QALY Teaching

The transformation of medical cost-efficiency into cost-inefficiency in cardiovascular prevention using QALY.

Introduction of the cost-efficiency creep

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The QALY concept in short

- Loss of life = 1 QALY lost
- Loss of life Quality (LQ) 20% = 0.2 QALY lost after MI / STROKE
- Duration of preventive therapy (T) 5, 10, 20 years
- Average time when events occur = T/2
- Value of a life lost (VSL/y)
  - SMB CHF 8‘500 per year
  - Schlander € 200‘000 per year
  - FDA $ 243‘000 per year
- Value of LQ lost
  - SMB CHF in first year 25‘000m, 8‘000 in subsequent years
  - Adding indirect cost (x 1.4): 35‘000 and 11‘200 respectively
  - FDA $ 800‘000 for rest of life

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The following calculations have been applied to 1‘000 Persons after 5, 10, 15 and 20 years of preventive therapy

- Scenario 1: SMB values
- Scenario 2: SMB values adding indirect costs

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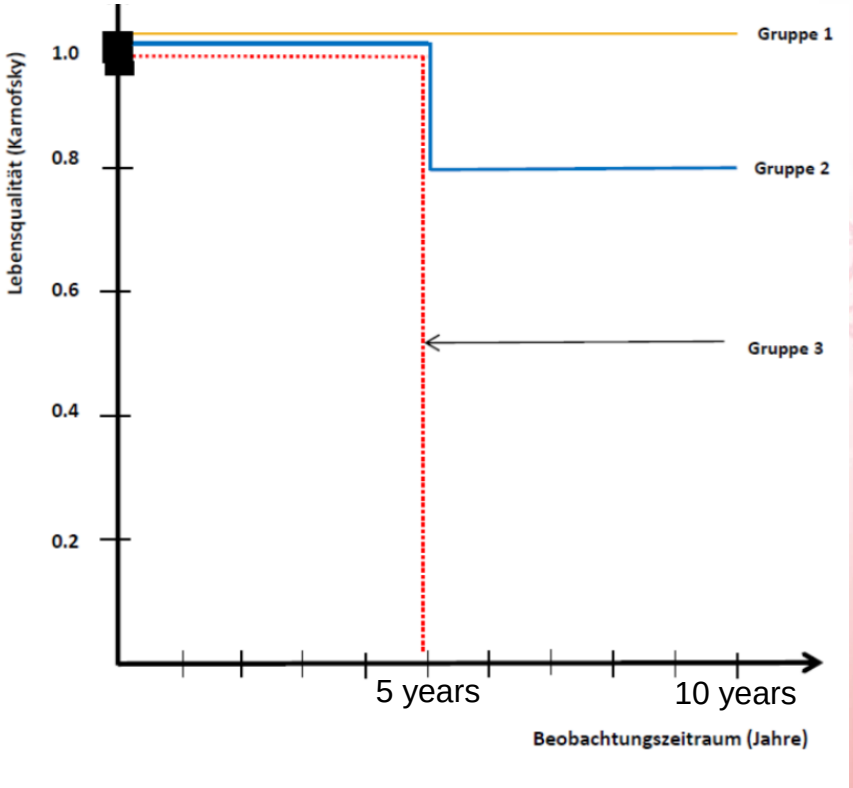
The model covers the observation (=treatment) time T and the loss of LQ after a non-fatal event (blue) or after a fatal event (dotted red).

Group 1: no event

Group 2: loses 0.2 QALY / year

Group 3: loses life 1 QALY / year



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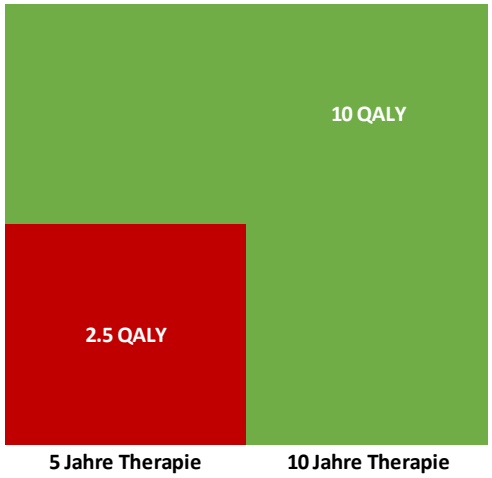
Doubling duration of therapy = increases QALY by a factor of 4

- 5 years of therapy avoids 1 death, 10 years 2 deaths
  - 5 years / 2 = 1 death x 2.5 = 2.5 QALY lost
  - 10 years /2 = 2 deaths x 5.0= 10.0 QALY lost
  - 20 years /2 = 4 deaths x 10.0=40 QALY lost

- The Swiss Medical Board only doubled the QALY, that‘s why statins appeared not to be cost-efficient, a simple technical error



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The clinical case: 10 year risk 45.40% in secondary prevention

58 years old male
BP 135 mm Hg, treated Blood Pressure
Diabetes Type II present
GFR calculated 40 ml/min
non smoker
Previous myocardial infarction and CABG w/o heart failure
Cholesterol 4.0 mmol/l,
HDL 1.6 mmol/l,
LDL 2.0 mmol/l

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Efficacy and price parameters of lipid lowering drugs

https://docfind.ch/AspirinStatinCompass.xlsx (calculator for primary and secondary prevention)

	LDL reduction %	RRR (%)	Daily drug price
Atorva 40 mg	0.48	22	0.37
Rosuva 20 mg	0.50	22	0.68
Ezetimibe 10 mg	0.22	22	1.23
Evolocumab	0.55	11	13.00
Alirocumab	0.46	15	13.00

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Cost per QALY

	Atorva 40 mg	Rosuva 20 mg	Ezetim 10 mg	Evolocumab	Alirocumab
SMB 5 y	-6 866	3 014	104 903	688 855	711 456
SMB 10 y	-11 668	-6 728	44 216	336 192	347 493
SMB 15 y	-13 269	-9 976	23 987	218 638	226 172
SMB 20 y	-14 069	-11 599	13 873	159 861	165 511
SCL 5 y	-69 647	-59 767	42 122	626 074	648 675
SCL 10 y	-50 965	-46 025	4 920	296 896	308 196
SCL 15 y	-44 737	-41 444	-7 481	187 170	194 703
SCL 20 y	-41 624	-39 153	-13 681	132 307	137 957

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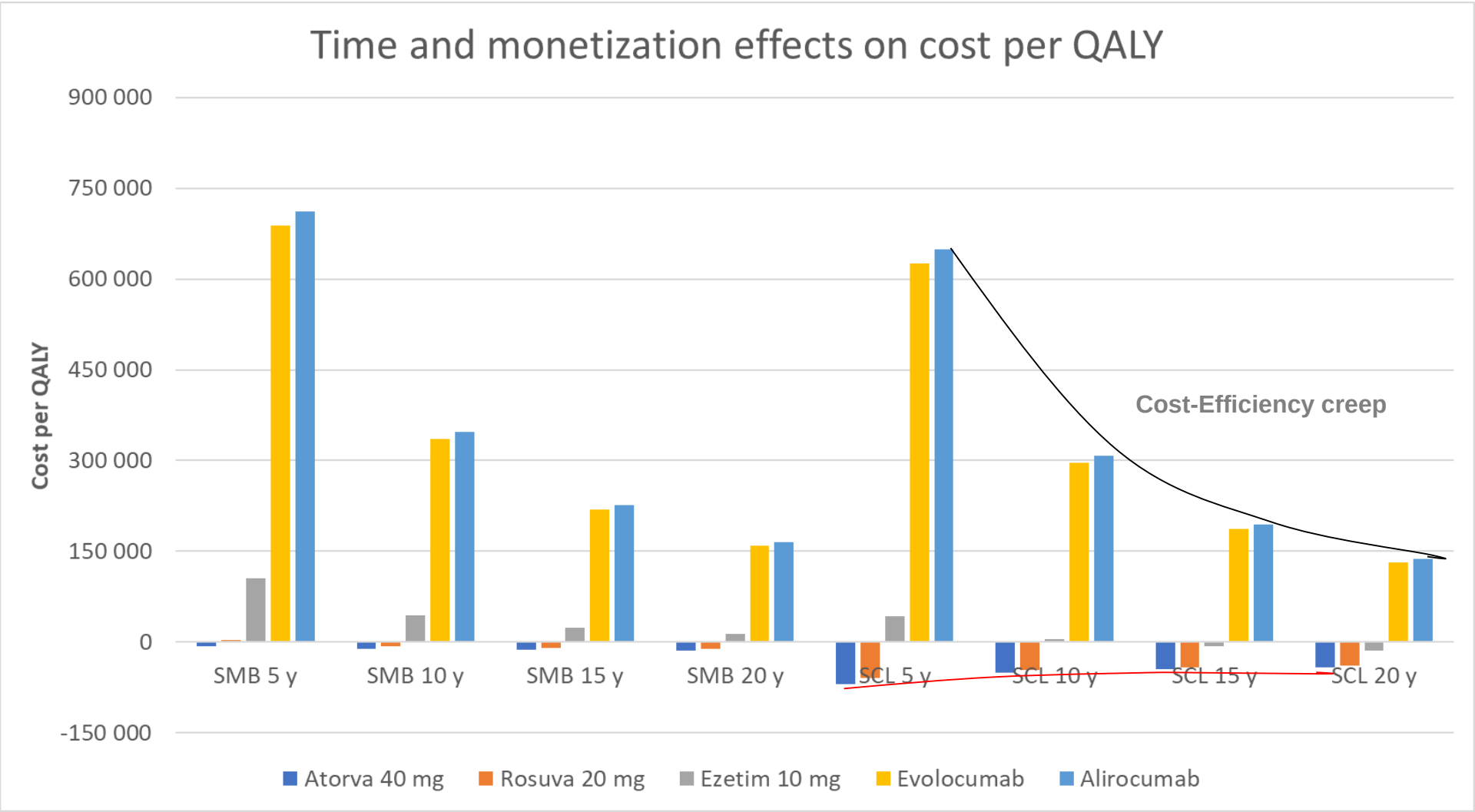

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Meaning of Results

- The QALY model results are highly dependant from treatment time and monetization of events.
- We term this the cost-efficiency creep.
- People who want to ration a medication, creep upwards in the model,
- People who want to save lives and prevent diseases, creep downwards in the model.
- Preventive medicine is a long-term commitment
- Even expensive therapies are cost-efficient if applied over a long time.

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Future directions

- National economists like Stefan Felder have won the victory regarding the definition of cost-efficiency using the arbitrary QALY concept in Switzerland and have important influence in the perception of the value of medicine

- The mere lack of knowledge of the professional medical societies in the establishment of value of medicine using QALY has a detrimental effect: no counterforce is present to rectify the disdain of life established by national economists.

- We advocate for an immediate introduction of medical health economy as new discipline in medicine.

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Talks and Teaching

- The vascular risk foundation seeks partners for the dissemination of medical cost-efficiency knowledge
- Professional medical societies are asked to lend support to such activities (AGLA, SKG, and so on)
- Improved communicative skills are overdue to improve the translation of our goals to the public in order to save lives and to avoid costly and preventive diseases in Switzerland.
- If you are interested contact by michel.romanens@hin.ch

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More Informations

https://www.swissmedicalboard.ch/fileadmin/public/news/2013/bericht_smb_statine_primaerpraevention_lang_2013.pdf

Indirect costs taken from Wieser et al https://www.zora.uzh.ch/id/eprint/103453/

VSL/Y taken from Schlander https://linkinghub.elsevier.com/retrieve/pii/S1098301517319526

FDA http://scholarship.law.upenn.edu/faculty_scholarshiphttp://scholarship.law.upenn.edu/faculty_scholarship/57

Do not use QALY. In StatNews Blog https://www.statnews.com/2019/02/22/qaly-drug-effectiveness-reviews /

negative costs/QALY
https://www.researchgate.net/publication/5754127_The_cost-effectiveness_of_risedronate_treatment_in_Japanese_women_with_osteoporosis/figures?lo=1

negative costs/QALY https://journals.plos.org/plosone/article/figure?id=10.1371/journal.pone.0138092.g006

negative costs/QALY dominates according to plos one article 2015 treat them all with statins

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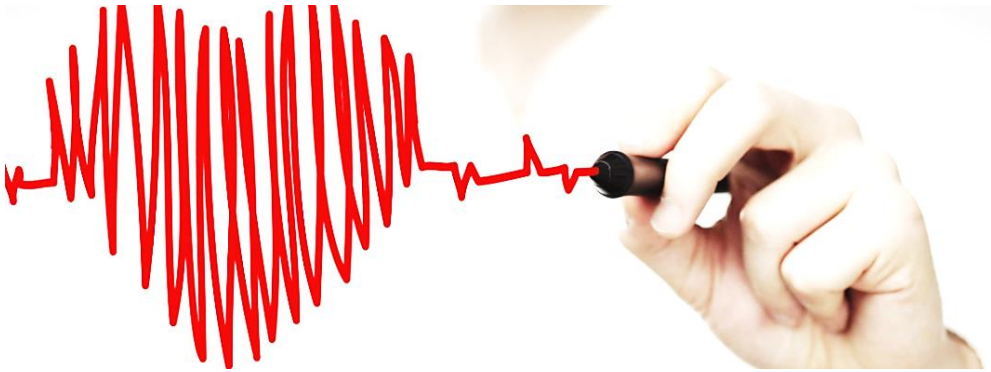

Calculations in the Internet:

https://docfind.ch/PEPPricing.xlsx
https://docfind.ch/AspirinStatinCompass.xlsx
https://docfind.ch/QALYEthics.xlsx