



Open Universiteit

Sustainable Health & Innovation

Maastricht HE/HTA seminar – January 18th 2022

Prof. dr. C. Boersma



Conflict(s) of Interest

Academic:

- **Open University:** Professor ‘Sustainable Health and Innovation’
- **University Medical Center – University of Groningen:** Health Economist

Private:

- Director **Health-Ecore**
- Co-founder **Digital Health Link**
- Co-founder **SensUR Health**
- Advisor **PITTS**

Other:

- Board member **NADP** (Netherlands Antibiotic Development Platform)
- Scientific advisor **VEROZ**
- Chair societal advisory board **ParkinsonNL**







Outline

- What is the healthcare reality?
- What is the economic reality?
- Healthcare innovation: context & opportunities
- A health(care)-trilemma
- Impact & learnings COVID-19
- The role of sustainability
- Summary/concluding remarks







Impact ageing of the population

Impact van de vergrijzing

Veranderingen in de bevolking

 <p>Aantal 65-plussers</p> <p>2015: 3,1 miljoen 2040: 4,8 miljoen</p> <p>+55%</p>	 <p>Aantal 90-plussers</p> <p>2015: 117.000 2040: 340.000</p> <p>+191%</p>
 <p>Aantal alleenwonende 65-plussers</p> <p>2015: 920.000 2040: 1,73 miljoen</p> <p>+88%</p>	 <p>Aantal 50-64 jarigen per 85-plusser (mogelijke mantelzorgers)</p> <p>2015: 10 2040: 4</p> <p>-60%</p>

Gevolgen voor de volksgezondheid

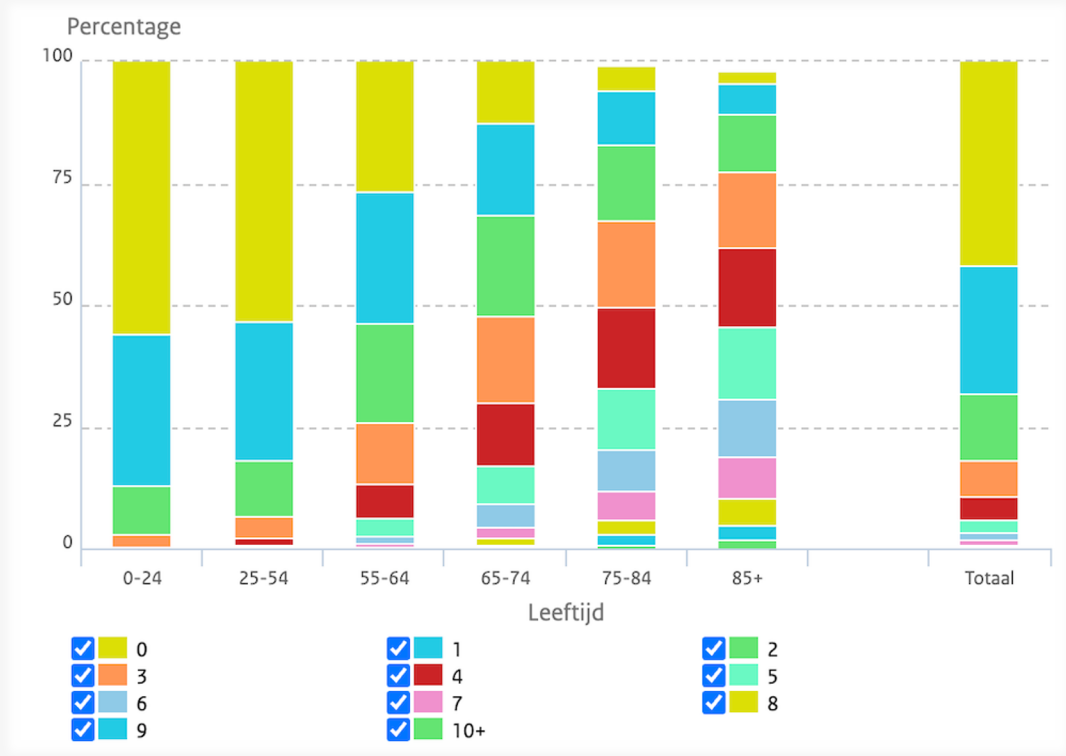
 <p>Aantal mensen met meerdere chronische aandoeningen tegelijk</p> <p>2015: 4,3 miljoen 2040: 5,5 miljoen</p> <p>+28%</p>	 <p>Aantal mensen met artrose</p> <p>2015: 1,2 miljoen 2040: 2,3 miljoen</p> <p>+92%</p>
 <p>Aantal sterfgevallen ten gevolge van dementie</p> <p>2015: 14.000 2040: 40.000</p> <p>+186%</p>	 <p>Aantal mensen met dementie</p> <p>2015: 154.000 2040: 330.000</p> <p>+114%</p>
 <p>Aantal 75-plussers dat zich eenzaam voelt</p> <p>2015: 600.000 2040: 1,3 miljoen</p> <p>+117%</p>	 <p>Aantal mensen met urine-incontinentie</p> <p>2015: 495.000 2040: 740.000</p> <p>+49%</p>

Gevolgen voor de zorg

 <p>Aantal staaroperaties bij 75-plussers</p> <p>2015: 62.000 2040: 128.000</p> <p>+106%</p>	 <p>Aantal mensen met dementie met indicatie voor verpleeghuiszorg</p> <p>2015: 76.000 2040: 165.000</p> <p>+117%</p>
 <p>Eerste hulp bezoeken door 85-plussers</p> <p>2015: 125.000 2040: 304.000</p> <p>+143%</p>	 <p>Uitgaven aan ouderenzorg</p> <p>2015: 17 miljard 2040: 43 miljard</p> <p>+157%</p>

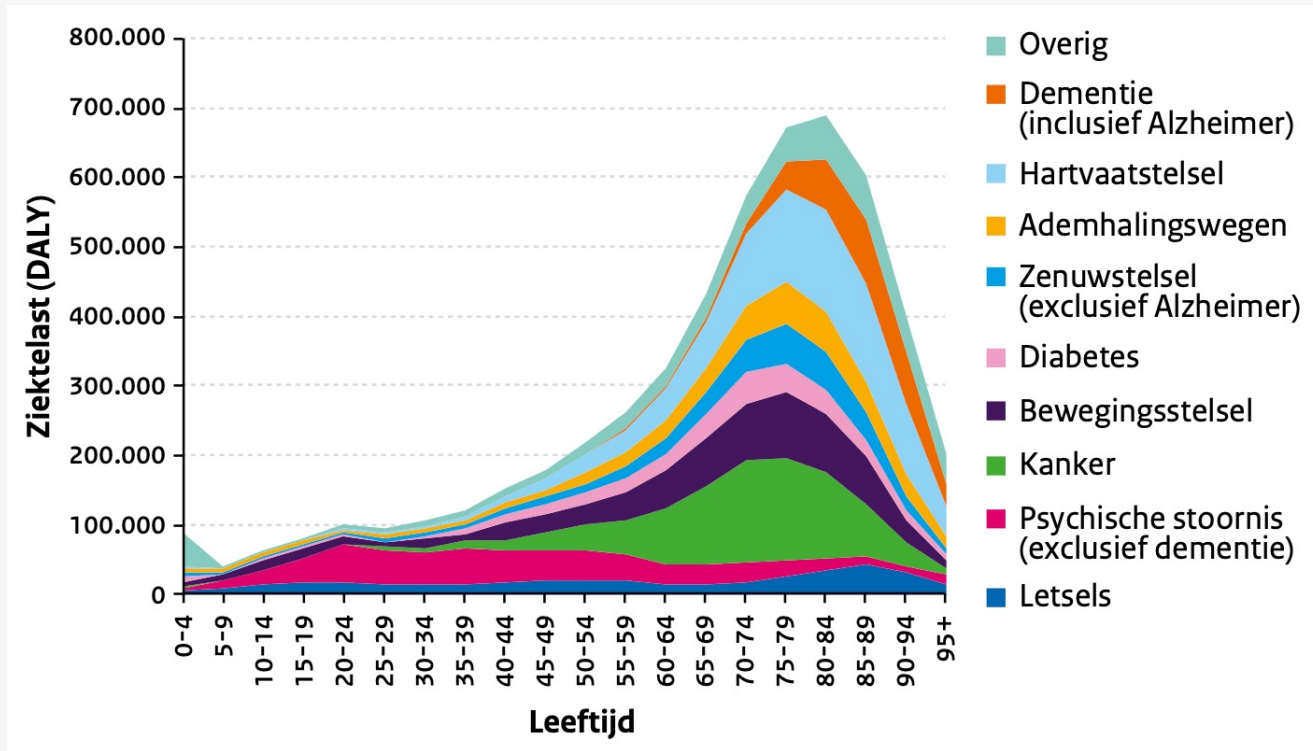
Source: Volksgezondheid Toekomst Verkenning 2018, Een gezond vooruitzicht. RIVM 2018

Prevalence number of chronic conditions



Source: Zorgregistraties eerste lijn, Nivel 2018

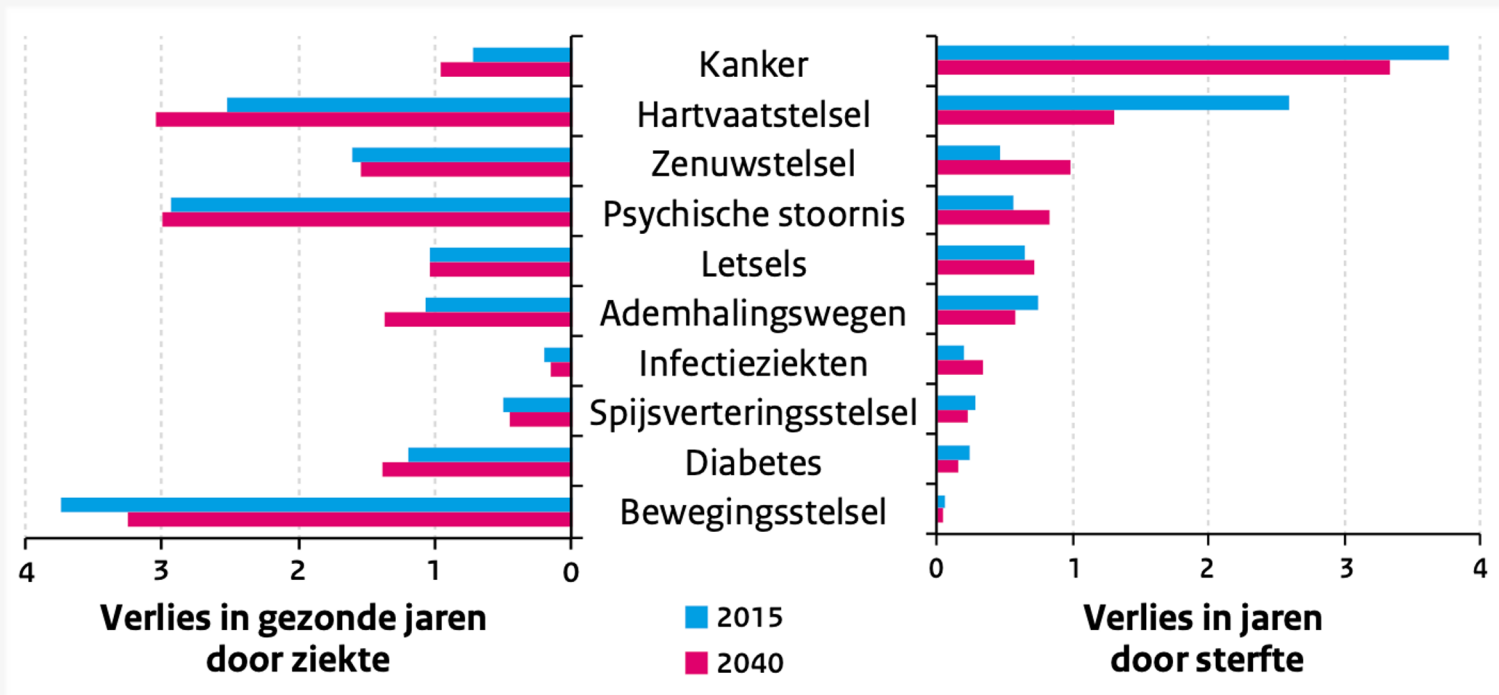
Disease burden in 2040: elderly and psychological



Source: Volksgezondheid Toekomst Verkenning 2018, Een gezond vooruitzicht. RIVM 2018

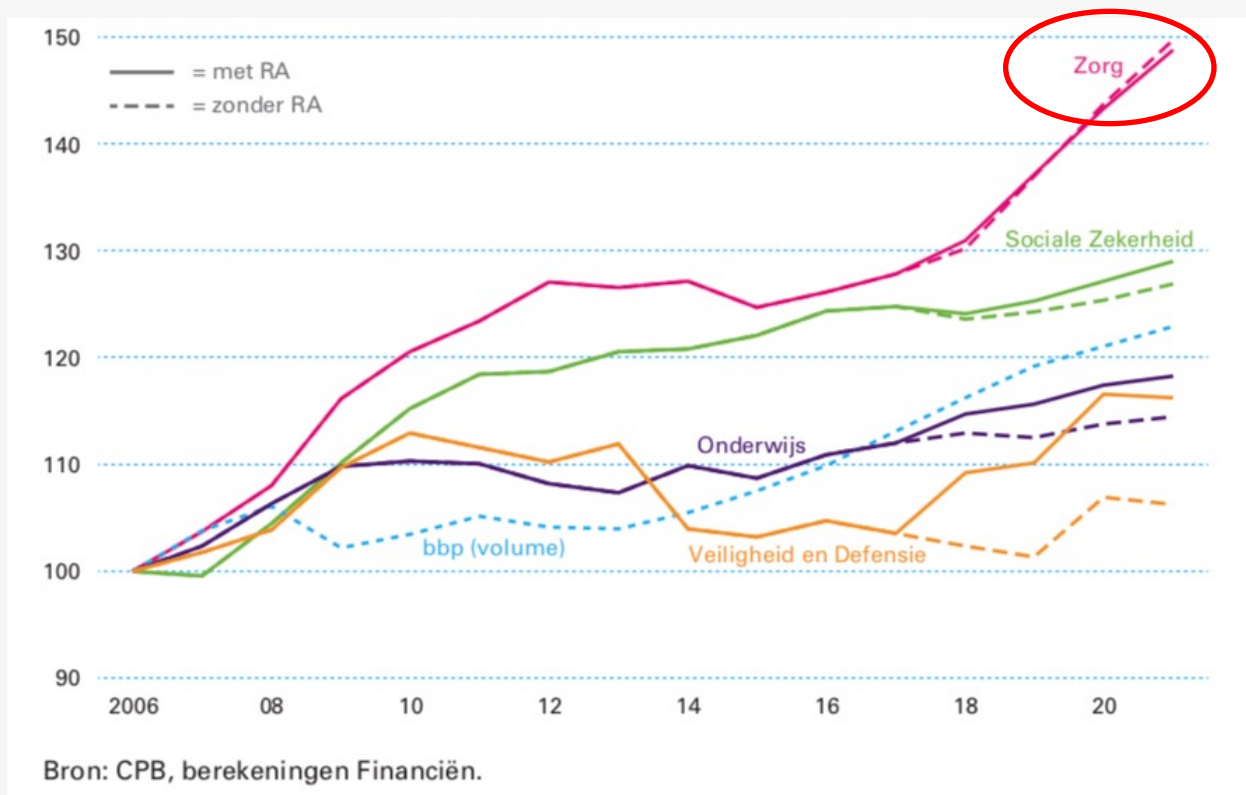


Life expectancy \uparrow \neq Healthy life years \uparrow



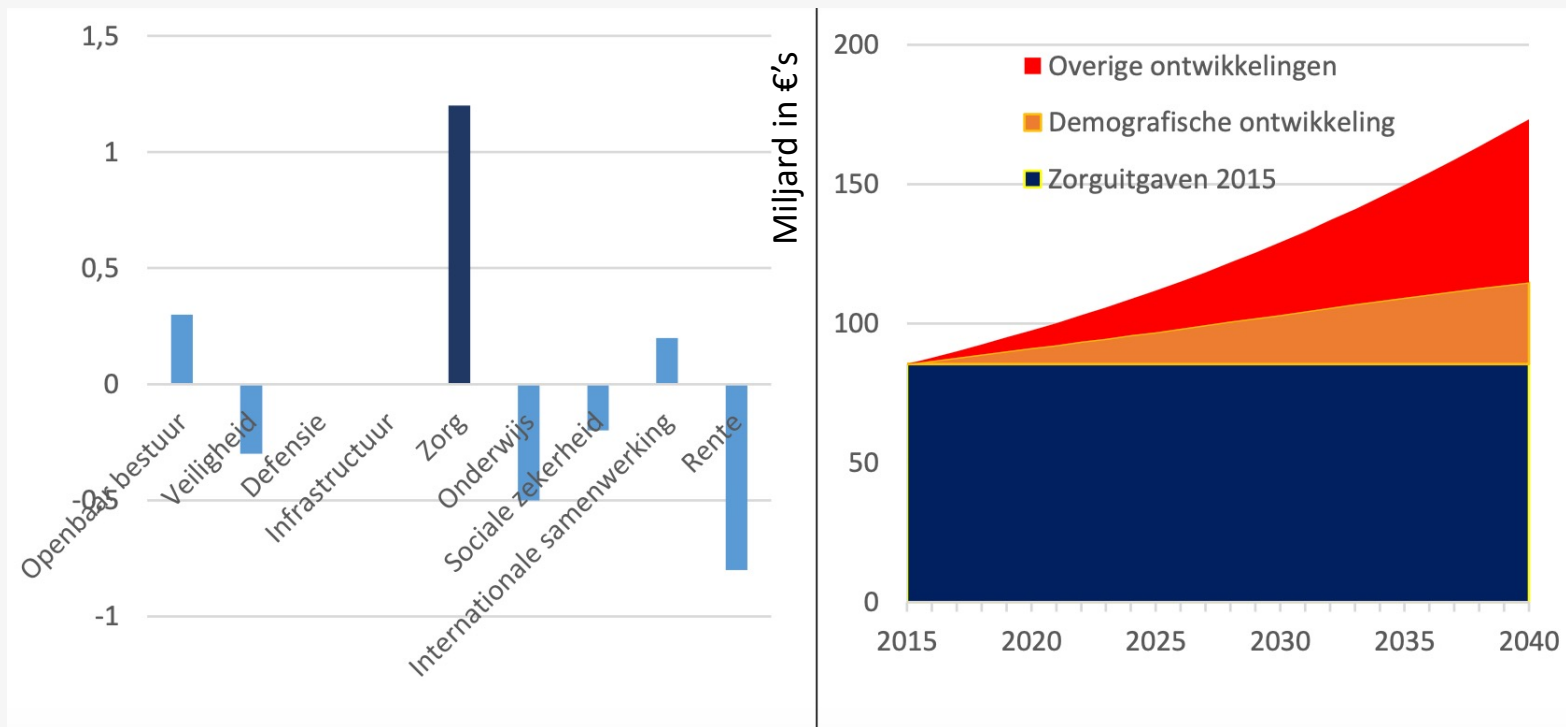
Bron: Volksgezondheid Toekomst Verkenning 2018, Een gezond vooruitzicht. RIVM 2018

Budget memorandum Netherlands 2019



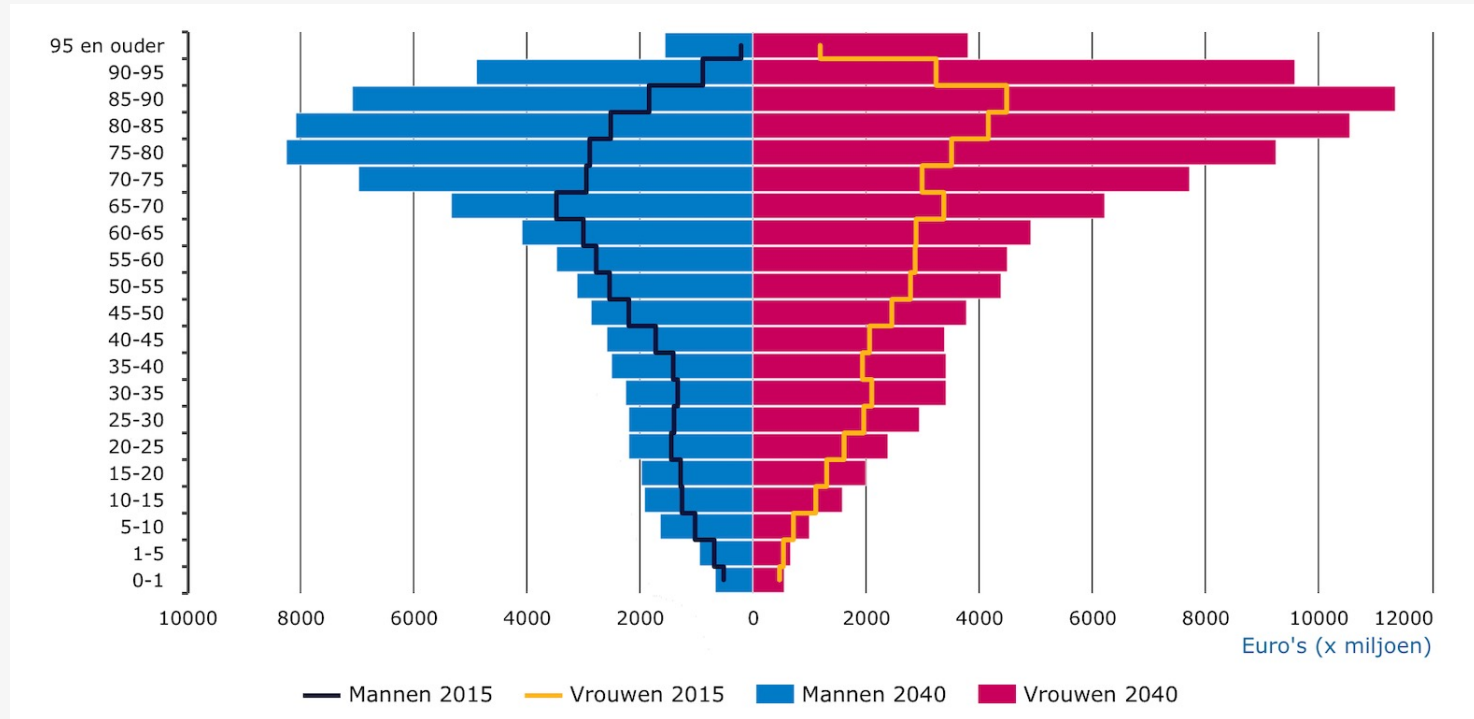
Healthcare expenditures in perspective

Mutatie collectieve uitgaven naar sector als percentage bbp, 2017-2025



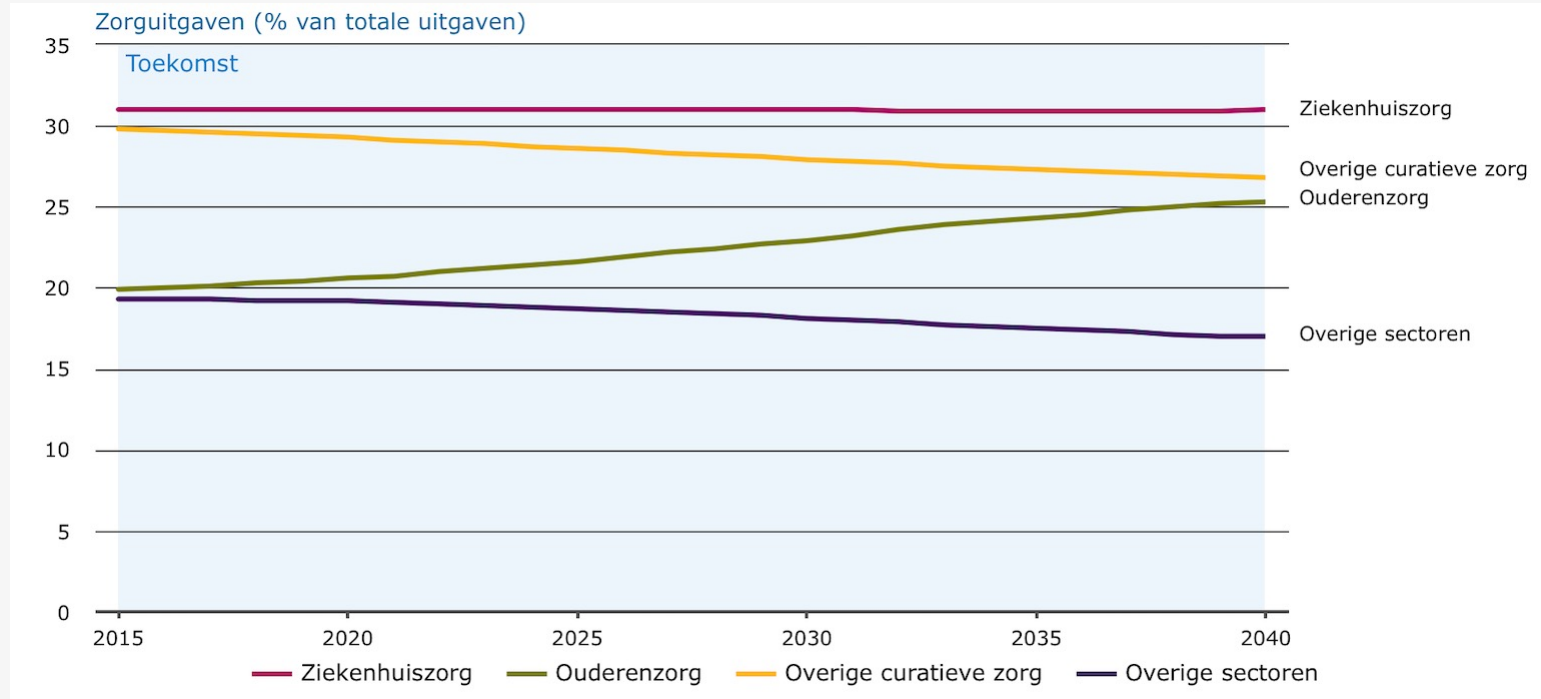
Source: Naar een toekomstbestendig zorgstelsel. Brede maatschappelijke heroverweging. Rijksoverheid, 20 april 2020

Development healthcare expenditures: age & gender



Source: Volksgezondheid Toekomst Verkenning 2018, Een gezond vooruitzicht. RIVM 2018

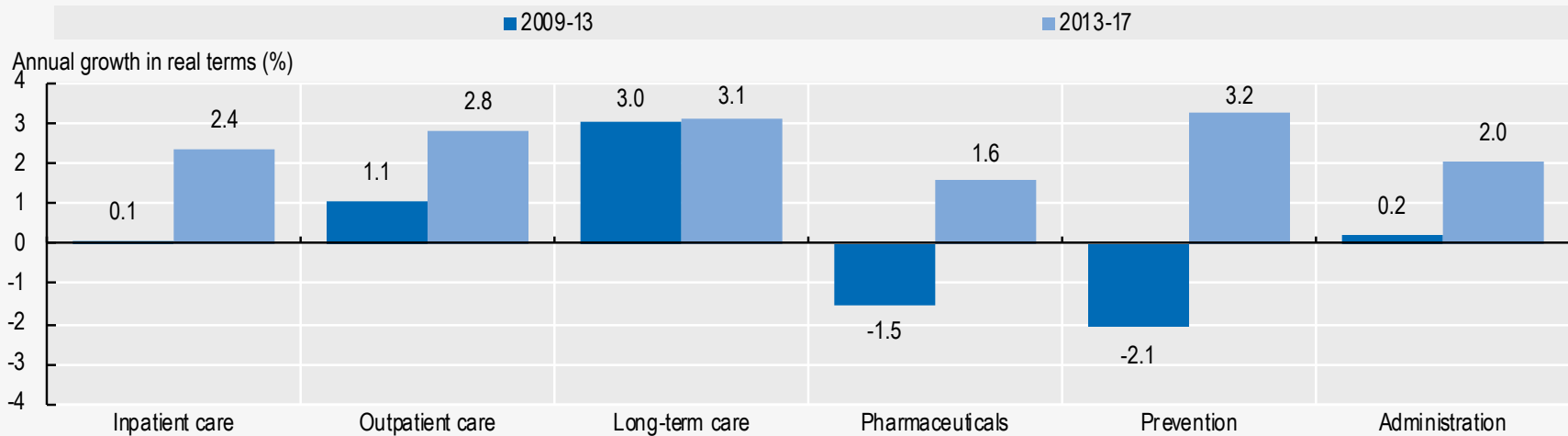
Increase (labor-intensive) elderly care



Source: Zorg voor de toekomst. Over de toekomstbestendigheid van de zorg. Verkenning 20/02. SER juni 2020.



Investment in prevention <3% in EU-countries



Source: OECD Health statistics 2019.

Healthcare innovation: context & opportunities

➤ The demand for healthcare increases:

- ✓ Ageing effects
- ✓ Lifestyle effects
- ✓ Increasing care supply

➤ The supply of healthcare comes under pressure:

- ✓ Substantial increase in healthcare expenditures (€97,9 billion in 2020 → ~€174 billion in 2040)
- ✓ Shortage of healthcare professionals (~80 000 healthcare workers in 2022)²
- ✓ Economic growth ‘?’

➤ Opportunities for innovation:

- ✓ Investment in better quality and durable affordable care => right medicine for the right patient
- ✓ Investment in the efficiency of care (optimize value-chain) with savings elsewhere in the healthcare chain
- ✓ Investment in labor productivity (less loss of productivity by prevention and treatment of disease)



Investment in the transformation of healthcare is needed...

Health-Trilemma: quality, accessibility and affordability

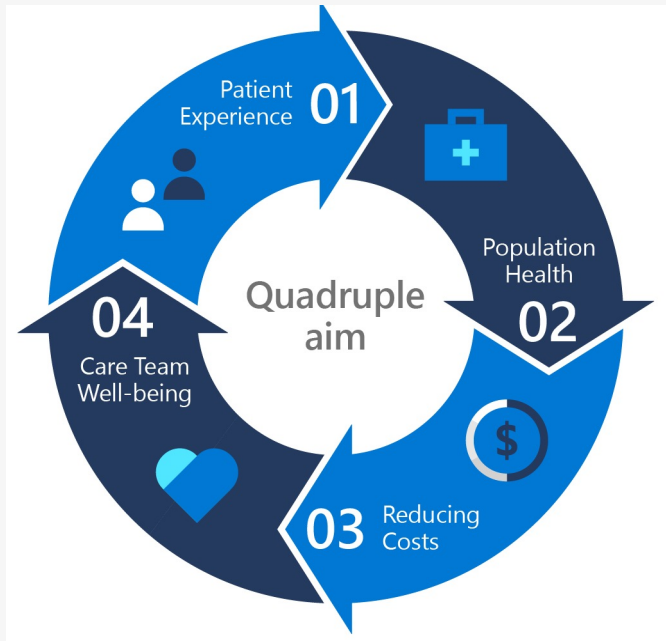


- Trend of growing healthcare costs is unsustainable
- Affordability of healthcare remains an issue

“We all want: “Qualitative good, Accessible & Affordable health care”

How do we balance:

- Access for all
- Affordability
- Reward for innovation



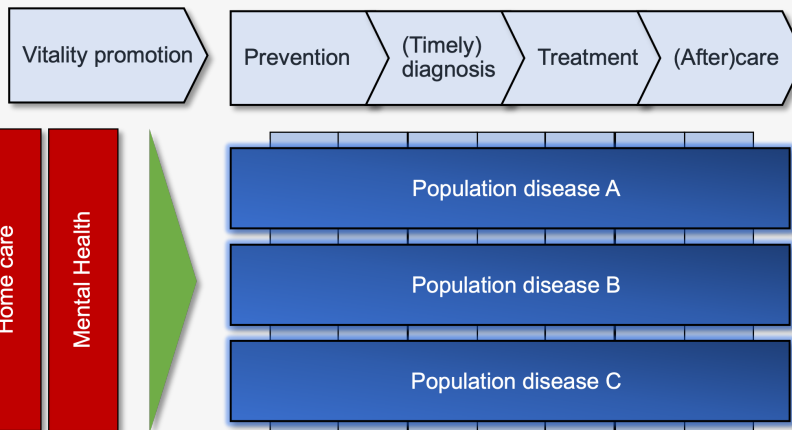
Conditions for value-chain optimization

Current



Vertical *annual* agreement on reducing growing health care *production* with budgeting operations (volume)

Future



Horizontal *more years* agreements about reducing growing health care *demand* with compensation based on *outcomes*

- Healthcare transformation through:
- Contractinnovation
 - Innovative earning models
 - Collaboration/organization
 - Monitoring/data
 - Innovations (instrumental)

CLINICAL MICROBIOLOGY REVIEWS, Oct. 2007, p. 660–694
0893-8512/07/\$08.00+0 doi:10.1128/CMR.00023-07
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Vol. 20, No. 4

Severe Acute Respiratory Syndrome Coronavirus as an Agent of Emerging and Reemerging Infection

Vincent C. C. Cheng, Susanna K. P. Lau, Patrick C. Y. Woo, and Kwok Yung Yuen*

State Key Laboratory of Emerging Infectious Diseases, Department of Microbiology, Research Centre of Infection and Immunology, The University of Hong Kong, Hong Kong Special Administrative Region, China

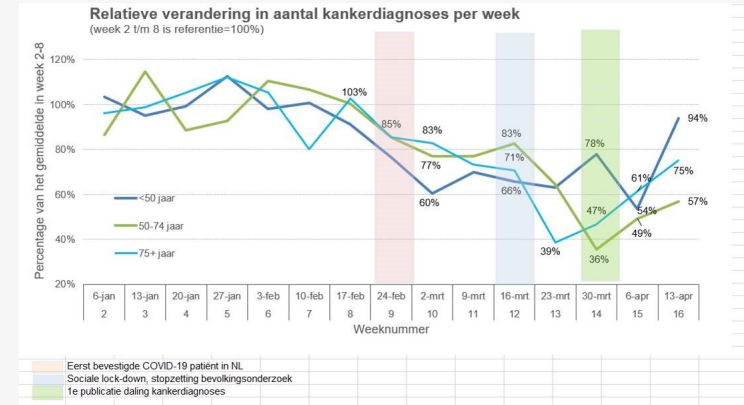
SHOULD WE BE READY FOR THE REEMERGENCE OF SARS?

The medical and scientific community demonstrated marvelous efforts in the understanding and control of SARS within a short time, as evident by over 4,000 publications available online. Despite these achievements, gaps still exist in terms of the molecular basis of the physical stability and transmissibility of this virus, the molecular and immunological basis of disease pathogenesis in humans, screening tests for early or cryptic SARS cases, foolproof infection control procedures for patient care, effective antivirals or antiviral combinations, the usefulness of immunomodulatory agents for late presenters, an effective vaccine with no immune enhancement, and the immediate animal host that transmitted the virus to caged civets in the market at the beginning of the epidemic. Coronaviruses are well known to undergo genetic recombination (375), which may lead to new genotypes and outbreaks. The presence of a large reservoir of SARS-CoV-like viruses in horseshoe bats, together with the culture of eating exotic mammals in southern China, is a time bomb. The possibility of the reemergence of SARS and other novel viruses from animals or laboratories and therefore the need for preparedness should not be ignored.

COVID-19 impact: healthcare, societal & economic



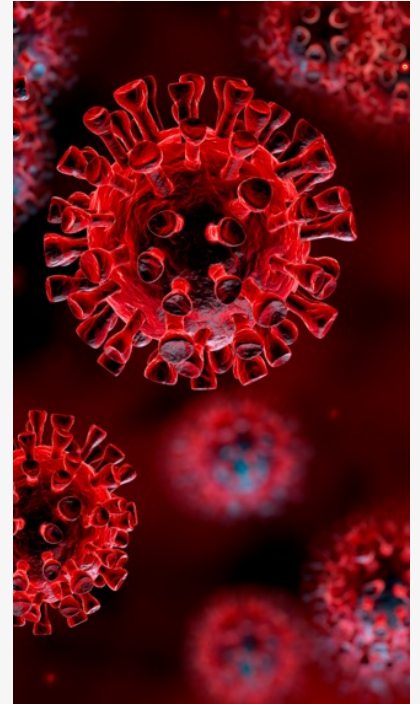
- Pressure on healthcare sector and healthcare personnel
- Less infectious diseases through social distancing
- Care-avoiding behavior (e.g. breastcancer diagnoses)
- Consequences “lock-down” (e.g. loneliness)
- Economic impact reactive measures > “Willingness to Pay”
- Public-private focus on and investment in the availability vaccine



Source: IKNL, COVID-19 monitoring.

COVID-19 learnings

- Importance infectious disease prevention & ‘pandemic preparedness’
- ‘Silo-transcending’ directing role, collaboration and overview population (data) is crucial
- Broad impact, thus investments in innovative solutions generate broad ROI
- Both care-avoiding behavior and overconsumption of care?’
- Innovation, entrepreneurship and relaxation of regulations possible
- Reactive vs. proactive acting (e.g. populationdata, triage, phasing of healthcare, ...)
- Distance care and digitalization gaining momentum



Potential of CO₂-emission reduction lungmedication (Belgium)



Replacing 50%/100% of pMDI with DPI would have a similar emission effect as reducing the (average) power consumption of 18400/36800 households

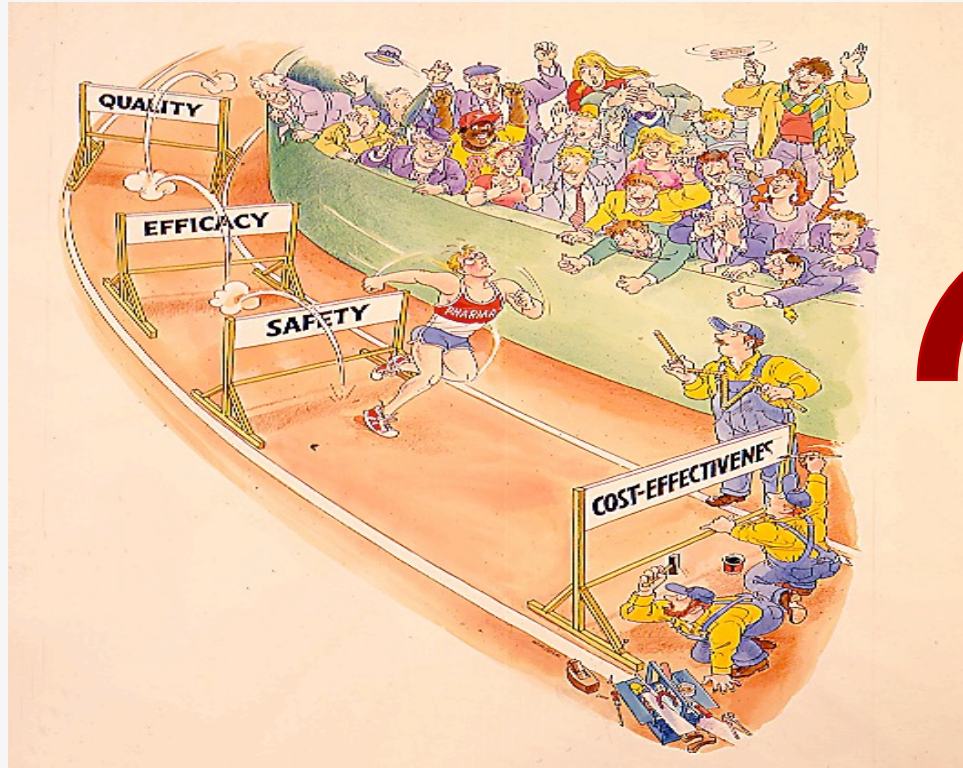


Replacing 50%/100% pMDI with DPI would have a similar emission effect as an annual reduction of the number of (petrol) cars by 9400/18800 (assuming 20,000 km driven on an annual basis)



Replacing 50%/100% pMDI with DPI would have a similar emissions effect as reducing 1500/3000 return flights from Brussels to London on an annual basis

Outcomes: health, economic and sustainability



fifth hurdle...?

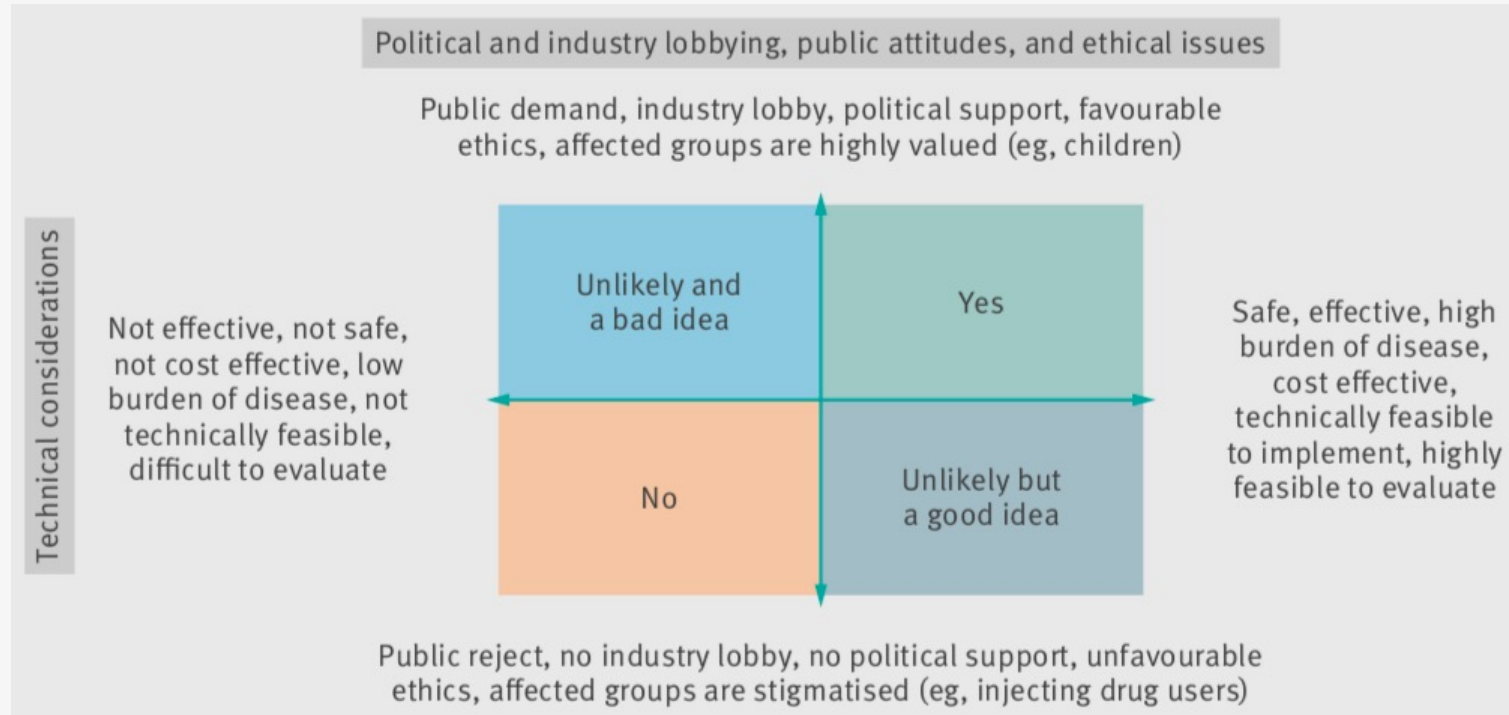


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Conditions for sustainable health and innovation



Source: Crowcroft BMJ 2015

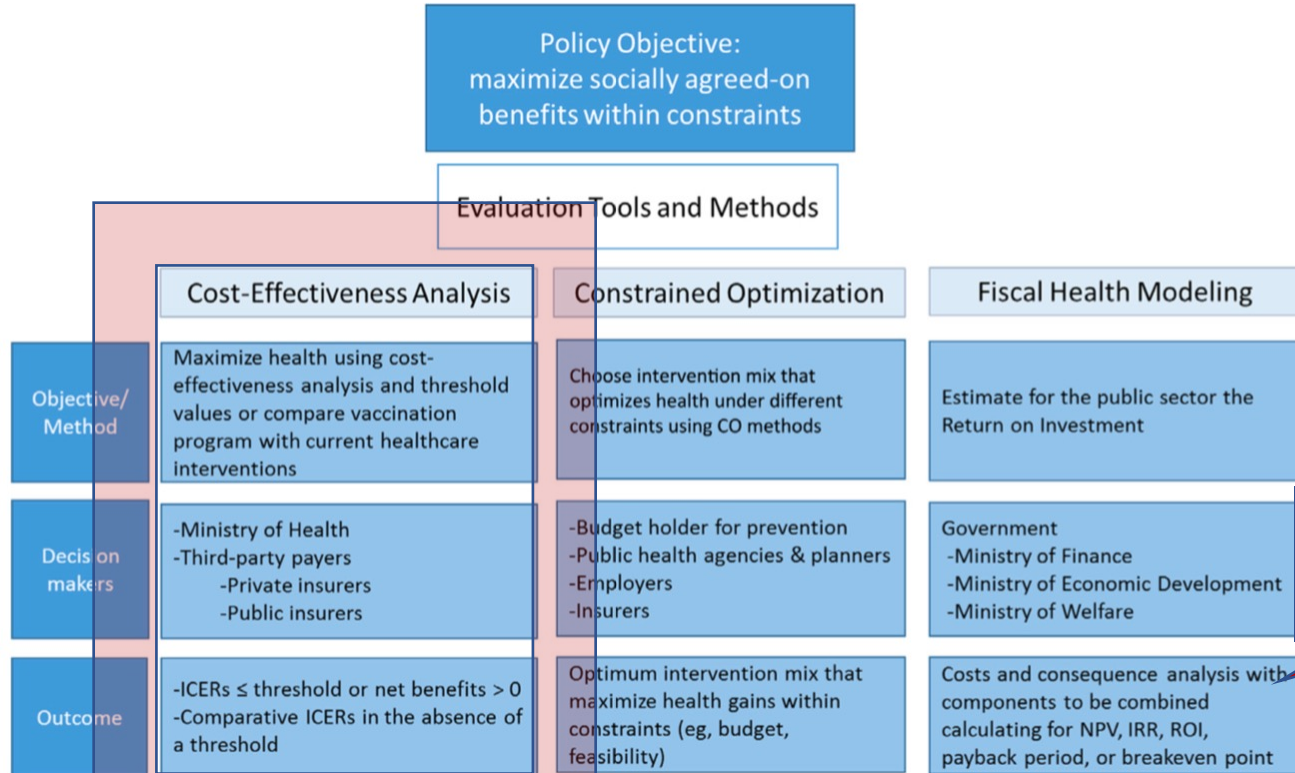


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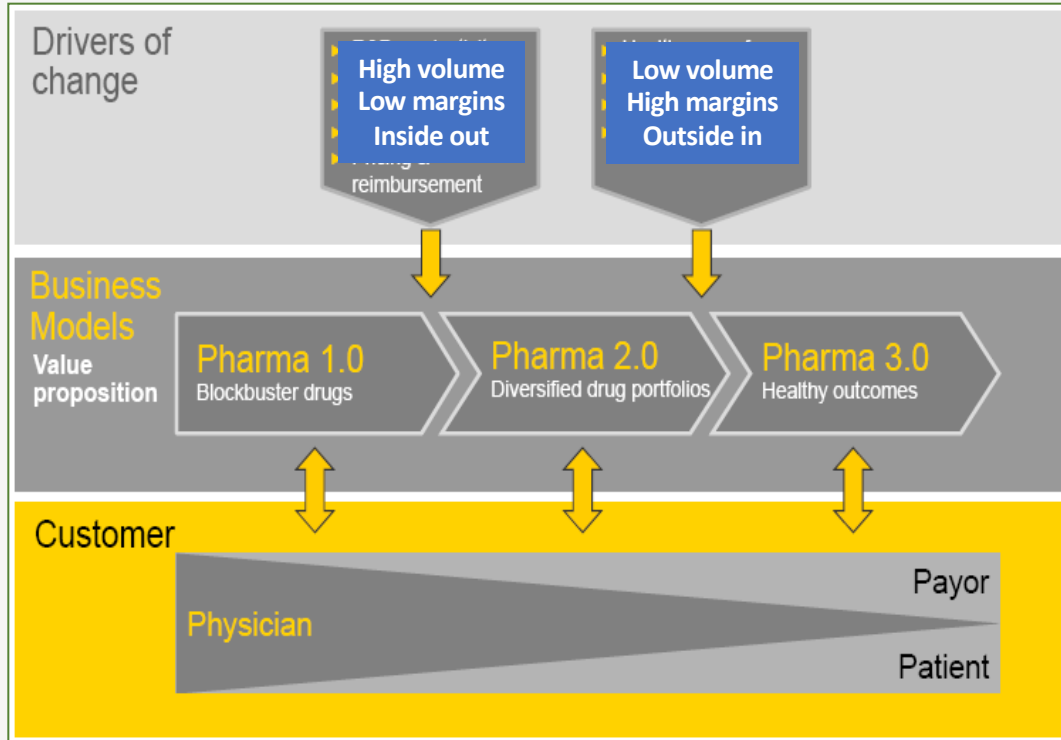
Healthcare systems: allocative efficiency



Real options methods

Source: Mauskopf et al Value in Health 2018

Evolution of business models

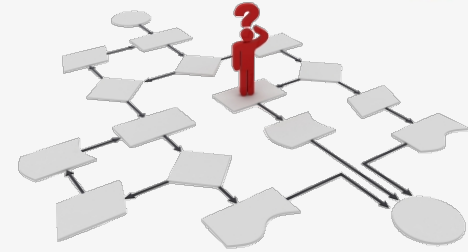


"everybody recognizes that the old model is not sustainable," said Simon Friend, global pharmaceutical leader at PricewaterhouseCoopers.

After the Cliff: Seizing a New Future for a Changed Industry
A Vision for Future Healthcare Based on a Collaborative Systems Approach Edited by Adrian McKemey, PhD, and John Doyle, PhD

How do we achieve 'healthy outcomes' or 'personalised medicine'?

Sustainable Health & Innovation



- From current silos to ambition-driven **ecosystem collaboration**
- From volume to **outcomes-driven** care
- From budgeting to **investment** in healthcare
- From limited care to **broad** societal and economic **scope**
- From the CO2 footprint challenge to **sustainability** as a driver of healthcare transformation

“Transformation of healthcare through entrepreneurship and innovation is needed from health, societal, economic and environmental perspective”



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zorgtransformatie
door ondernemerschap
en innovatie

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Thank you for
your attention

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