Real world evidence supporting health economic evaluations and market access - a Nordic perspective

Nordic Trial Alliance Stakeholders Workshop 2017
Hotel Bristol, Oslo
31 January 2017

Jarmo Hahl, CEO
Medaffcon Oy
Finland
Perspective

Health Economics

• Costs: Health care resource use
• Effectiveness: Health benefits, utility,

Market Access

• Access to treatment of choice based on clinical judgement
  • Access not affected by the financial status of the patient, provider of the service, or the payer of the service
• Service provider
Clinical trials in economic evaluations

Pros

• Internal validity
• Costs and benefits from the same setting
• Traditional statistical analyses

Cons

• Require large population and long period
• Differences to clinical practice (e.g. protocol driven costs)
• Differences in treatment practices in countries
• Selection bias
Practical challenges

• Efficacy is not effectiveness
• Placebo is not a relevant comparator for decision maker
• Costs and effectiveness need to be gathered from multiple sources (epidemiological, clinical, financial)
• Modelling as a solution
Then what?

Modelling allows to...

• combine multiple data sources
• examine longer time spans
• testing different assumptions on levels of risks, effectiveness, costs...
• manage the uncertainty related to the analysis

It is evident, that RCTs are not enough for the use of health economics and economic evaluation
What is Real World Evidence

Real World Data (RWD)

• Healthcare data not collected through traditional randomized controlled clinical trials (RCTs) and used for decision making

Real World Evidence (RWE)

• Evidence derived from the aggregation and analysis of RWD elements
What is it for? The big picture

- Adaptive Pathways
- Research efficiency
- Value based healthcare

RWD
Multiple functions, stakeholders and end users

Medical research
Safety
Market Access, health economics

Facilitates decision making

• Prioritisation
  • Budget constraints
  • Evidence on "every day effectiveness"

• Clinical decision making
  • RWD may or may not support RCT evidence
Cross-Nordic projects

• Several high quality examples in Medical research and Safety

Example 1. The use of SSRIs during pregnancy and adverse effects in the offspring

A Nordic collaboration has been established to study possible adverse effects of the use of Selective Serotonin Reuptake Inhibitors (SSRIs) during pregnancy. A collaborative study involves four countries: Denmark, Sweden, Norway and Finland.

Example 3. The SCANDAT database

The Scandinavian Donations and Transfusions (SCANDAT) database holds data on virtually all blood donors and recipients who have been registered at least once in any of the computerized local blood bank databases in Sweden and Denmark. Computerizations of administrative transfusion registers were initiated in 1966 in Sweden and in 1985 in Denmark.

Example 4. The Pandemic Influenza vaccine and narcolepsy - a potential collaboration

After the influenza A(H1N1) pandemic in 2009/2010, concerns have been raised about a potential causal link between the Pandemrix vaccine and narcolepsy, especially in children. In Sweden, Finland and Norway, there have been reports of an increased incidence of narcolepsy, and several cases have been reported to medical agencies as adverse events after vaccination. However, narcolepsy is a rare diagnoses and it is a challenge to obtain correct information on all new cases of narcolepsy, both vaccinated and unvaccinated. Increased
Cross-Nordic projects

• Several high quality examples in Medical research and Safety

• Health Economics and Market Access?
  • Increasing demand
  • Not so much to report so far – costs, efficiency and quality, though
Lots of valuable research have been done

**COSTS AND QUALITY AT THE HOSPITAL LEVEL IN THE NORDIC COUNTRIES**

SVERRE A. C. KITTELSEN*, KJARTAN S. ANTHUND, FANNY GOUDE*, INGRID M. S. HUITFELDT*, UNTO HÄKKINEN†, MARIE KRUSE*, EMMA MEDIN*, CLAS REHNBERG*, HANNA RÄTTÖ*

**Measuring cost efficiency in the Nordic Hospitals—a cross-sectional comparison of public hospitals in 2002**

Miika Linna • Unto Häkkinen • Mikko Peltola • Jon Magnussen • Kjartan S. Anthun • Sverre Kittelsen • Annette Roed • Kim Olsen • Emma Medin • Clas Rehnberg

**The Cost of Inaction**

A socioeconomic analysis of costs linked to disrupting substances on male reproductive health

**Costs of cancer in the Nordic countries**

A comparative study of health care costs and public income loss compensation payments related to cancer in the Nordic countries in 2007

Authors

Jorid Kalseth, Vidar Halsteinli, Thomas Halvorsen, Birgitte Kalseth, Kjartan Anthun, Mikko Peltola, Kirs Kautiainen, Unto Häkkinen, Emma Medin, Jonatan Lundgren, Clas Rehnberg, Birna Bjørg Másdóttir, Maria Heimisdottir, Helga Hrefna Bjarnadóttir, Jóanis Erik Kétlum, Janni Kilsmark
Cross-Nordic projects

• Several high quality examples in Medical research and Safety

• Health Economics and Market Access?
  • Increasing demand
  • Not so much to report so far – costs, efficiency and quality, though

• Economic evaluation: complex situation due to the need for multiple data sources => time is of essence, in many cases

• Ad hoc approach: get the data where it is accessible in reasonable time with reasonable cost

Case example: HRU from SWEDEHEART, epidemiology from FINRISKI, mortality from national registry, Qol from stand-alone survey...
Lots of valuable research have been done

COSTS AND QUALITY AT THE HOSPITAL LEVEL IN THE NORDIC COUNTRIES
SVERRE A. C. KITTELENSK, KJARTAN S. ANTHUNB, FANNY GOUDEC, INGRID M. S. HUITFELDTD,
UNTO HÄKKINENF, MARIE KRUSEG, EMMA MEDING, CLAES REHNBERG, HANNA RÄTTÖD

Measuring cost efficiency in the Nordic Hospitals—a cross-sectional comparison of public hospitals in 2002

Miika Linna · Unto Häkkinen · Mikko Peltola · Jon Magnussen · Kjartan S. Anthun ·
Sverre Kittelsen · Annette Roed · Kim Olsen · Emma Medin · Clas Rehnberg

The Cost of Inaction
A socioeconomic analysis of costs linked to disrupting substances on male reproductive health

Costs of cancer in the Nordic countries
A comparative study of health care costs and public income loss compensation payments related to cancer in the Nordic countries in 2007

Cost effectiveness of adding budesonide/formoterol to tiotropium in COPD in four Nordic countries
Rune Nielsen a, b, *, Hannu Kankaanranta c, Leif Bjermer d, Peter Lange e, Sofie Arnetorp f, Morten Hedegaard g, Anna Stenling g, Nicole Mittmann h

One type of studies missing
Example here: RCT-based, local costs—but no local resource use that would be based on data on clinical practice!
INTRODUCTION AND OBJECTIVES

- Myelofibrosis (MF) is a rare and life-threatening myeloproliferative disorder characterized by progressive scarring of the bone marrow and a number of severely debilitating symptoms.
- MF survival is highly associated with disease severity, as shown in Auria Biobank observations (n=88, Figure 1), showing the evident unmet medical need.
- The objective of this analysis was to estimate cost-effectiveness of ruxolitinib (RUX) in a treatment of MF patients compared with best alternative care (BAT) in Finland.

AURIA BIOBANK

- The analysis used real world data (RWD) from Finnish Auria Biobank to the extent possible in describing and classifying Finnish MF patients and their health care utilization (HRU).
- 88 MF patients were identified from the database between 2004 and 2013, and followed retrospectively to define average HRU of MF patients in different IPSS-groups and in group where MF has transformed to leukemia.
- Half of the patients (44) belonged to the IPSS groups relevant for this analysis (high- or intermediate-2 risk).

METHODS

- Efficacy data from RUX pivotal trial COMFORT-II was used as the most relevant clinical evidence of RUX versus BAT.
- A survival-based decision analytic cohort model with health states On-Treatment, Off-Treatment and Dead was constructed (Figure 2).
- Transitions between the health states were determined by overall survival (OS) and treatment discontinuation collected in COMFORT-II.
- The probability of leukemic transformations was based on Auria Biobank observations.
- Treatment discontinuation was used as a proxy for progression.
- Costs for health states included drug acquisition costs and HRU of care.
Why Nordics then?

Sources of RWD are those where the Nordics are typically strong

- National registries
- Quality registries
- EMRs
- Biobanks
- Cohorts linked to e.g. biobanks
Why Nordics then?

• Unique identifier (linking data, traceability)
• Universal health care (coverage)
• Policy and legislative development (access, time costs)
• Quality of the data (validity)

• Combined to a population of 26 million inhabitants
• ”A Nordic cohort”
Towards personalized medicine

- Increasingly challenging to overcome access hurdles (4th and 5th)
  - Cost-effectiveness
  - Budget Impact
- Rare, orphan, ultra-orphan diseases
- The role of RWD/RWE increases in decision making
  - Nordic cooperation beneficial for the Nordic countries itself
  - Nordics as primary source of RWE to facilitate decision making in other countries
  - Opportunity (again!) to attract research activities and investments
Towards MEAs

Managed entry agreements

Financial-based arrangements
- Patient-level schemes
  - Patient utilisation cap
  - Patient cost cap
  - Free/discounted treatment initiation
- Population-level schemes
  - Discount
  - Price-volume agreement with cap
  - Price-volume agreement without cap

Performance-based risk-sharing arrangements
- Performance linked reimbursement
  - Outcomes guarantees
  - Process of care
- Coverage with evidence development
  - Money-back guarantees
  - Conditional treatment continuation

To manage budget impact
To manage utilisation in the real world
To provide evidence regarding decision uncertainty

Access for all indicated patients

Adapted from Garrison et al. (2013) – ISPOR taxonomy

Figure 1: A taxonomy of managed entry agreements (MEAs).
In the (near) future?

Linkage database

- National patient register
- Prescription drug register
- Cause of death register
- Disease specific registries
- EMR from clinics
- Patient personal real-time data

Patient data by e.g. NMR

Blood
Urine
Feces
Sweat

Sleep
Weight
Pulse (variations)
RR
Stress
QoL
Exercise
Symptoms
VAS

Patient, Provider, Payer
Pull Based On Outcome

More focus on prevention & value driven treatment

Improve sustainability of healthcare systems

Solutions. Delivered.
Finnish THL’s ambition

OUR REFORM PLEDGE 2016:

MAKING EFFICIENT USE OF DATA

THL’s data policy defines the priorities to promote the efficient use of our datasets as of 2016. We will promote efficient use of our datasets through co-operation both internally within THL and externally with national and international actors.

MAKING DATASETS VISIBLE

We will gradually make the systematic description of our datasets and the release of our metadata an established practice.

IMPROVING TIMELINESS AND CUSTOM REPORTING

We will review the timeliness and relevance of our datasets with a bold eye. We will make the most use of already collected data and avoid collecting overlapping data.

MAKING OPEN DATA AND OPEN PUBLISHING OUR PRIORITY

We will invest in open data and improve our collaboration with developers. We will release as open data the metadata, statistical data and baseline data from THL’s key datasets.

MAKING DATASETS AVAILABLE

We will increase the availability of restricted data by adopting clear rules on the disclosure and ownership of datasets. We aim to create a national-level one-stop shop for access authorisation and data disclosure.

ADOPTING ELECTRONIC DATA LIFE CYCLE MANAGEMENT

We will emphasise the necessity of drawing up a data management plan at the start of each data life cycle. We will develop safe electronic use, storage and archiving of our datasets.
The ambition translates into...

Secondary use of health and social welfare data
Wishlist

• Metadata and open data across the Nordics available
  • Data catalogue
• Data infrastructure and application of standards
• Making data available
  • Rules and ownership
  • Ethical and legal harmonization
• One stop shop
  • ... or at least efficient cross-country coordination

• Almost identical to the one from the industry, as I understand...
Nordic ambition? Go for it!

OUR REFORM PLEDGE

MAKING EFFICIENT USE OF DATA

data policy defines the priorities to promote the efficient use of our datasets. We will promote efficient use of our datasets through co-operation with national and international actors.

MAKING DATASETS VISIBLE
We will gradually make the systematic description of our datasets and the release of our metadata an established practice.

IMPROVING TIMELINESS AND CUSTOM REPORTING
We will review the timeliness and relevance of our datasets with a bold eye. We will make the most use of already collected data and avoid collecting overlapping data.

MAKING OPEN DATA AND OPEN PUBLISHING OUR PRIORITY
We will invest in open data and improve our collaboration with developers. We will release as open data the metadata, statistical data and baseline data from key datasets.

MAKING DATASETS AVAILABLE
We will increase the availability of restricted data by adopting clear rules on the disclosure and ownership of datasets. We aim to create a one-stop shop for access authorisation and data disclosure.

ADOPTING ELECTRONIC DATA LIFE CYCLE MANAGEMENT
We will emphasise the necessity of drawing up a data management plan at the start of each data life cycle. We will develop safe electronic use, storage and archiving of our datasets.
Thanks for your attention!