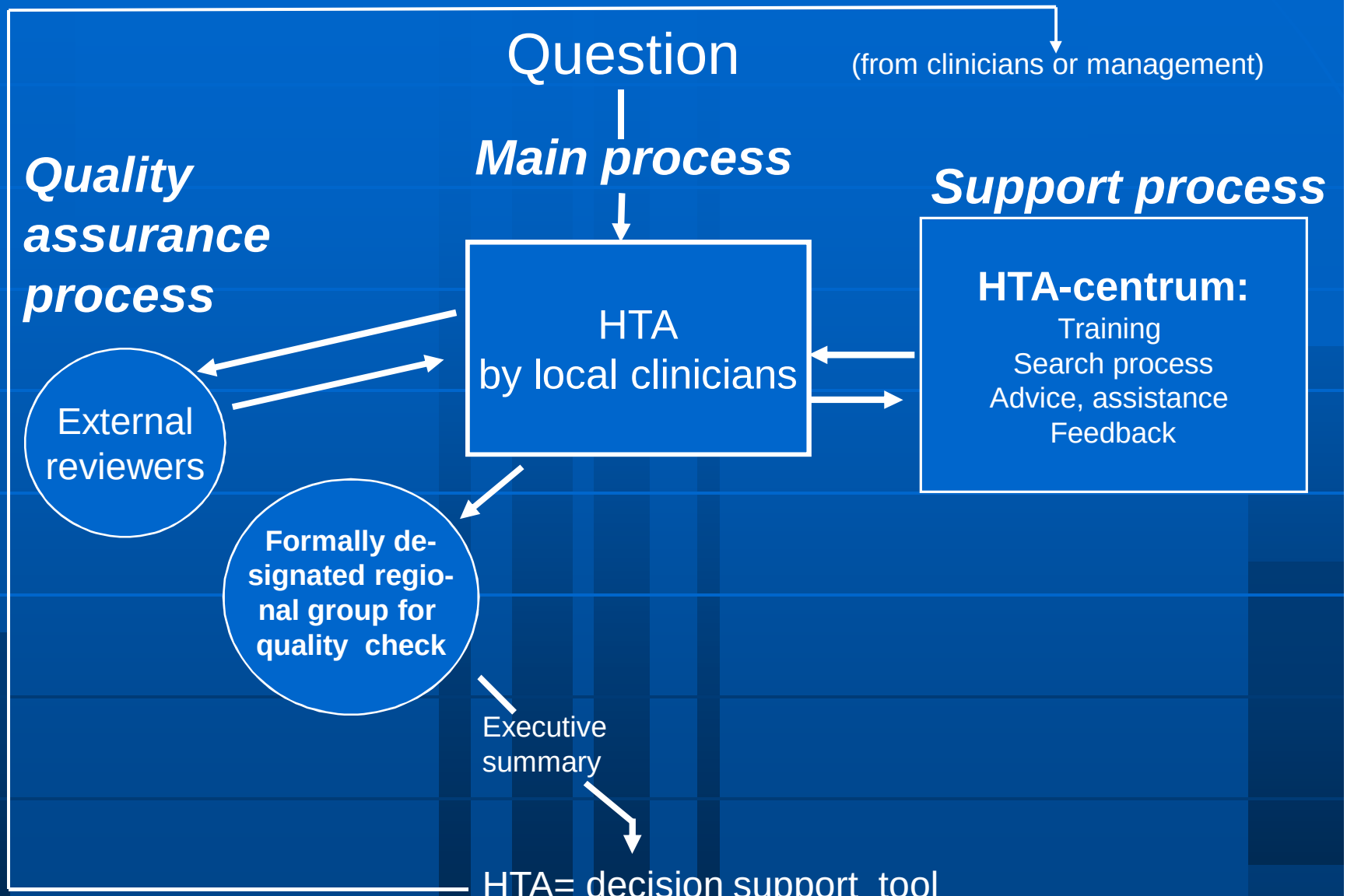
- Formal introduction should be mandatory
- Relevant HTA before
- Regional HTA must be accepted by clinicians, academy, management & politics
- *Clinicians be responsible for relevant HTA (= incentive activity-based HTA)*

- Activity-based HTA needs support & multidisciplinary quality assurance
- Support organisation (HTA-centrum) including medical library needed
  -regional but organised in university hospital with medical library as part of HTA-centrum
- Possibility of applying for research grants

Project establishing activity-based HTA

- Project group with competencies including management, EBM, HTA, info
- Activity (clinicians) nominated questions
- Clinicians did 8 HTA projects w support
- Region accepted activity-based HTA & financed support organisation

Needs-led activity-based HTA



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Activity-based HTA: main principles

- PICO model (Patients, Intervention, Comparison, Outcome)
- Limited questions, rapid projects
- HTA protocol approximately 25 questions
- Full systematic literature review

Activity-based HTA: goal leadtimes
Workload for the involved clinicians

Meetings
10 hs

PICO

↓

Systematic literature search

↓

Evaluation of publications

↓

GRADE
HTA protocol completed

↓

Quality check

↓

Quality controlled HTA

2 months

10 – 30 hs

1 month

Goal: sum 3 months

Step 1: Nominations & initiating HTA

- Question nominated (website)

  -prioritisation principles on the website
  -preliminary search & discussions
  -accept (/not accept)

- Heads of relevant departments

  -must support question and thus HTA production
  -must commission 3–5 clinicians for HTA and make sure they have time (20–40 hours/each)

- HTA-centrum

  -appoints 2 HTA experts + 2 information specialists

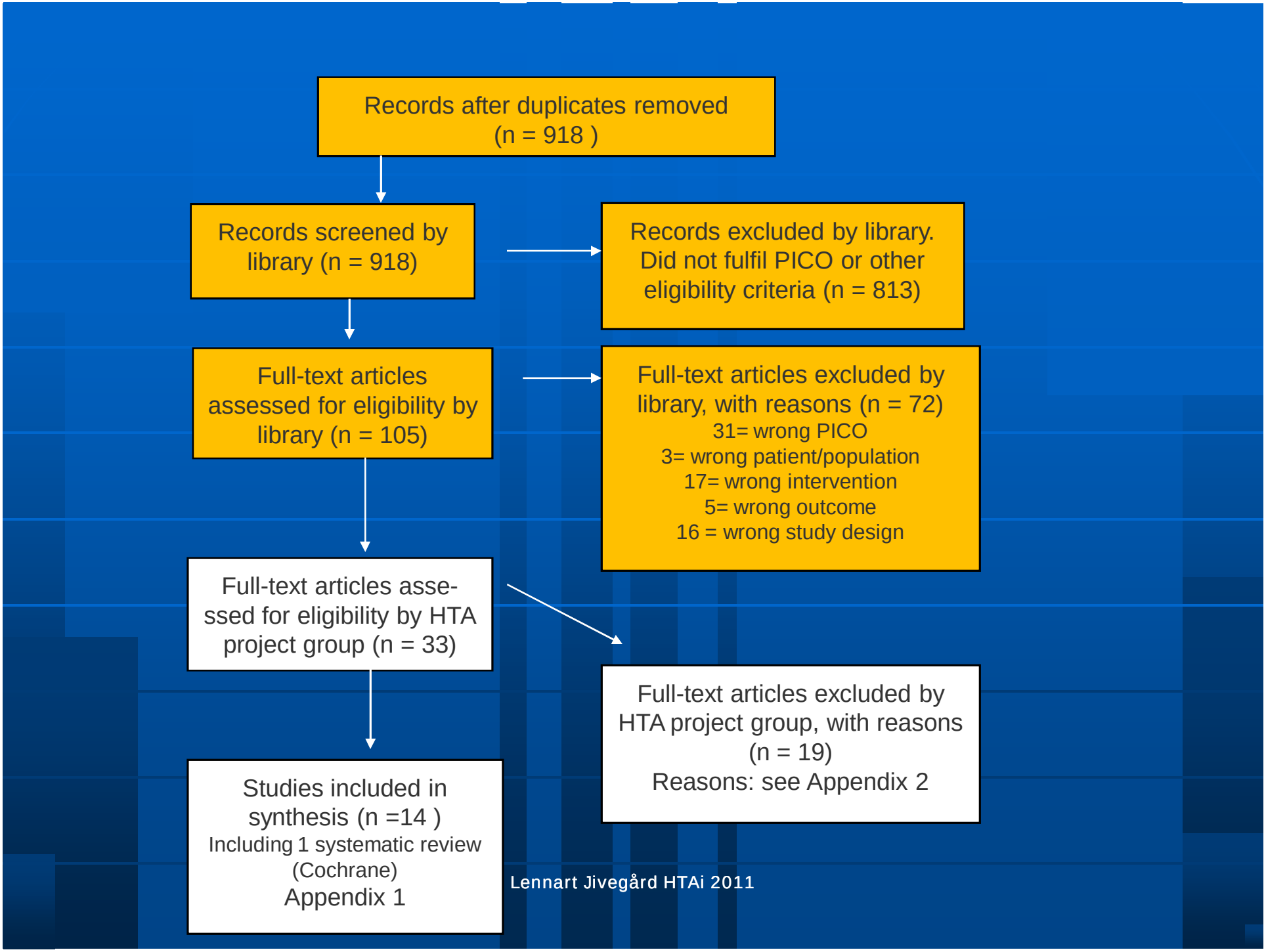
Step 2: Start meeting

- Introducing HTA
- PICO defined
- HTA protocol & tools presented

  (http://www.sahlgrenska.se/sv/SU/Forskning/HTA-centrum/)
- Training critical evaluation
- Detailed time plan

Step 3: Search process

- Profiled information specialists (medical library) have major role in HTA process


Records after duplicates removed (n = 918)
Records screened by library (n = 918)
Records excluded by library. Did not fulfil PICO or other eligibility criteria (n = 813)
Full-text articles assessed for eligibility by library (n = 105)
Full-text articles excluded by library, with reasons (n = 72)
31= wrong PICO
3= wrong patient/population
17= wrong intervention
5= wrong outcome
16 = wrong study design
Full-text articles asse-ssed for eligibility by HTA project group (n = 33)
Full-text articles excluded by HTA project group, with reasons (n = 19)
Reasons: see Appendix 2
Studies included in synthesis (n =14)
Including 1 systematic review (Cochrane)
Appendix 1
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Step 4: Critical evaluation & GRADE

- Included articles evaluated (checklists)
  -read by the clinicians in HTA group and 2 HTA experts
  -quality, relevance discussed and decided in consensus
- GRADE (work sheets)
  -discussed and decided in consensus during meeting(s)

2. Treatment / exposure assignment

a. Were details about randomization procedure given?
- ❑ Yes = 0
- ❑ No = 1

b. Could the randomization be manipulated?
- ❑ Yes (e.g., tossing of coin or throwing of dice) = 1
- ❑ No (e.g., opaque envelopes, computer-generated list kept by others than investigators) = 0

c. Did randomization lead to unpredictable treatment assignment?
- ❑ Yes = 0
- ❑ No, treatment could potentially be deduced in some or all = 2

d. Were there exclusions / withdrawals *after* randomization?
- ❑ Yes = 2
- ❑ No = 0

3. Comparability of groups

a. Was there an account of the comparability of groups with regard to all conceivable factors that might affect the outcome?
- ❑ Yes = 0
- ❑ No = 1

b. Were there any important differences?
- ❑ Yes = 2
- ❑ No = 0
- ❑ No data given = 0 (already scored under 3a)

Arbetsblad för att sammanställa evidensstyrkan – per effektmått

Tillstånd:	
Åtgärd:	
Effektmått:	
Ingående studier: RCT ☐ Systematisk översikt ☐ Kohortstudier ☐ Antal studier: Antal pt:	
Studiekvalitet (Randomiseringsförfarande, blindning, uppföljning, bortfall, intention-to-treat) ☐ Inga begränsningar ☐ Vissa begränsningar (*men inte nog för nedgradering*) ☐ Allvarliga begränsningar (*minska ett steg*) ☐ Mycket allvarliga begränsningar (*minska två steg*) Kommentera begränsningar eller grundvalen för nedgradering:	☐ 0 ☐ 0? ☐ -1 ☐ -2
Överensstämmelse (Estimat av relativa effekten lika storlek och riktning mellan studierna? Överlappande konfidensintervall?) ☐ Baserat på metaanalys Statistisk test för heterogenicitet: ☐ Chi-2 ☐ I^2 ☐ Inget ☐ Inga problem ☐ Viss heterogenicitet (*men inte nog för nedgradering*) ☐ Bekymmersam heterogenicitet (*minska ett steg*) Kommentera brist på överensstämmelse eller grundvalen för nedgradering:	☐ 0 ☐ 0? ☐ -1
Överförbarhet (Studiepopulation – extern validitet, interventionens specificitet, effektmåttets relevans, relevans av jämförelsemetod, sjukvårdsmiljö, adekvat uppföljningstid) ☐ Ingen osäkerhet ☐ Viss osäkerhet (*men inte nog för nedgradering*) ☐ Osäkerhet (*minska ett steg*) ☐ Påtaglig osäkerhet (*minska två steg*) Kommentera viss osäkerhet eller grundvalen för nedgradering:	☐ 0 ☐ 0? ☐ -1 ☐ -2

Oprecisa data (Få händelser, vida konfidensintervall som infattar möjlig ogynnsam effekt) ☐ Inga problem ☐ Vissa problem med precision (*men inte nog för nedgradering*) ☐ Oprecisa data (*minska ett steg*) Kommentera viss osäkerhet eller grundvalen för nedgradering:	☐ 0 ☐ 0? ☐ -1
Risk för publikationsbias (Få och små studier från samma forskargrupp eller företag som alla visar samma sak, kända opublicerade studier) ☐ Inga problem ☐ Klar risk för publikationsbias (*minska ett steg*) Kommentera grundvalen för nedgradering	☐ 0 ☐ 0? ☐ -1
Effektstorlek Vid stor effekt eller mycket stor effekt kan man öka 1 till 2 steg. ☐ Ej relevant ☐ Stor effekt (RR < 0,5 eller > 2) (*öka ett steg*) ☐ Mycket stor effekt (RR < 0,2 eller >5) (*öka två steg*) Kommentera grundvalen för uppgradering	☐ 0 ☐ +1 ☐ +2
☐ Kommentera andra viktiga aspekter som ska beaktas vid kategorisering av evidensstyrka/bedömning av vetenskapligt underlag? Detta är tex ett tydligt dos-responssamband som kan höja evidensstyrkan respektive tydliga confounders, som om samtliga "arbetar emot" interventionen kan höja evidensstyrkan.	
Räcker summan av smärre brister under flera punkter till en nedgradering med ytterligare ett helt steg? ☐ Ja ☐ Nej	☐ -1 ☐ 0
Evidensstyrka ☐ Hög (++++) ☐ Måttlig (+++) ☐ Låg (++) ☐ Mycket låg (+)	

Step 5: HTA protocol completed

- Summary of *knowledge*
- Contents (<10 pages)
  -health problem, technology
  -search process
  -level of evidence for patient benefit and risks
  -tables for all studied outcomes
  -ethical & organisational aspects
  -economic aspects (budget impact)
  -uncertainties and gaps of evidence
- Executive summary= ≤ 2 pages

Step 6: Quality control

1. Support & feedback by HTA-centrum
2. External assessment by two reviewers
3. Regional HTA quality assurance group
   -final check + suggesting revisions
   -approval of adequate quality
   -responsible for executive summary

Step 7: Publication (after final revision)

- Sent to
  -those who nominated question
  -regional stakeholders
  -other HTA units
- On website, HTA database

Output
-two important outputs

	n =
Clinicians trained in HTA work (understand and can spread HTA principles)	>140
HTA reports	40

Impact of activity-based HTA

-examples of introduction of technologies

- Abdominal aortic aneurysm screening
- Increased bariatric surgery (national guidelines)
- Liquid-based cytology for cervix cancer

Examples of disinvestment

- Auricular acupuncture for drug abuse
- SNS for fecal incontinence
- Extraction of wisdom teeths

Impact activity-based HTA

Research grants for evidence development (1 million USD annually)

70 000 Euro	Barrett´s esophagus / Hans Lönroth
40 000 Euro	Osseointegration **/**Peter Nyberg, Björn Ståhlgren
70 000 Euro	PGD (Preimplantatorisk genetisk diagnostik) /Bo Hallin, Inger Bryman
70 000 Euro	Robotkirurgi vid lokaliserad prostatacancer /Pär Lodding, Eva Haglind
70 000 Euro	Kan behandling med mekaniska hjärtpumpar minska mortaliteten hos patienter med livshotande hjärtsvikt i samband /Lars Grip

40 000 Euro	ECMO- Lars Wiklund/Lars Grip
35 000 Euro	Robotkirurgi - Eva Haglind
35 000 Euro	Robotkirurgi – Pär Lodding
50 000 Euro	Dyslipidemi och obstruktiv sömnapné / Kaj Stenlöf/Lars Fändriks
40 000 Euro	Robotassisterande laparaskopisk kirurgi – Eklind
70 000 Euro	Akut kirurgi (tromboendartärectomi) – Rosengren
70 000 Euro	Osseointegration – Hagberg
70 000 Euro	Klafförsedda stent – medfödda hjärtfel - Mikael Dellborg
40 000 Euro	Vakumförband – Gerdin
40 000 Euro	Barret´s Eosophagus (fortsatt stöd) - Edebo

Economy and staff

- No extra budget for the work by clinicians
- HTA-centrum

  -staff (n=7) works part time (20 – 80%) with HTA

  -competencies EBM, management, HTA, information specialist

  -HTA chief (50%) is professor and EBM-expert

  -staff corresponds to 3,5 full-time employees

  -increasing staff later this year
- Budget HTA-centrum 700,000 USD

  (+ existing budget for medical library)

Economy: ”Upside”

- Avoid introducing technologies
  -e.g. insufficient evidence for new guidelines for termination of postmature pregnancy
  -3,5 million USD reduced cost annually
- Disinvestment
  -e.g. SNS for faecal incontinence
  -280,000 USD reduced cost annually

Number of nominated questions for activity-based HTA

	n =
2006-07	14
2008–09	28
2010–11 (prognosis)	54

72 nominations until March 2011

	n=
Accepted for HTA	50
-40 quality controlled until 06/2011	
-6 ongoing	
-4 start later during 2011	
Short answers (by HTA-centrum)	5
Not accepted	17 (24%)

HTA production 2007 – June 2011

- 40 quality controlled HTA reports
  -8 of which January to June 2011
- Medicine 38
  Nursing 1
  Odontology 1

CATEGORIES, HTA projects

	n =
Method/process	22
Expensive technique/ device/implant	12
Drugs	6

Type of question

	n=	
Introduction of technology	36	(90%)
Disinvestment	4	

HTA production

2007: Test projects establishing HTA

1. ECMO
2. Robotically assisted laparoscopic surgery for prostate cancer
3. Post term pregnancy
4. Screening for abdominal aortic aneurysm
5. Negative pressure wound treatment for diabetic foot gamgrene
6. Osseointegrative limb prostheses
7. Surveillance of Barrett´s esophagus
8. Preimplantatory genetic diagnosis

2008 (Start of HTA-centrum)

9. Bariatric surgery
10. Amphetamine treatment for adult ADHD
11. Liquid-based cytology

2009

12. Perioperative MR during tumour neurosurgery
13. Surgical treatment of pseudomyxoma peritonei
14. Sacral nerve stimulation of faecal incontinence
15. TNF-alphainhibitors for early rheumatoid arthritis
16. Antinatriuretic Peptide for prevention or treatment of renal failure
17. Valvular stent graft
18. Diagnosis of colonic tumors
19. Probiotics
20. Robotically assisted laparoscopic surgery for cervix carcinomas
21. Urgent carotid surgery after TIA/minor stroke
22. Auricular acupuncture for drug abuse
23. Drug treatment for Postpolio syndrome

2010

24. Percutaneous closure of patent foramen ovale in cryptogenic stroke patients
25. Wisdom teeth extraction
26. Nurse-based outpatient clinics
27. Fenestrated endovascular aortic aneurysm repair
28. Brachytherapy for hepatic cancer
29. Transarterial aortic valve insertion
30. Laparoscopic treatment for perforated diverticulitis
31. Abdominal reduction plastic surgery

2011 (until June)

32. Pharmacologic treatment for recurrent myeloma
33. Clinical Decision Support Systems and implementation of guidelines
34. Phrenic nerve stimulation for medullary injuries with total ventilator dependancy
35. Laparoscopic renal surgery for renal tumors
36. Pulsoxymetry screening for severe CHD in newborns
37. Robotically assisted laparoscopic surgery for benign gynecological conditions
38. Corneal cross linking for keratoconus
39. Negative pressure wound therapy
40. Treatment of flexor tendon injuries in the hand

Currently ongoing HTA projects

41. Shoulder arthroplasty
42. Soliris
43. Bone anchored hearing aid
44. Hyperbaric oxygen treatment
45. Surgical or endovascular treatment for external iliac atherosclerotic lesions
46. Fixation or not for multiple rib fractures with thoracic instability

+ 4 projects currently waiting to start

Evidence level (GRADE) for primary outcome in 40 HTA projects

	n =	
⊕	24	(60%)
⊕⊕	5	
⊕⊕⊕	9	
⊕⊕⊕⊕	2	

Some basic statistics after 40 HTA

- Project duration 4,6 ± 2,1 months
- Primary result of search 818 ± 603 titles
- In full text to HTA group 31 ± 27 articles
- Finally included 13 ± 8 articles

Examples from executive summary in a Statement from Regional quality assurance group "Corneal cross-link for keratoconus"

Method and patient category:

Keratoconus is a noninflammatory, asymmetrical, progressive corneal ectasia caused by biomechanical instability of the corneal stroma. The result is induced myopia and irregular astigmatism leading to reduced vision. Treatment modalities are primarily glasses and or contact lenses. However, it has been estimated that one out of five patients will progress to such an extent that a corneal transplant is necessary to regain useful vision.

Level of evidence:

The systemic literature search identified two randomised, controlled trials (RCTs) and five non-randomised, controlled observational studies reporting the effects of corneal crosslinking on keratoconus. The follow-up ranged from three to 24 months. Both RCTs were of low-to-moderate quality. One of the controlled observational studies was of moderate and the other four were of low scientific quality.

Uncorrected distance visual acuity (UDVA)

Only one RCT compared the difference between CXL-treated eyes and control eyes. There was no statistical difference between these two groups after three months of follow-up. Three observational studies reported a slight improvement in paired analyses, i.e. within the treated before and after CXL.

The level of evidence to support an improvement of UDVA by CXL compared to no treatment is very low (GRADE ⊕).

Impact:
decisions about assessed technologies

Hospital CEO should ask these questions

Survey to heads of departments for HTA reports > 1 year old (n= 26)

- Decision not ready/unclear n= 4
- Clear decision n= 22

-according to level of evidence 20/22 (91%)

How is activity-based HTA running?

- Increasing interest: nominations increasing
- The other major health care regions in Sweden start similar activities
- Project times: slight increase
- Process works very well and is accepted
- Clinicians nearly always very positive
- Improves HTA competence and may facilitate implementation of HTA/guidelines

Concluding remarks

- Necessary adjuncts
  -support and quality assurance organisations with high credibility in the activity, academy and administration
- Key success factors:
  -careful limitation of projects and time planning
  -effective support & quality control processes
- Activity-based HTA can be used in your organisation too!

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My background

- MD 1975, speciality vascular surgery.
- Research: PhD, Senior university lecturer
- Leadership positions for 13 years
  -head of clinics
  -CEO for hospital area with 650 beds
- Present
  -Consultant vascular surgeon, Senior university lecturer 70%
  -Support person for HTA-centrum

Informal decision-makers

- Want new technology
- Incentive to produce HTA
- Trained scientific readers

Needed

- Competences
  - -HTA/EBM
  - -Management
  - -Economy
  - -Information
- Protocols & tools

Good quality HTA when needed

Formal decision-makers

- Want HTA report
- Support HTA production
- Customer to HTA report

Current status activity-based HTA

- Main aim: rapid process enables use in budget process
- Goal: from nomination to completed HTA: ≤ 6 months
- Main problem at present:
  -waiting time to start HTA process