TANDVÅRDS- OCH
LÄKEMEDELSFÖRMÅNSVERKET

What characterizes the market for pharmaceutical drugs?

How do we make economic evaluations of new treatments, i.e. calculate the cost-effectiveness?

Douglas Lundin,
Chief economist

Which products are worth paying for?

Repatha:
- High cholesterol
- Cost per year: 50 000 kr
- Cost per QALY:
  300 000 kronor

Spinraza:
- Spinal Muscular Atrophy
- Cost per year: 2-3 milj kr
- Cost per QALY:
  5,7 – 7,7 million kronor

Free style libre:
- Diabetes
- Cost per year: 13 000 kr
- Cost per QALY:
  300 000 kronor

1

- Basics of the reimbursement system
- Costs and prices

2

Pharmaceutical market: Characteristics of the supply and the demand side

3

Economic evaluations (HTA) for new drugs:

- Why?
- How?

TLV is a government agency under the Ministry of Social Affairs, that:

- Do HTA – health technology assessments
  - Prescription drugs
  - In-hospital drugs
- Decides on price and reimbursement för prescription drugs

Agneta Karlsson

TLV can take 3 types of decision regarding drugs

General reimburse-ment

For all of the drugs approved indications

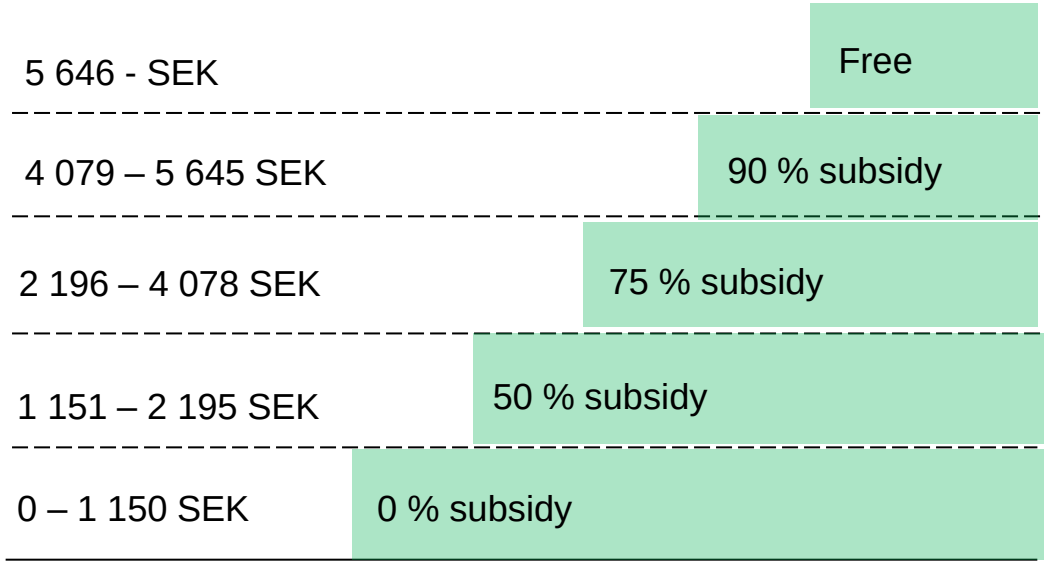
Restricted reimburse-ment

- Only for the indications/patient groups where the drug is cost-effective
- For instance, only after the patient has tried a lower priced alternative

No reimburse-ment

- No reimbursement
- Price not regulated

The reimbursement ”stair”: out-of-pockets cost for patients



Maximum out-of-pocket cost per year:
2 300 SEK

Reimbursement decisions

The law regulating TLV's decisions

Läkemedel som ingår i läkemedelsförmånerna

15 § Ett receptbelagt läkemedel ska omfattas av läkemedelsförmånerna och inköpspris och försäljningspris ska fastställas för läkemedlet under förutsättning att

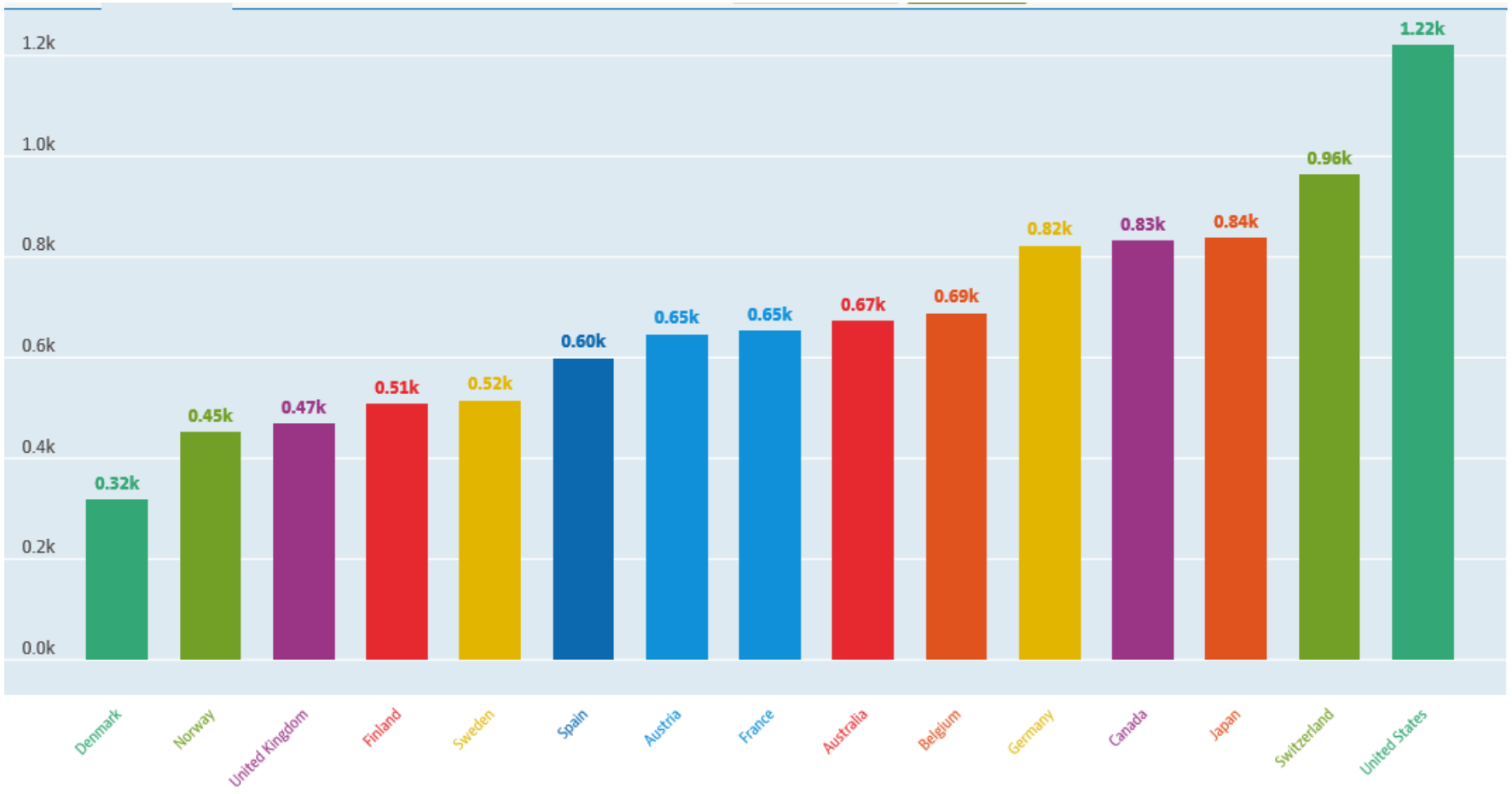
1. kostnaderna för användning av läkemedlet, med beaktande av bestämmelserna i 3 kap. 1 § hälso- och sjukvårdslagen (2017:30), framstår som rimliga från medicinska, humanitära och samhällsekonomiska synpunkter, och
2. det inte finns andra tillgängliga läkemedel eller behandlingsmetoder som enligt en sådan avvägning mellan avsedd effekt och skadeverkningar som avses i 4 kap. 1 § första stycket läkemedelslagen (2015:315) är att bedöma som väsentligt mer ändamålsenliga. *Lag (2017:49)*.

The cost should be ”reasonable” from a medical, humanitarian and societal economic perspective

- TLV's interpretation:
  ”Reasonable” = cost effective
- But allowing for severity of disease
- Societal perspective
- QALYs (Quality adjusted life years)

The board takes the decisions

Drug expenditure per capita, US $



Sweden has low prices on generics

Source: OECD

Trends

- Many new oncology drugs
- Smaller patient groups
- Less data and less good evidence at launch: single arm trials!
- High treatments costs per patient
- ATMPs: cell- and gene therapies

Drug regulation

Getting medicines to market faster

The drug regulator in America is innovating rapidly. Good

"… In response, the FDA wants to find ways to accelerate clinical trials.

Instead of having to demonstrate that long-term outcomes, such as cognitive function for dementia, are improved, a drugmaker might have to show only an improvement in a biological proxy for the disease…

"But the shift increases the risk that money will be spent on new drugs that end up being no more effective than existing ones."

"But buyers of drugs need to do more to tie payments to health outcomes."

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Economic evaluations (HTA) for new drugs:

- Why?
- How?

Pharmaceuticals: What characterizes …

The supply side

The demand side

Pharmaceuticals: What characterizes …

The supply side

- High fixed costs for R&D
- Low marginal costs
- Patents very important …
- … but does most often not lead to a monopoly
- Heavily regulated industry
- Price setting characterised by:

- Cost 10-20 billion SEK to develop a new drug
- The production cost per ”tablet” often just a few ”ören”
- Obvious conflict between *static* och *dynamic* efficiency

1. The companies has to set high unit prices in order to get a positive return on investment
2. But high unit prices leads to a inoptimally low use

DN Debatt

DN Debatt. ”Smartare priser på läkemedel ger god vård för alla”

PUBLICERAD 2012-04-02

Den sittande statliga utredningen av priser och subventioner av läkemedel bör utreda ett införande av en tudelad tariff, där staten tar ansvar för att stimulera forskning och landstingen tar ansvar för bästa användning av läkemedlen,

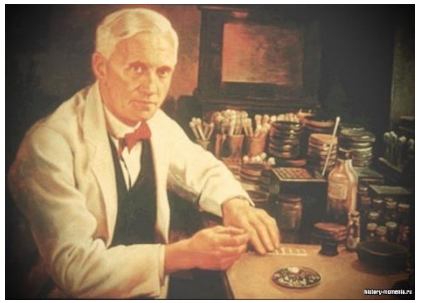
2012-04-02

The proposed solution:

- *Fixed lump sum* which pays for R&D
- *Low unit cost* leads to large usage

Dynamic efficiency:

Is enough money invested globally in R&D for new drugs? Or is there a market failure?



Alexander Fleming, discovered penicillin

Probably not for antibiotics

From a British government commissioned report:

> Secondly, we need to tackle the supply problem: we need new drugs to replace the ones that are not working anymore because of resistance. We have not seen a truly new class of antibiotics for decades. It is in policymakers' hands to change this. We have recommended that countries must review carefully how they buy and price antibiotics, to reward innovative new drugs without encouraging unnecessary use of new antibiotics. In addition to

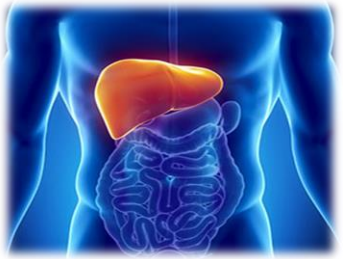
Pharmaceuticals: What [illegible]erizes …

Most often an oligopoly

The supply side

- High fixed costs for R&D
- Low marginal costs
- Patents are very important …
- … but does most often not lead to a monopoly
- Heavily regulated industry
- Price setting characterised by:

Atrial fibrilation
New Oral AntiCoagulants
- Pradaxa
- Eliquis



Hepatitis C
- Epclusa
- Sovaldi
- Viekirax/Exviera
- Zepatier

Reumatic disease
- Enbrel
- Benepali
- Erelzi
- Humira

Pharmaceuticals: What characterizes …

The supply side

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- Heavily regulated industry
- Price setting characterised by:

- Market approval
- Production
- Marketing
- Prices

Pharmaceuticals: What characterizes …

The supply side

- High fixed costs for R&D
- Low marginal costs
- Patents very important …
- … but does most often not lead to a monopoly
- Heavily regulated industry
- Price setting characterised by:

- Not based on marginal costs
- Meets a monopsony with buyer power
  - Non disclosed discounts
- Price discrimination:
  - Among countries
  - On indication?

Pharmaceuticals: What characterizes the …

Supply side

Demand side

Pharmaceuticals: What characterizes …

- Some part has to act as the ”price sensitive buyer”
- Regulated prices in almost all developed countries
- EU: Internationel reference pricing
- Sweden:

  Value based pricing:
  a drug is reimbursed if price and effect implies that it is cost effective

The demand side

- The user does not pay. The one that decides what to use does not either pay. The bill is passed on to the tax payer.
- Almost nobody can afford to pay themselves for the new advanced drugs
- Cannot afford all possible treatments
- Often major uncertainty regarding how effective the new drug is. Clinical trials!!!

Pharmaceuticals: What characterizes …

4,5 million SEK per patient and year

3-4 million kr per patient and year

”Insurance”
- Often tax financed

The demand side

- The user does not pay. The one that decides what to use does not either pay. The bill is passed on to the tax payer.
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- Cannot afford all possible treatments
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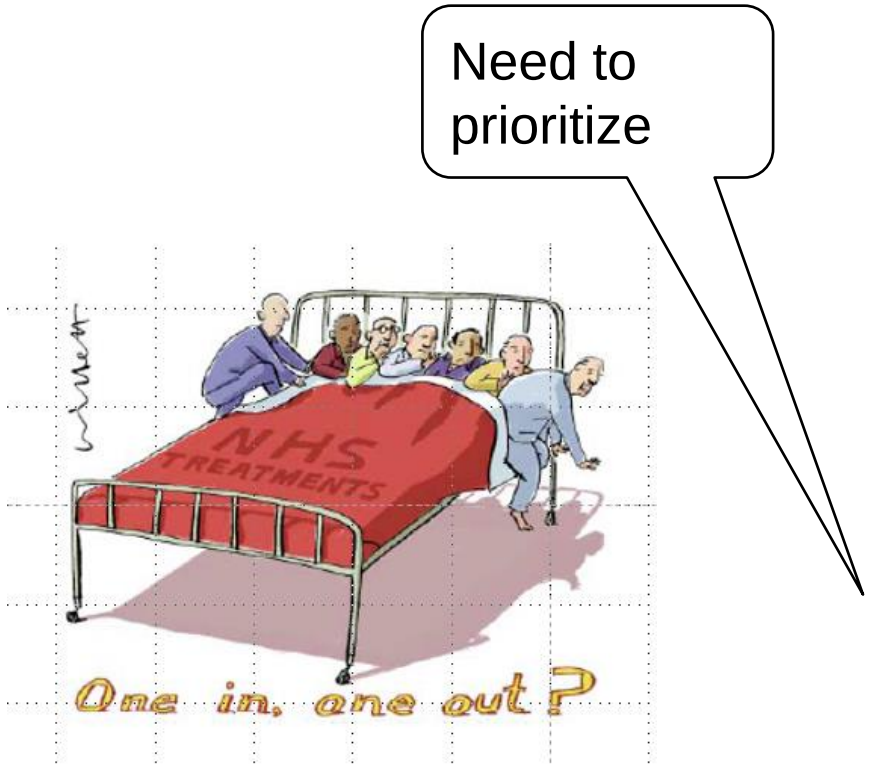
Pharmaceuticals: What characterizes …



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Pharmaceuticals: What characterizes …

- Studies, studies, studies …
- Risk sharing – perhaps in the future

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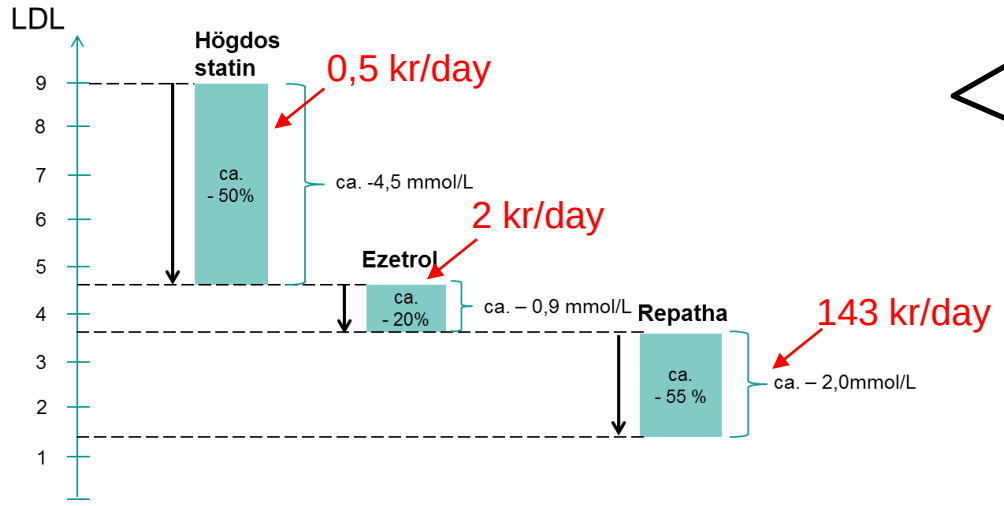
Should we pay for Repatha with tax money?

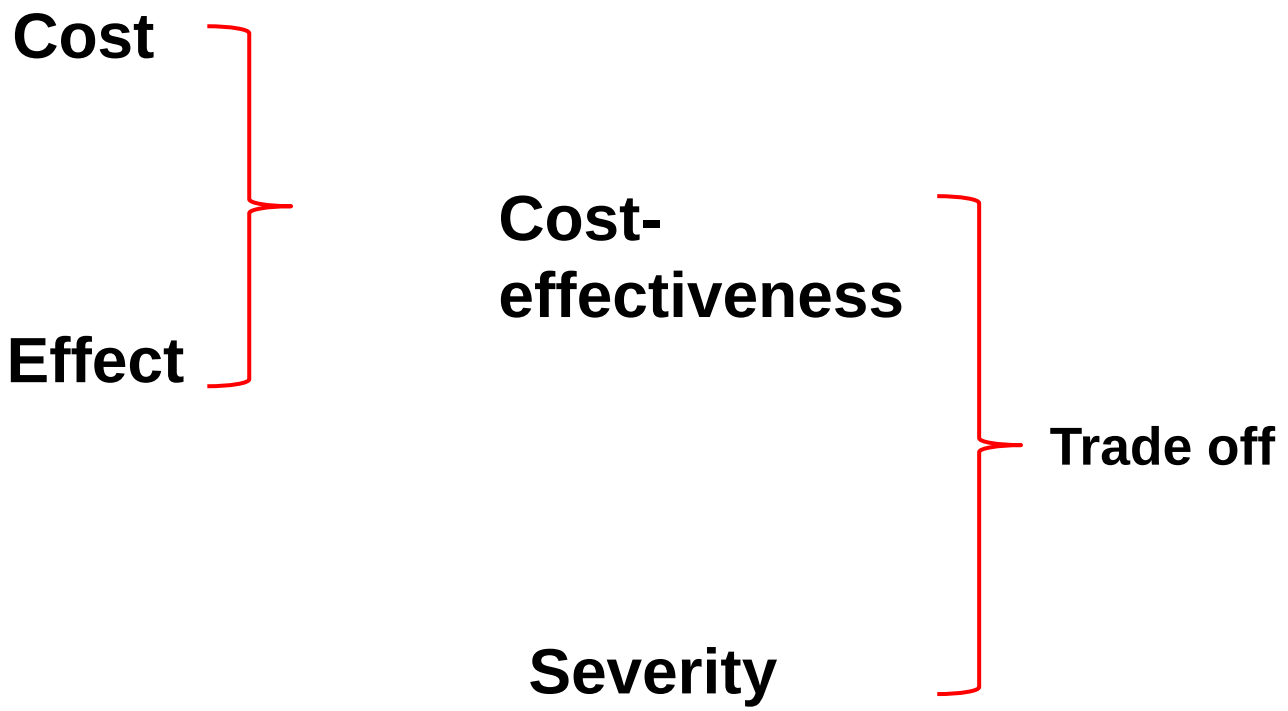
Approximate reductions in LDL cholesterol

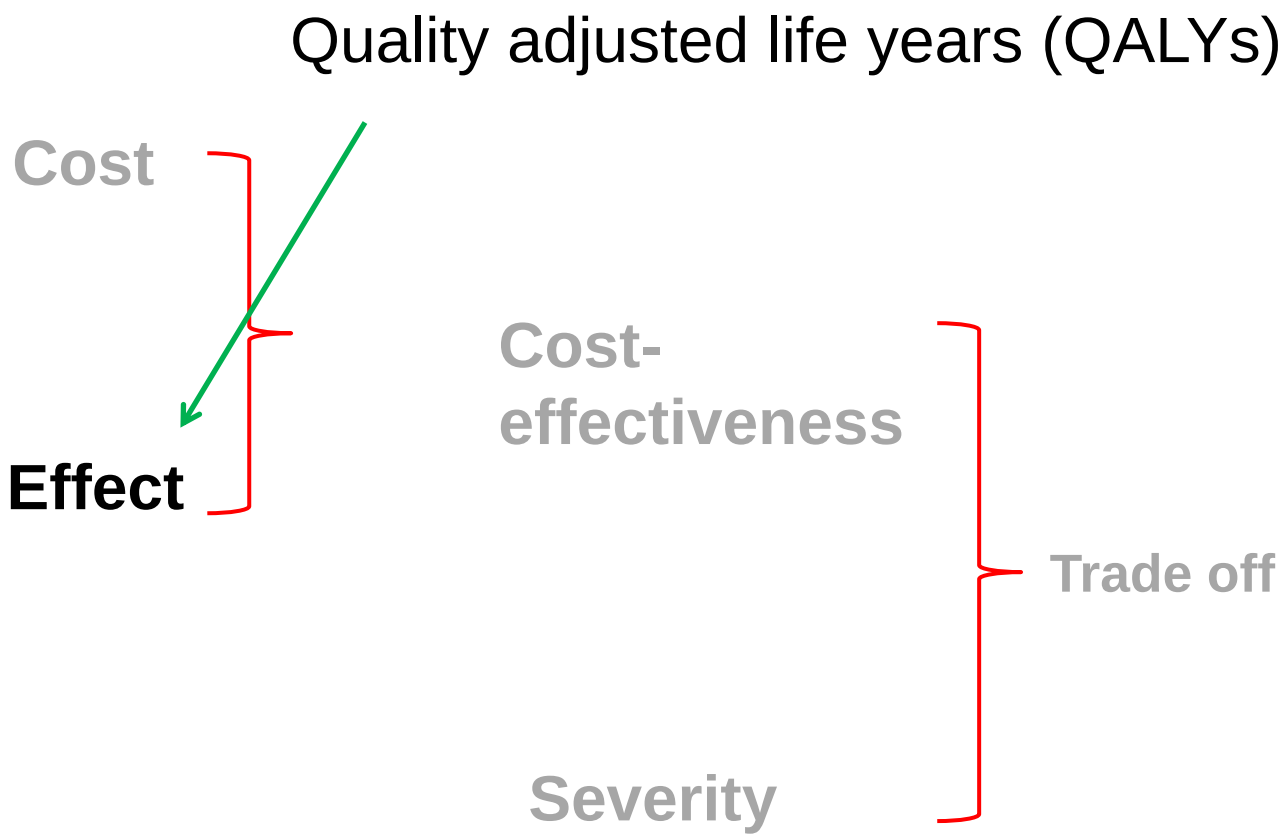


Is 143 kr per day for a decrease in LDL-cholesterol of 2 mmol/l *a reasonable cost*?

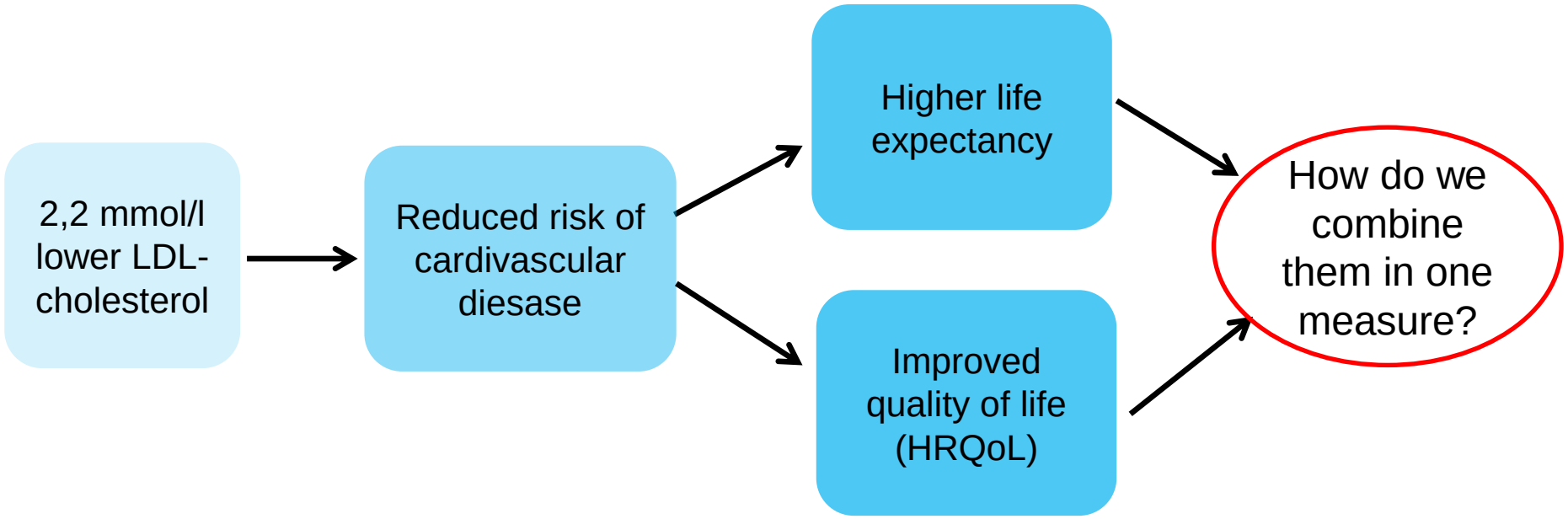
Repatha™ (evolocumab) injection 140 mg/mL

TLV


Cost
Effect
Cost-effectiveness
Severity
Trade off


Quality adjusted life years (QALYs)
Cost
Effect
Cost-
effectiveness
Trade off
Severity

How do we calculate the value of a reduction of LDL cholesterol with 2 mmol/l?



How do we combine them in one measure?

The measure should:

1. Capture what the patient really cares about

- Health related quality of life
- Durability of health improvement
- Life expectancy

2. Allow for comparisons between different medical conditions

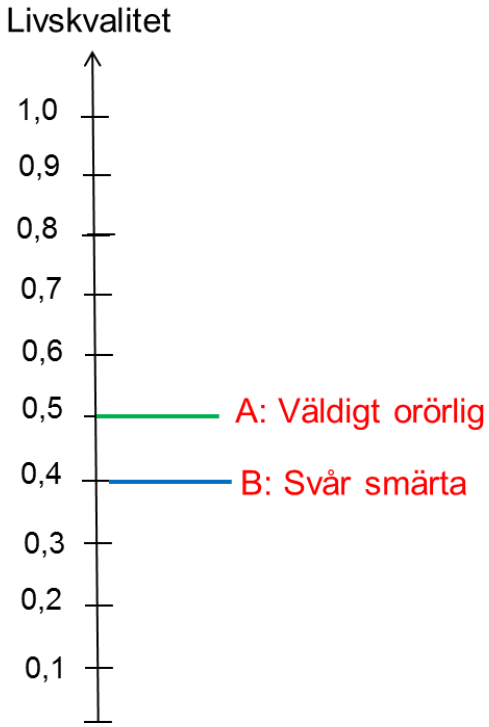
- Between different types of HRQoL
- Between HRQoL and life expectancy

How do we combine them in one measure?

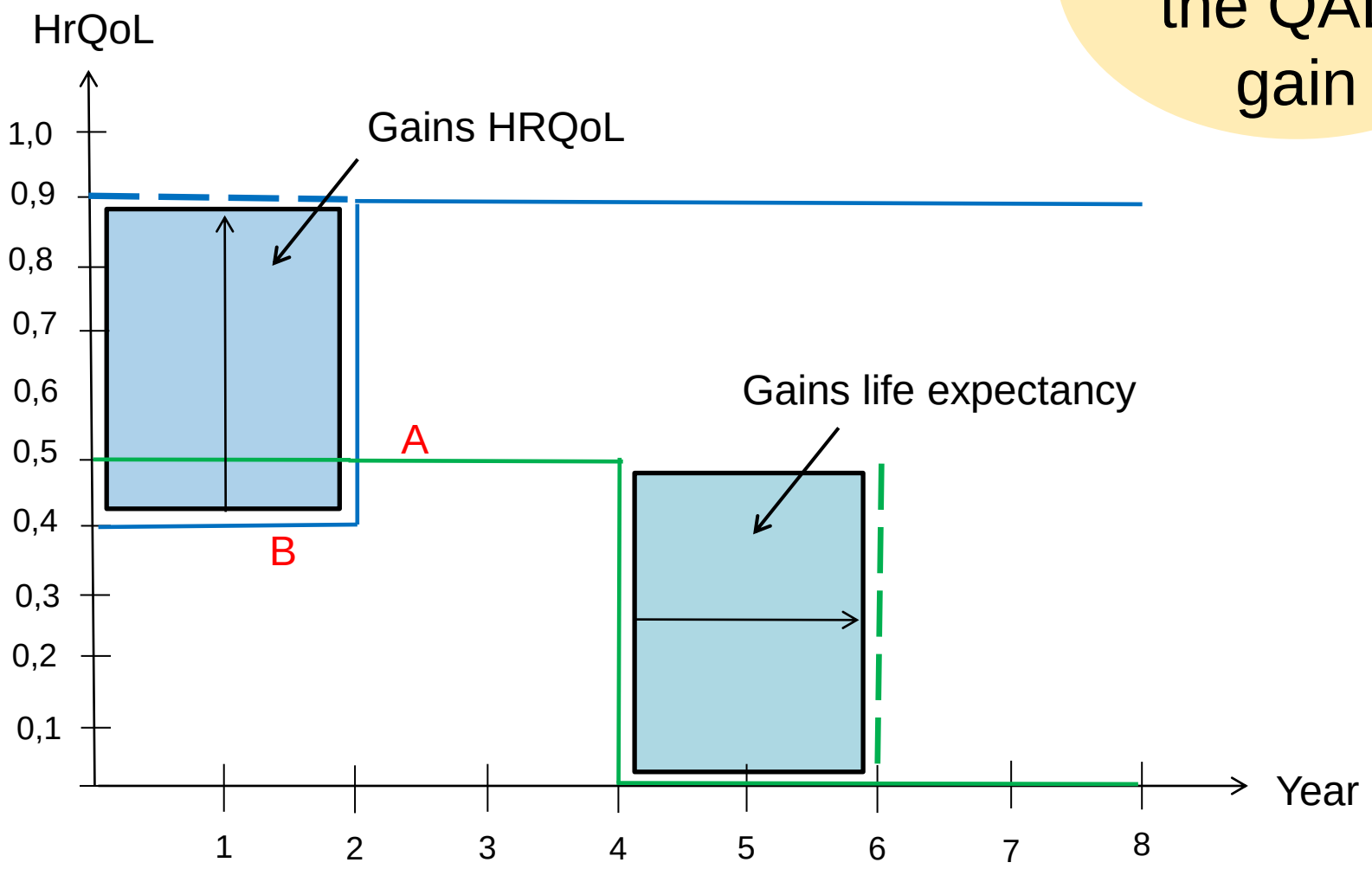
Health related quality of life
has many dimensions:

- Pain
- Mobility
- Mental
- …

Common scale!

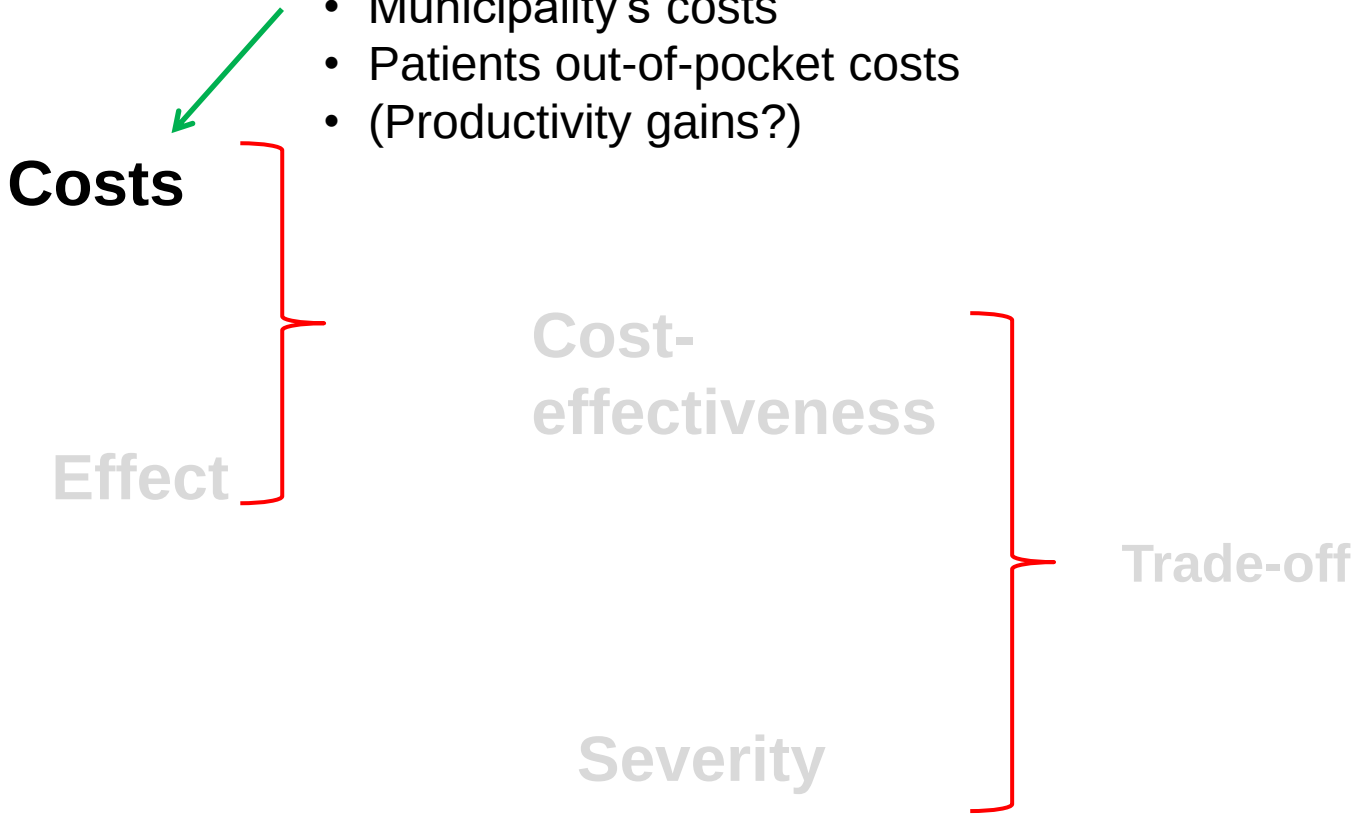


The area represents the QALY gain



Societal perspective – all costs/savings regardless who pays

- Health care costs
- Municipality's costs
- Patients out-of-pocket costs
- (Productivity gains?)



Why did the legislator think that a societal perspective was to be preferred?

Condition	Health care costs as a share of total costs, %
Musculo – sceletal (e.g. reumatic conditions)	9
Mental disorders	47
Cardio vascular	54
Respiratory	36
Oncology	36
CNS	46

Table from the government report that led to the pharmaceutical benefits act

Cost per gained QALY = $\frac{Cost_{New} - Cost_{Old}}{QALY_{New} - QALY_{Old}}$

Cost

Effect

Cost-effectiveness

Trade off

Severity

Cost

Effect

Cost-effectiveness

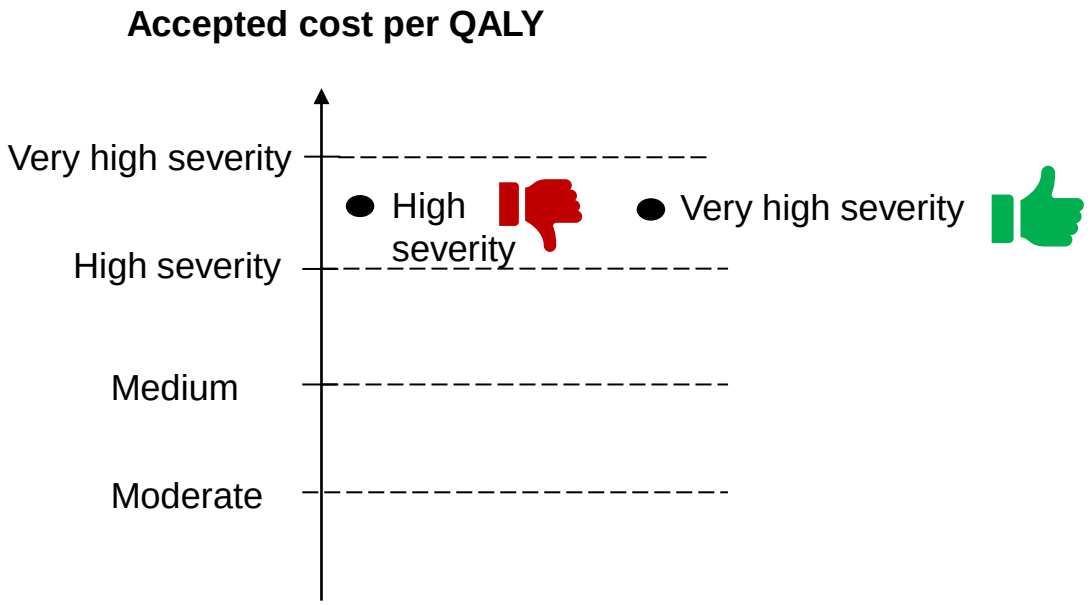
Severity

Trade off

Accept all treatments with a cost per QALY below X.

But let X vary depending the severity of the condition –
higher X for more severe conditions

Is the cost per QALY below the threshold?



Does TLV rely too much on cost effectiveness?

Läkartidningen

The ethical committee of the Swedish Physicians' Association.

"New cancer drugs can prolong life with on average 5 months at a cost of 1 000 kr per patient and day. TLV does considers this too expensive.

This kind of hidden rationing is not a reasonable way of solving the problem with costly new drugs."

"Our point of departure are the ethical principles Riksdagen have decided on… These principles are in hierarchial order

- *the human dignity principle,*
- *the need and solidarity principle and*
- *the cost-effectiveness principle"*

TLV

Summary: Health Technology Assessment in TLV's Decision Making

- TLV is known in Sweden for taking cost-effectiveness seriously
- A new drug needs to provide reasonable value for money in order to be subsidized
  - The motivation: Maximizing health gains
- But cost-effectiveness is only one of three decision making criteria. The other two are:
  - Human value
  - Needs and solidarity
- The cost-effectiveness analysis:
  - Societal perspective: Include all costs and cost-savings
  - Measuring health gains by Quality Adjusted Life Years (QALYs)