



Health economic evaluation in quality register research

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The NEW ENGLAND JOURNAL *of* MEDICINE

Perspective

The Randomized Registry Trial — The Next Disruptive Technology in Clinical Research?

Michael S. Lauer, M.D., and Ralph B. D'Agostino, Sr., Ph.D.

The next *"next disruptive technology in health care"*

Aims

Gain knowledge about

1. Health economic outcomes
2. How to measure health economic outcomes in Swedish health care
3. How to design a cost-effectiveness analysis using enriched quality register data

Agenda

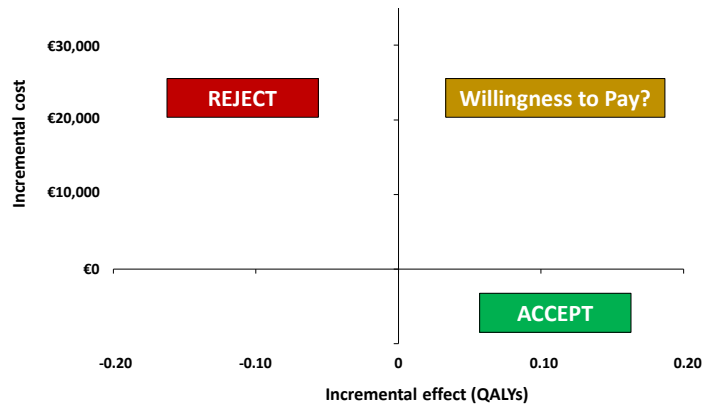
- Introduction to health economic evaluation
- Group work
- Discussion
- Economic evaluation in the randomized SWEFOT trial

Introduction to health economic evaluation

Incremental Cost Effectiveness Ratio (ICER)

$$\text{ICER} = \frac{\Delta \text{Costs}}{\Delta \text{QALYs}} = \frac{\text{Costs}_{\text{new intervention}} - \text{Costs}_{\text{control intervention}}}{\text{Effects}_{\text{new intervention}} - \text{Effects}_{\text{control intervention}}}$$

The cost-effectiveness plane



Eriksson JK, Karlsson JA, Bratt J, Petersson IF, van Vollenhoven RF, Ernestam S, Gebrek P, Neovius M
Annals of the Rheumatic Diseases, 2014

Costs

Costs

- Health care costs
 - Non-primary outpatient care
 - Inpatient care
 - Primary care (Stockholm, Västra Götaland, Skåne)
 - Drug cost
- Productivity losses
 - Sick leave (sjukpenning)
 - Disability pension (sjuk- /aktivitetsersättning)
- Other
 - Community care and transportation, informal care, patients' out of pocket expenses, loss of unpaid work and leisure time

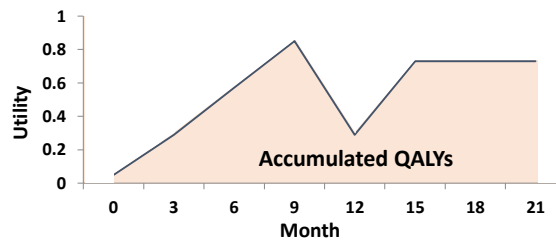
Effects

Effects

- Length of life (expected life years saved)
- Quality of life

Cost-utility analysis (CUA)

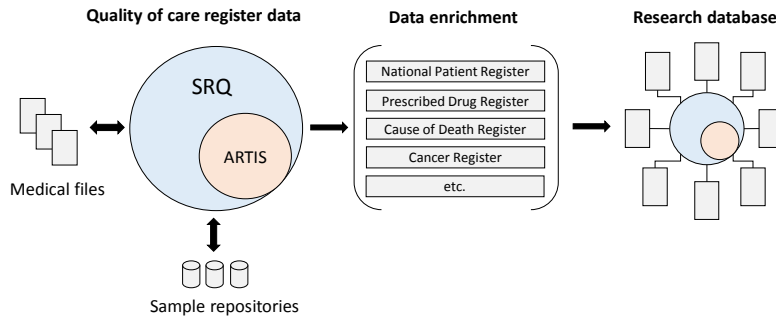
- QALYS = Quality adjusted life years



Register sources

- **The National Patient Register**
 - Non-primary outpatient care
 - Inpatient care
- **The Prescribed Drug Register**
- **Social Insurance Agency**
 - Compensated days of sick leave (≥ 15 days)
 - Compensated days of disability pension
- **The Causes of Death Register**

Enriched quality register data



Eriksson JK, Askling J, Arkema E
Clin. Exp. Rheumatol, 2014

Group work

Part 1 – Measure and recording data

- What variables do you measure in your quality of care registers?
- Are those measures used in research or health care evaluations?
- Challenges of measuring and recording data?

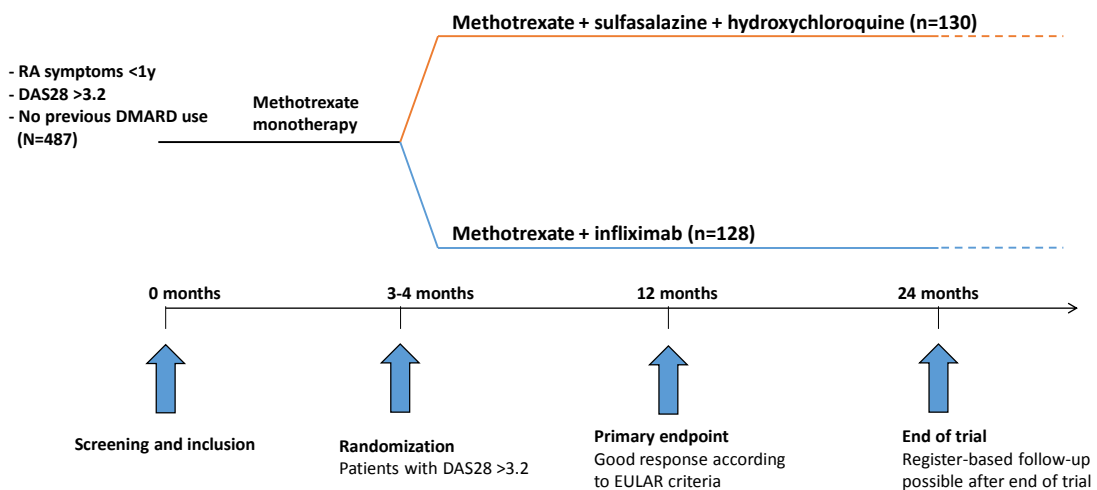
Part 2 - Analysis

- How conduct a cost-effectiveness analysis based on quality of care register data?
- Strengths?
- Challenges?

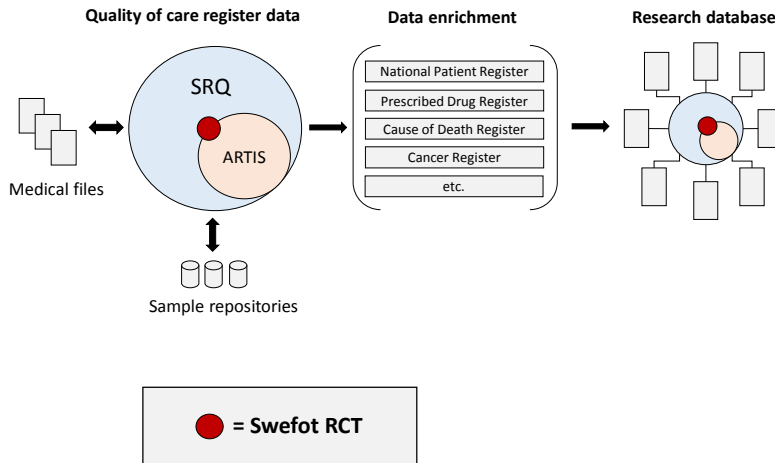
The randomized SWEFOT trial

- Biologic drugs in RA
 - Efficacious vs methotrexate monotherapy [MTX]
 - Expensive: ≈€15,000 per year
- Common clinical situation in early RA: MTX failure – What next?
 - Combination DMARDs? [conventional treatment]
 - Biologic DMARD + MTX?

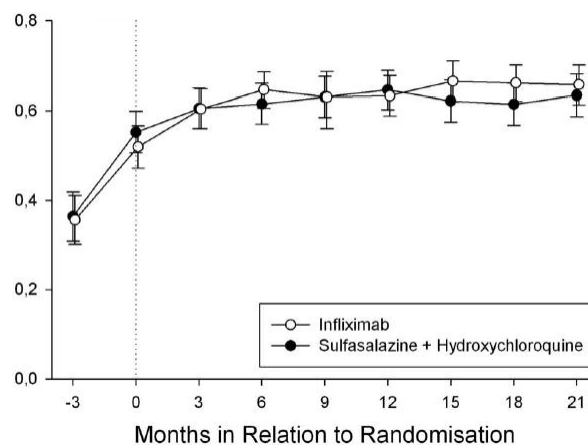
The randomized Swefot trial



Enriched quality register data



Quality of life (EQ5D)



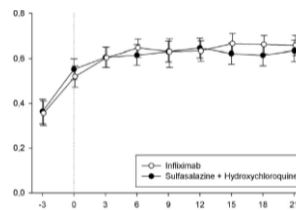
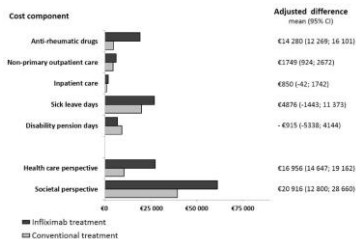
QALYs
Adjusted difference (95% CI)
0.01 (-0.07 to 0.08)

Karlsson JA, Neovius M, Nilsson J, Petersson IF, Bratt J, van Vollenhoven RF, Ernestam S, Geborek P
Annals of the Rheumatic Diseases, 2013

Incremental cost-effectiveness ratio

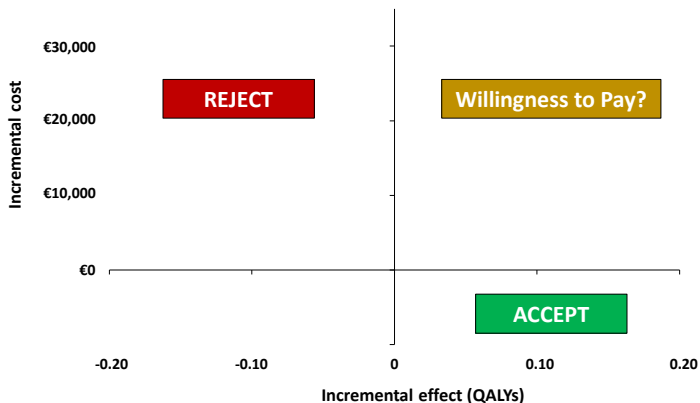
ICER (€ per QALY)

$$ICER = \frac{\Delta \text{ Costs}}{\Delta \text{ QALYs}} =$$



Incremental cost-effectiveness ratio

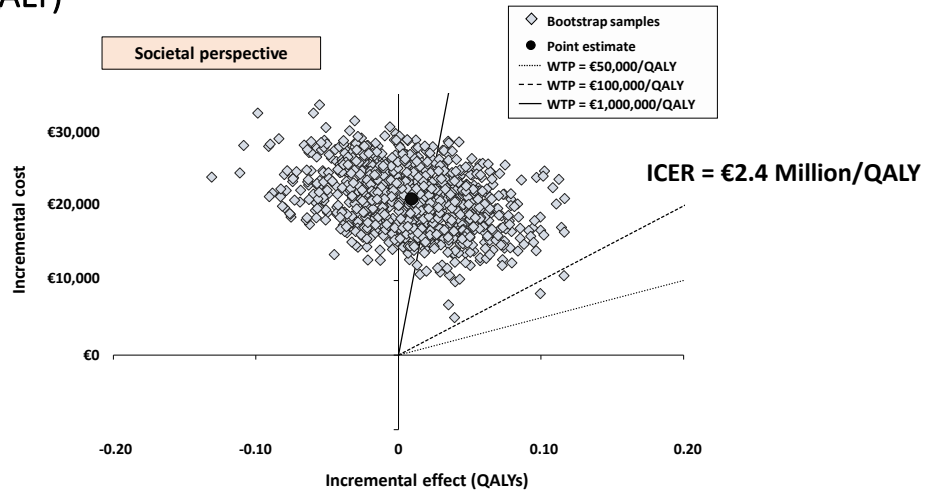
ICER (€ per QALY)



Eriksson JK, Karlsson JA, Bratt J, Petersson IF, van Vollenhoven RF, Ernestam S, Geborek P, Neovius M *Annals of the Rheumatic Diseases*, 2014

Incremental cost-effectiveness ratio

ICER (€ per QALY)



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Annals of the Rheumatic Diseases, 2014

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Biological vs. conventional combination treatment and work loss in early rheumatoid arthritis: a randomized trial.
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