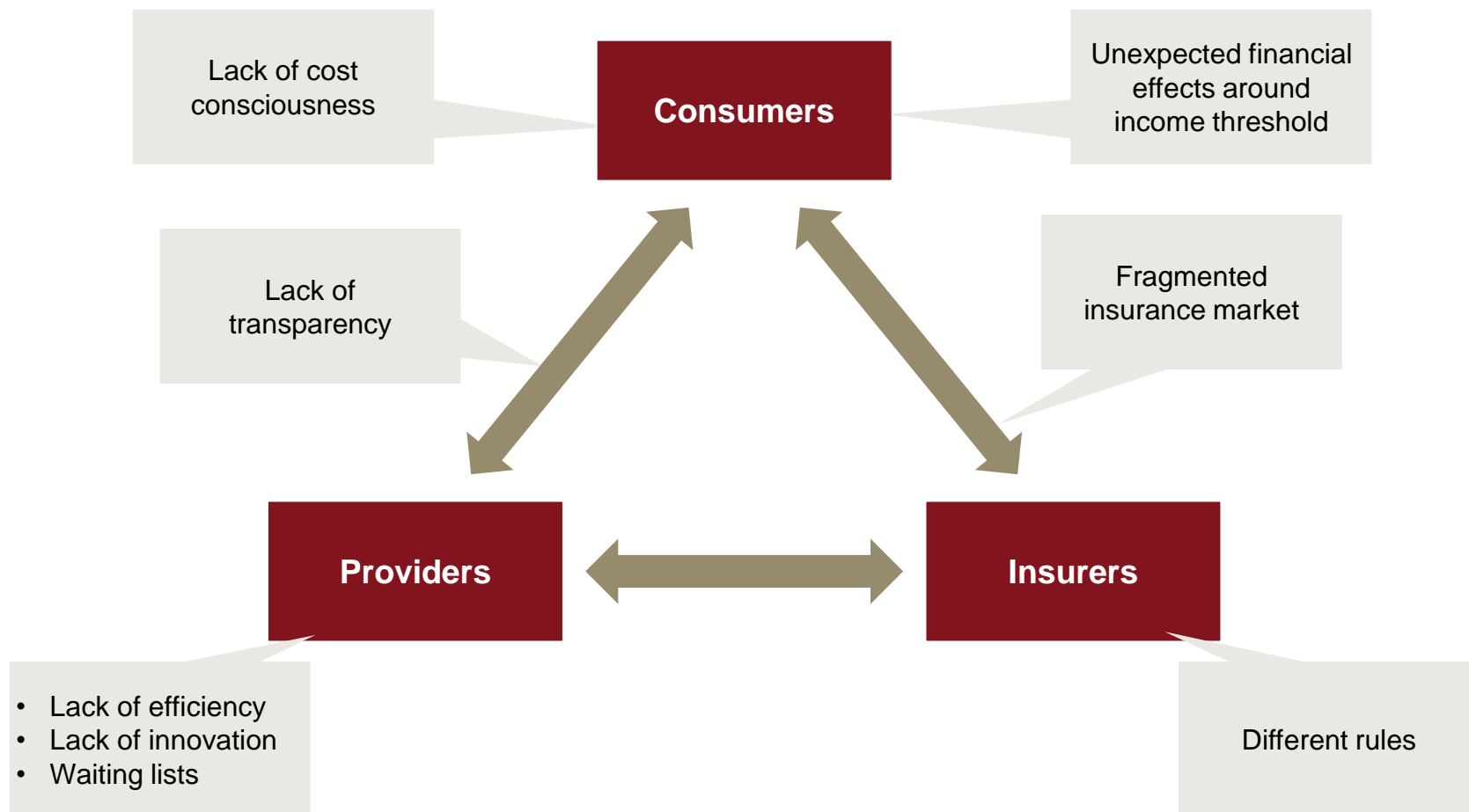

Saving lives and costs: a contribution to the sustainability of health care

Driving Change in Health Care – A quality agenda

Curative care: Our starting point (pre 2006)

- Tradition of private initiative
 - Hospitals, nursery homes privately owned
 - Medical specialists and general practitioners mostly private entrepreneurs
- Mixed public/private insurance
 - 60% social insurance (below average income level)
 - 30% private insurance (no government interference)
 - 10% civil servants, elderly, etc.
- Growing government interference (from ± 1980 onwards)
 - Main objective: Cost containment
 - Detailed price regulation, budgeting
 - National, and regional planning, and licensing

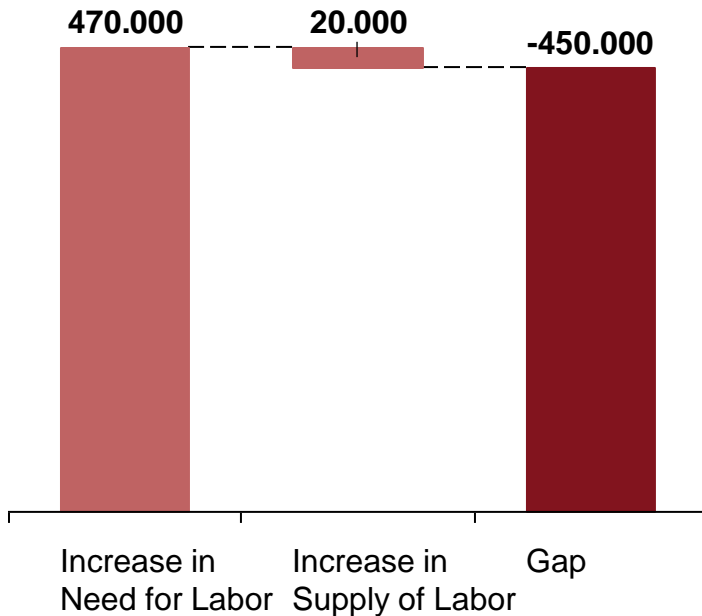
System-related problems stressed the need for reform



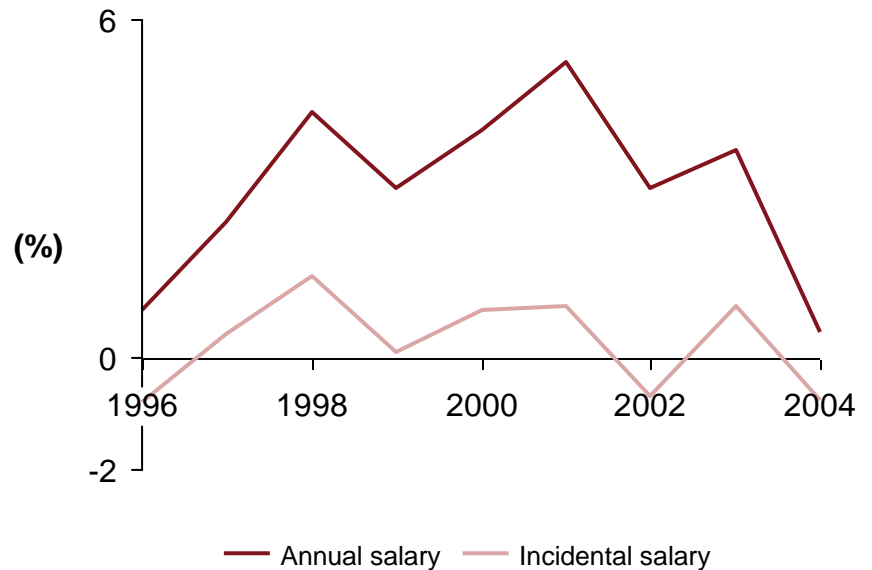
The question of productivity became increasingly urgent given the tight labor market

Labor scarcity in *future* may put additional pressure on cost

(Labor deficit health care 2010–2025)



Salary explosion from the past are illustrative of this may increase health care costs



Sources: CPB Netherlands Bureau for Economic Policy Analysis; ZIP innovatie; Strategy& analysis

The 2005–2006 reform intended to boost productivity in an inefficient health care system

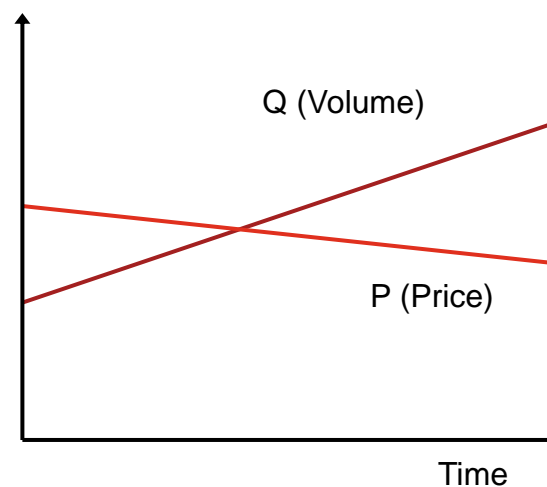
System pre-2006: macro effective but micro inefficient

- Effective macro instrument
 - Cost containment on macro (national) level
 - Policy implementation through intervening in the system
- But problematic on the micro level
 - Micro inefficiency
 - Lack of spirit of enterprise and innovative climate
 - Rationing → waiting lists

Growing pressure on the system to change

- Social problems: waiting lists
- More costs
- Political strains
- Law suits

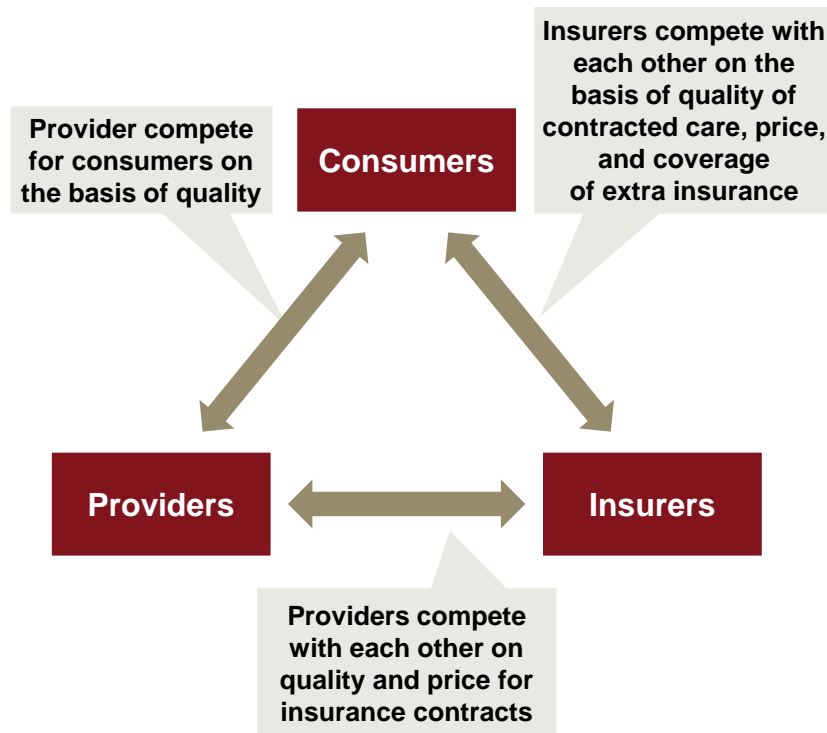
The 2005-06 reform: More efficiency to accommodate volume



- Volume growth is a fact of life: Ageing, innovation
- More efficiency is needed to deal with volume growth
- Competition will lead to more efficiency and lower prices

We envisioned competitive dynamics contributing to cost control and quality of care

The competition model



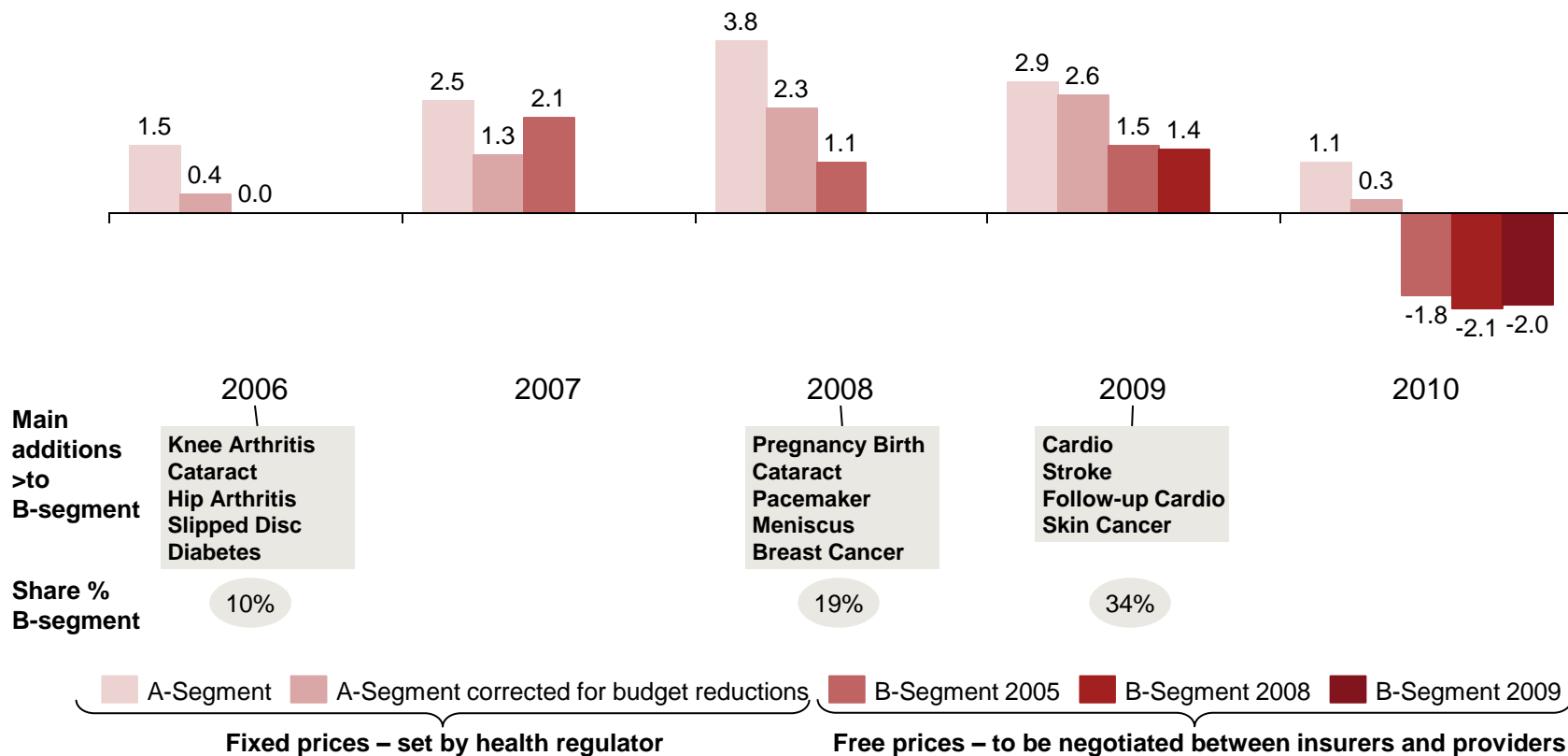
- **Room to move**
 - Freedom of nominal premium setting
 - Freedom to offer supplementary deductibles, group discounts, and extra insurance
 - Freedom of contracting (insurer ↔ health care provider)
 - Freedom of price negotiations
 - Freedom of capital investments (capital costs in DRG's)
- **Changed incentives and responsibilities**
 - From budgeting to output pricing/p4p
 - Insurers and providers have to compete for clients
 - Quality indicators for hospital and outpatient care
 - Increase amount of risk of insurers and providers
 - Duty of care for health insurers
- **Clear government safeguards**
 - Compulsory acceptance for basic insurance
 - Compulsory health insurance and income related subsidy
 - Legally defined coverage of basis insurance
 - No premium differentiation between insured
 - Health Care Authority (market development, price regulation)
 - Health Insurance Board (package of entitlements, risk equalization)

The health care reform has been successful

- Waiting lists have been virtually eliminated
- Substantial increase in transparency as a result of DRGs
 - Better view on real costs of treatment
 - Better registrations
 - Better view on practice variation
- Prices have decreased
- And ... we are increasingly capable of controlling volume growth

Negotiations for the free DRG segment resulted in lower prices

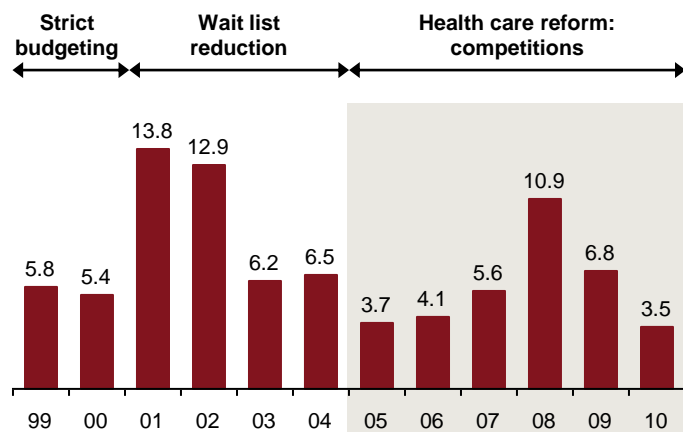
Price development hospital DBCs 2006-2010 (% , nominal)



Sources: Marktscan Medisch Specialistische Zorg 2011; Nza. Onderhandelen over ziekenhuiszorg; Vektis 2009

Health care reform succeeded in lowering prices, but it did not curb volume growth

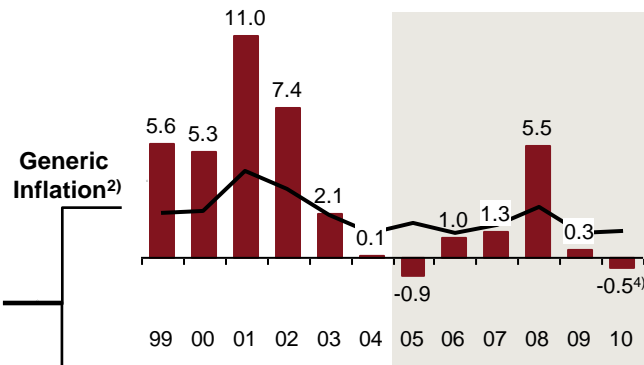
Total growth in hospital expenditures (%)¹⁾



The 2005-2006 Reform Paradigm

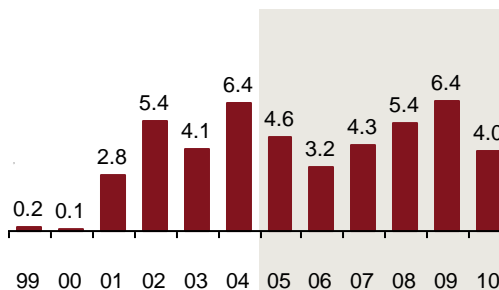
- Volume growth is a fact of life: ageing, innovation
- More efficiency is needed to deal with volume growth
- Competition will lead to more efficiency and lower prices

Price increase (%)



- Health care reform (competition) has indeed led to lower prices (driven by B-segment)

Volume growth (%)



- But since the health care reform volume growth accelerated
- **Today's challenge:** volume growth reduction without the waiting lists of the nineties

1) Hospital expenditure include day and/or night cost and include specialist health care (4) Estimate based on "Marktscan Medisch specialistische zorg 2011"

2) Consumer Price Index CBS

Sources: CBS Statline (Zorgrekeningen; expenditures at current and constant cost); RIVM Performance Of Dutch Health Care 2010; Stijging Zorgkosten ontrafeld; VGE; Marktscan Medisch specialistische zorg 2011; BoStrategy& analysis

The US experience also suggests controlling prices may focus on the wrong part of the equation



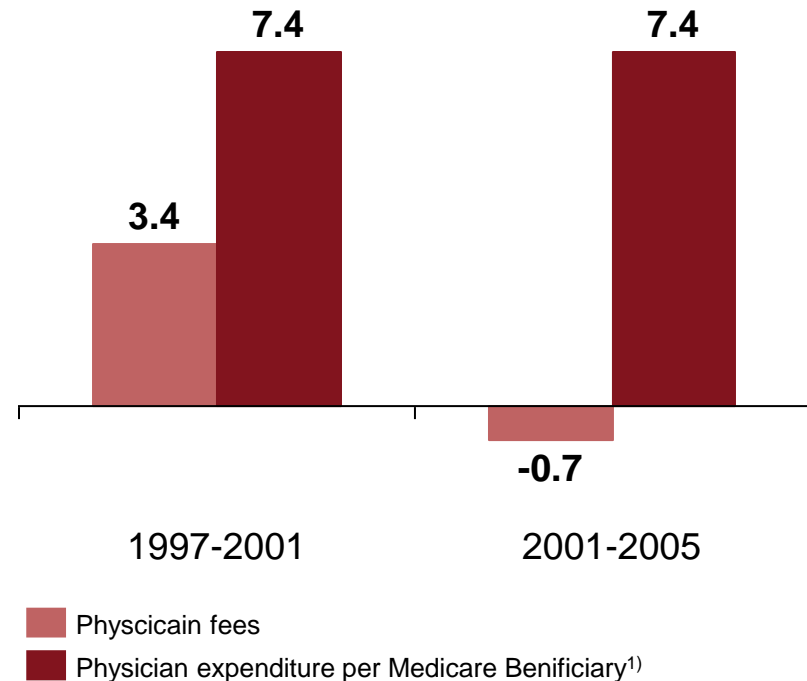
Example US Medicare

- Medicare has committed significant effort to figuring out the “ideal” price paid per unit of service to curb spending, when **use rate** is actually the more important variable

$$\text{Total Cost} = \text{Price} \times \text{Use Rate}$$

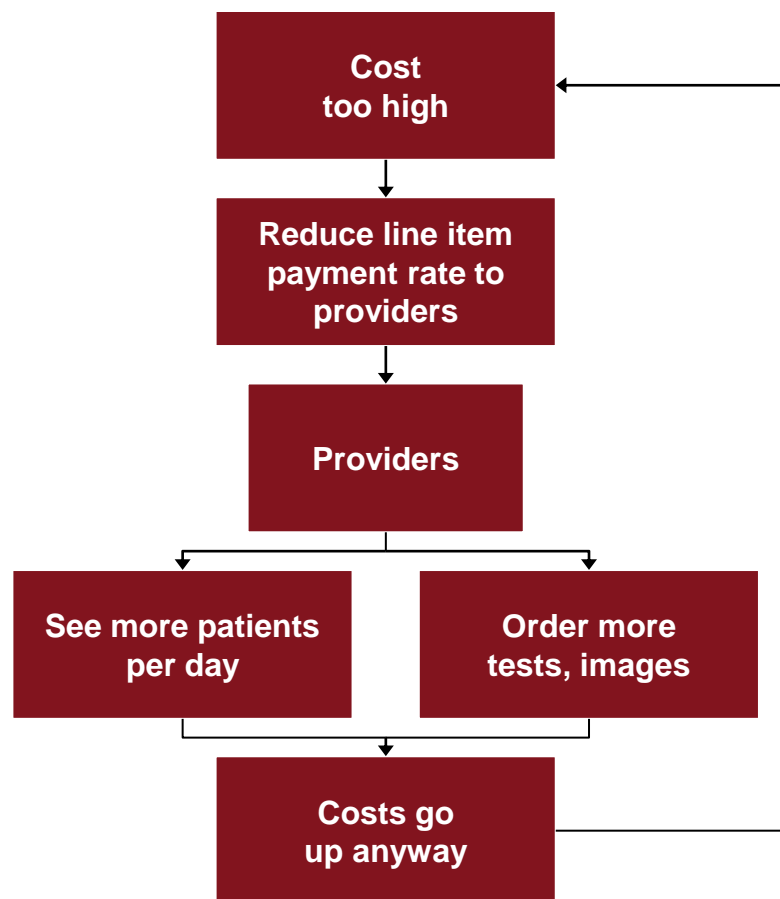
- The use rate is a direct function of the medical practice style in the delivery system

Growth (%) in physician fees compared with growth in total expenditures



Sources: Mayo Clinic - Robert Smoldt

The Medicare price control cycle: cutting prices drives volume up

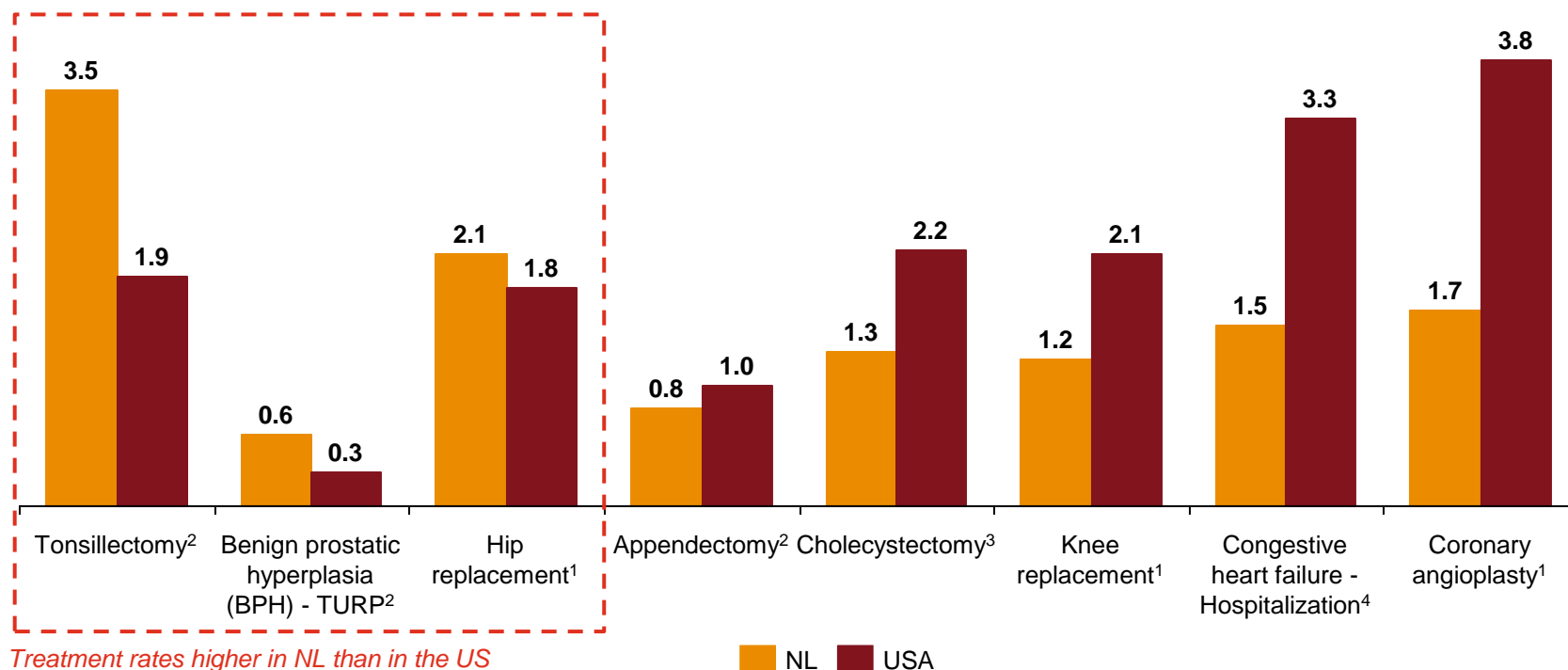


Sources: Mayo Clinic - Robert Smoldt

Usage is not a US problem: Higher rates in NL for hip replacements, TURPs and tonsillectomies

Incidence rates in the Netherlands and the USA

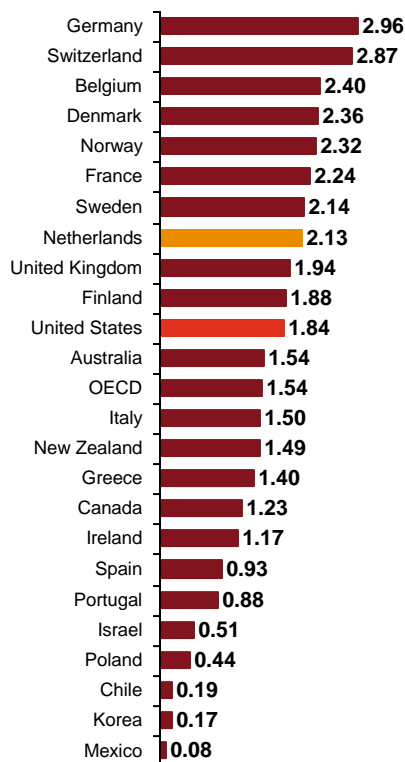
Number of treatments per 1000 population



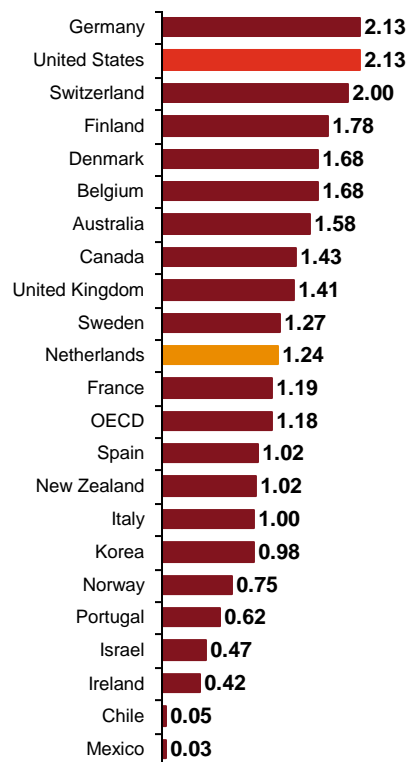
Sources: 1) OECD 2009, 2) NL: DIS 2006-2007; USA: HCUP 2006, 3) Laparoscopic versus small-incision cholecystectomy, F.Keus, 2008, 4) NL: DIS 2006-2007; USA: CDC 2010

The US is not an outlier in health usage – Budget based German health care ranks high

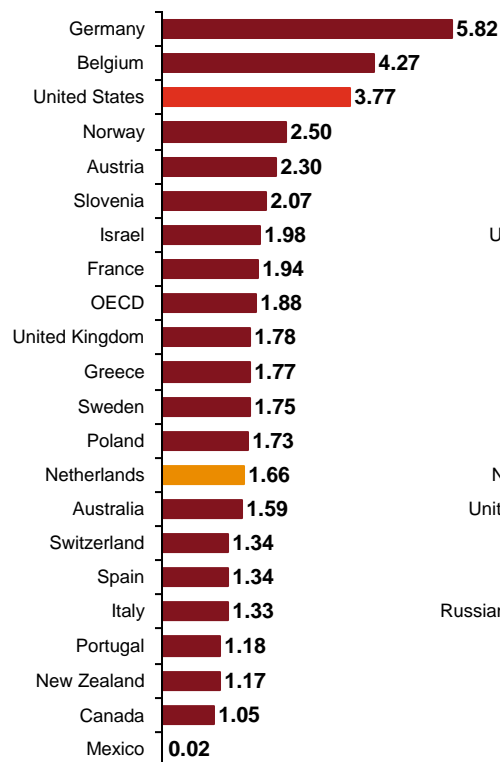
Hip replacement surgery, per 1000 population, 2009¹⁾



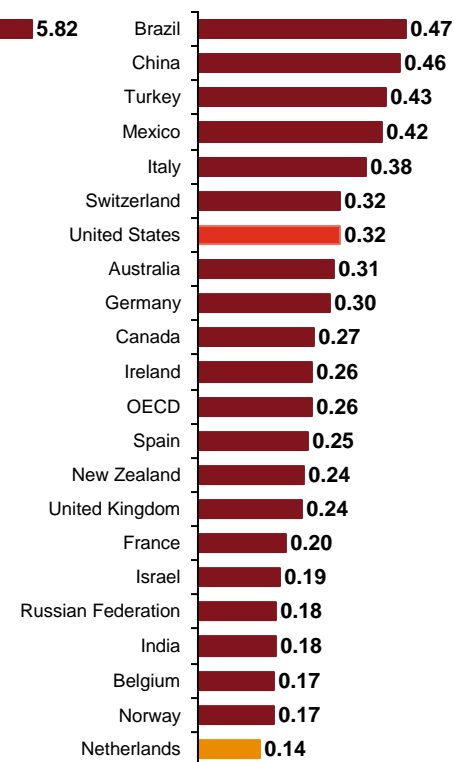
Knee replacement surgery, per 1000 population, 2008¹⁾



Coronary angioplasty (PCI), per 1000 population, 2009¹⁾



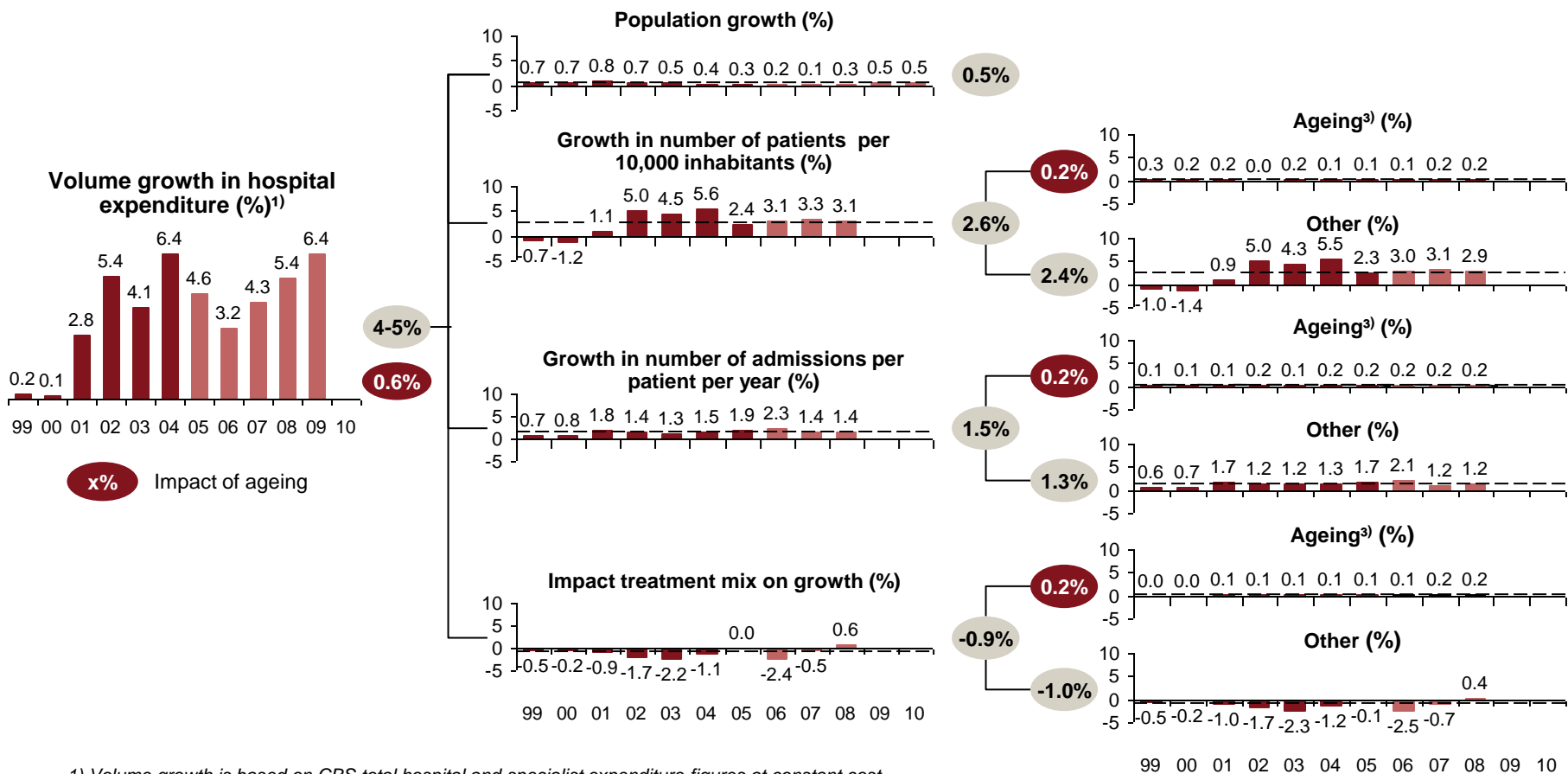
Caesarean sections per 100 live births, 2009¹⁾



1) Or nearest year

Source: OECD, Strategy& analysis

Ageing is often blamed for volume growth. Wrong!



1) Volume growth is based on CBS total hospital and specialist expenditure figures at constant cost

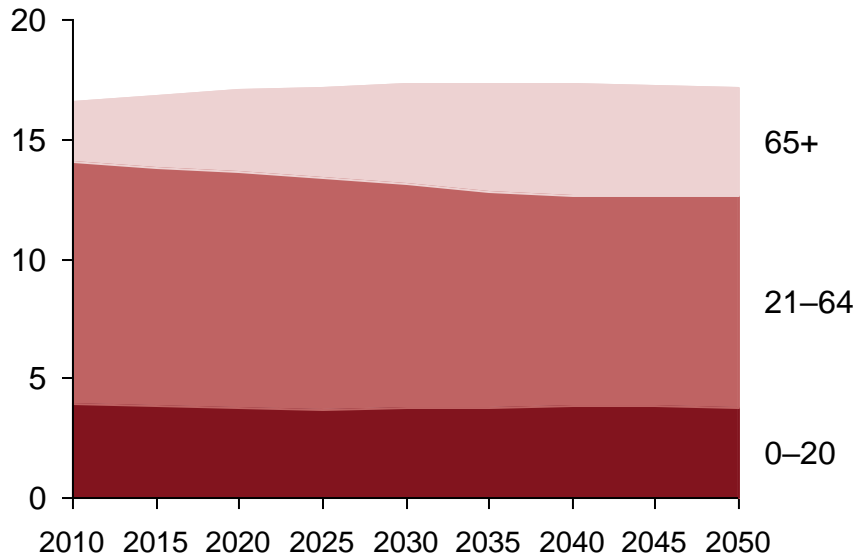
2) Defined as total hospital and specialist expenditure figures at constant cost divided by the total number of admissions

3) Isolated effect of population ageing on driver

Sources: CBS Statline (Gezondheid en Welzijn); RIVM Performance of Dutch Health Care 2010; Kosten van Ziekten 2005; Strategy& analysis

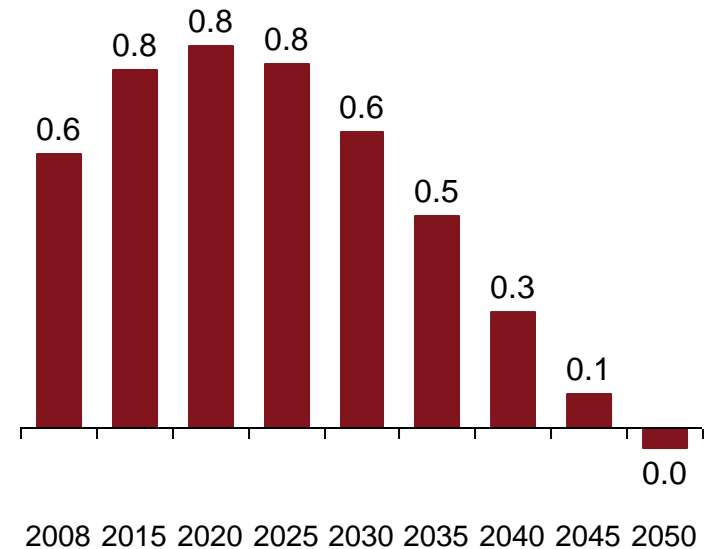
Over the next 15 years, ageing will continue to drive volume, but yearly impact does not exceed 1%

Forecasted population ageing and growth
(In Mn people)



15.3% 19.9% 24.2% 27.1% 26.3% Share 65+ in total population

Estimated impact of ageing on yearly volume growth (%)



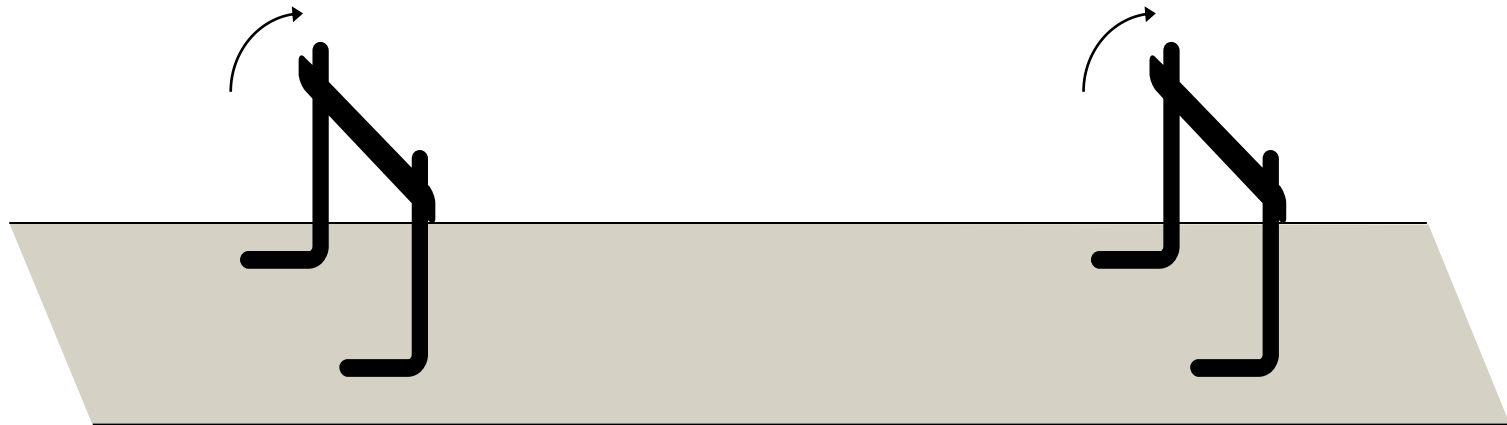
- Hence, a strong need to reduce any volume growth on top of ageing

Sources: United Nations; Department of Economic and Social Affairs; Strategy& analysis

The challenges to overcome for the payors

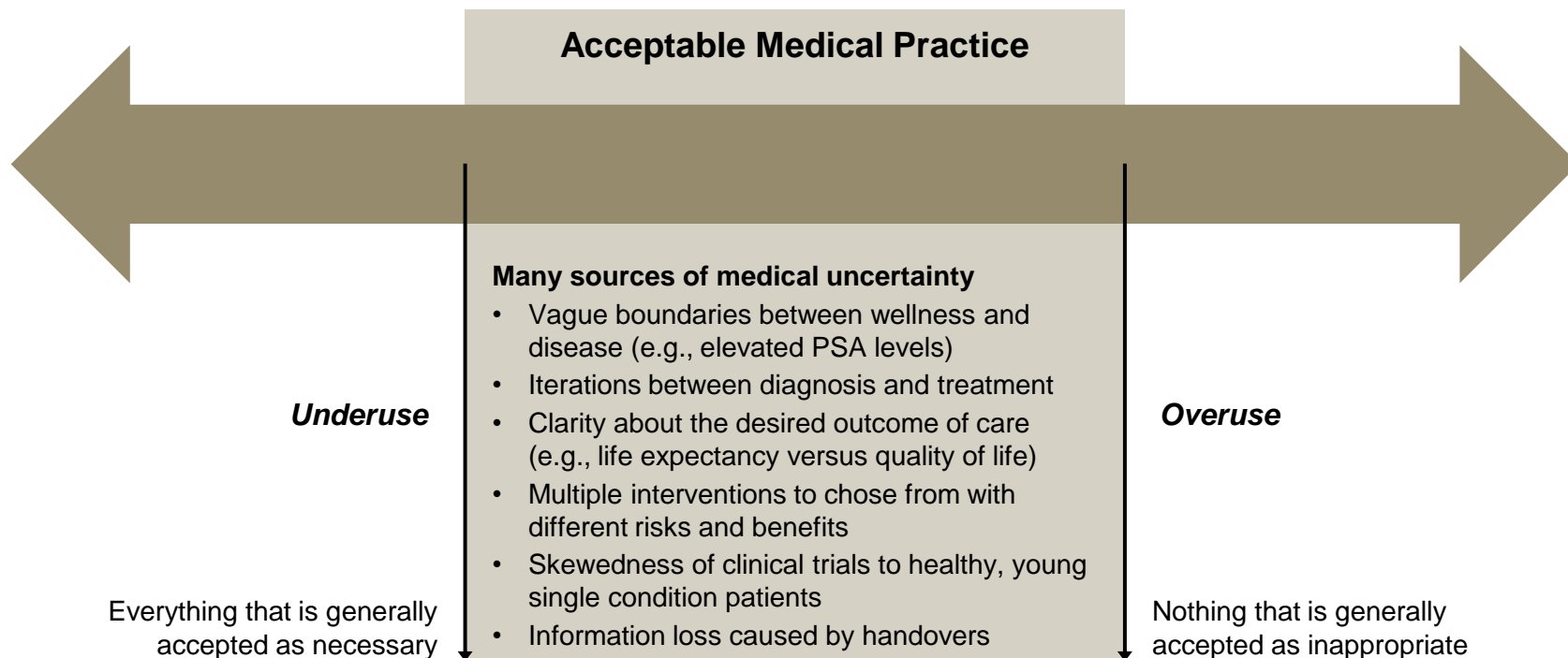
We pay volume instead of quality

We pay in a fragmented way



Source: Strategy&

Acceptable medical practice is an enormous grey area – offering lots of room to respond to price and volume incentives and to counter disruptive innovations



The human body is a nearly endless source of revenues” – A medical specialist

We may be inclined to overestimate the effectiveness of medical care

Attitude of an average patient

1

Ever increasing
(early) diagnostic
capabilities

- It is better to know
- The earlier you know the better

2

Evidence for
every day care

- If the doctor offers it, it will be effective
- No harm in trying

3

Alignment doctor
and patient
preferences

- The doctor will know what is best for me

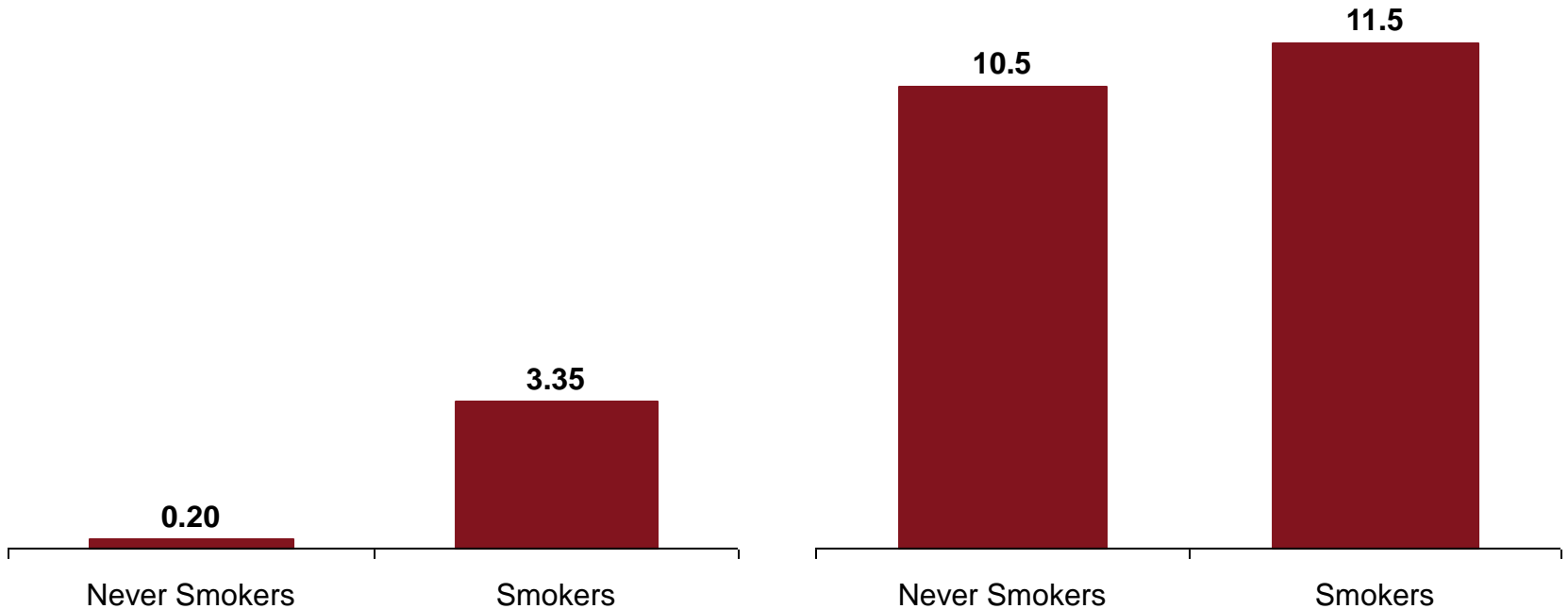
Over diagnosis is a real-risk; example lung cancer screening

Smokers are at 17 times higher risk of death as a result of lung cancer

Number of deaths per 1,000 over five years

But the number of abnormalities identified spiral CT diagnosis of lung cancer is similar for smokers and non-smokers

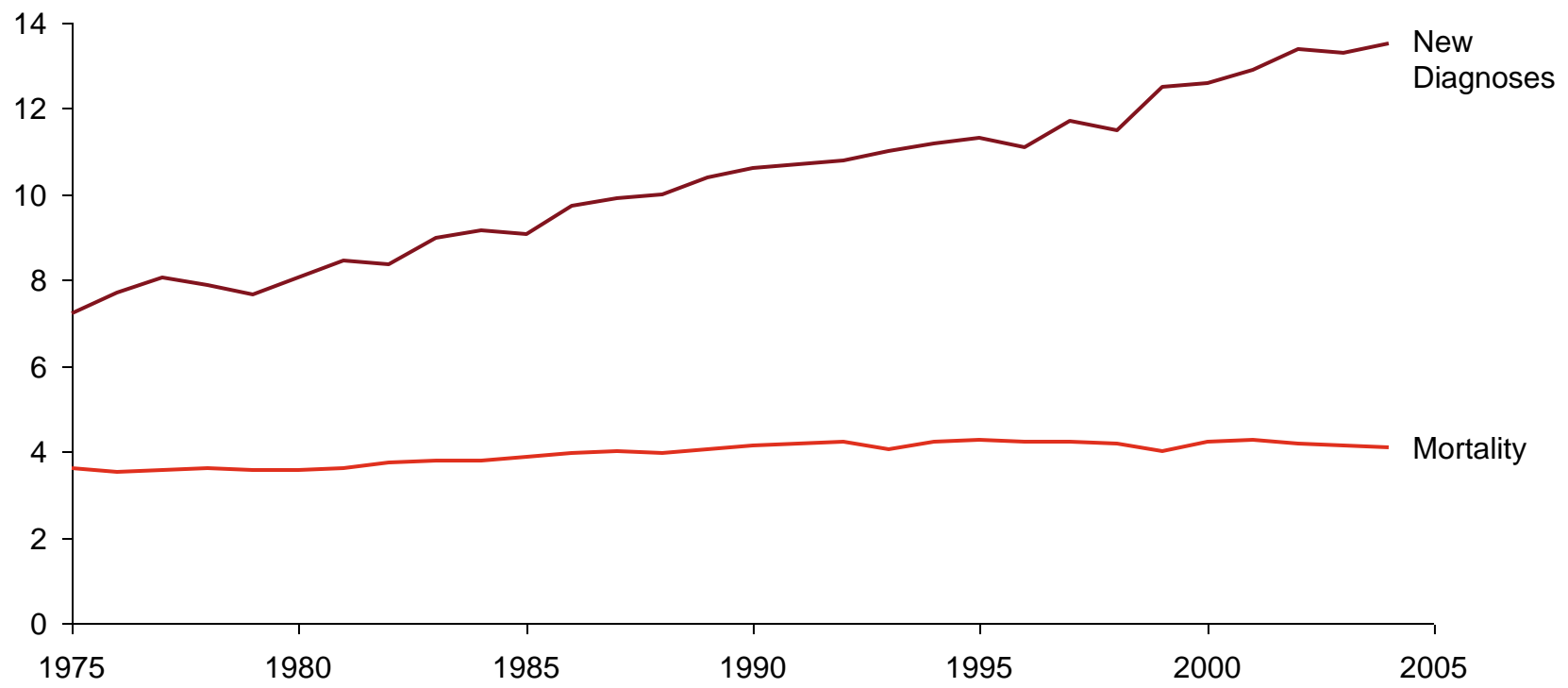
Diagnosed cancer per 1,000 scans



Sources: Over diagnosed (Welch); Strategy& analysis

Over diagnosis for kidney cancer?

New kidney cancer diagnoses and deaths
Per 100,000 people

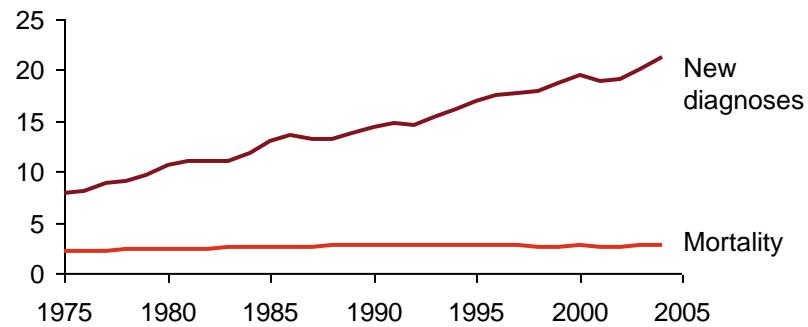


Sources: "Over diagnosed"; Welch; Strategy& analysis

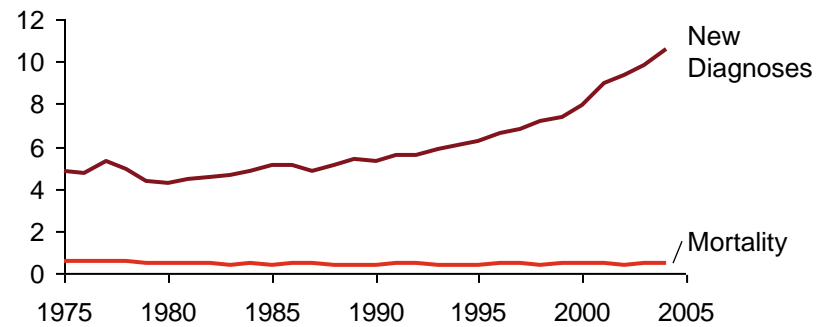
What about other cancers?

Cancer and diagnoses U.S.

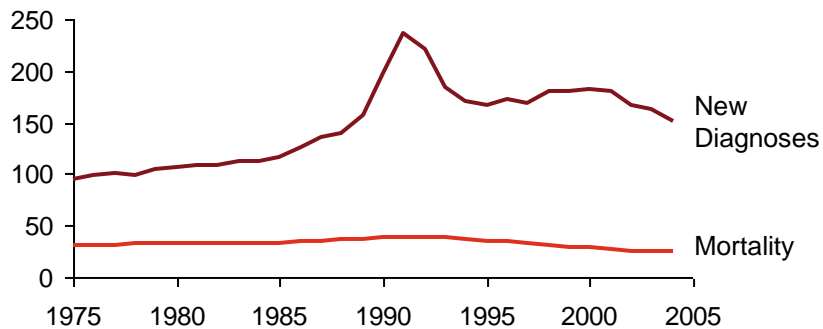
Skin Cancer Per 100,000



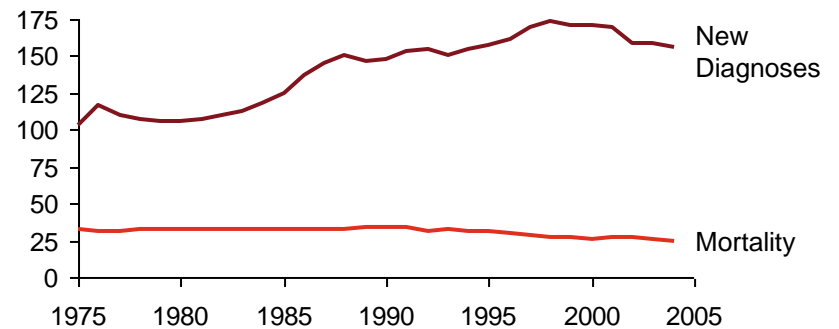
Pancreas cancer Per 100,000



Prostate Cancer Per 100,000



Breast Cancer Per 100,000



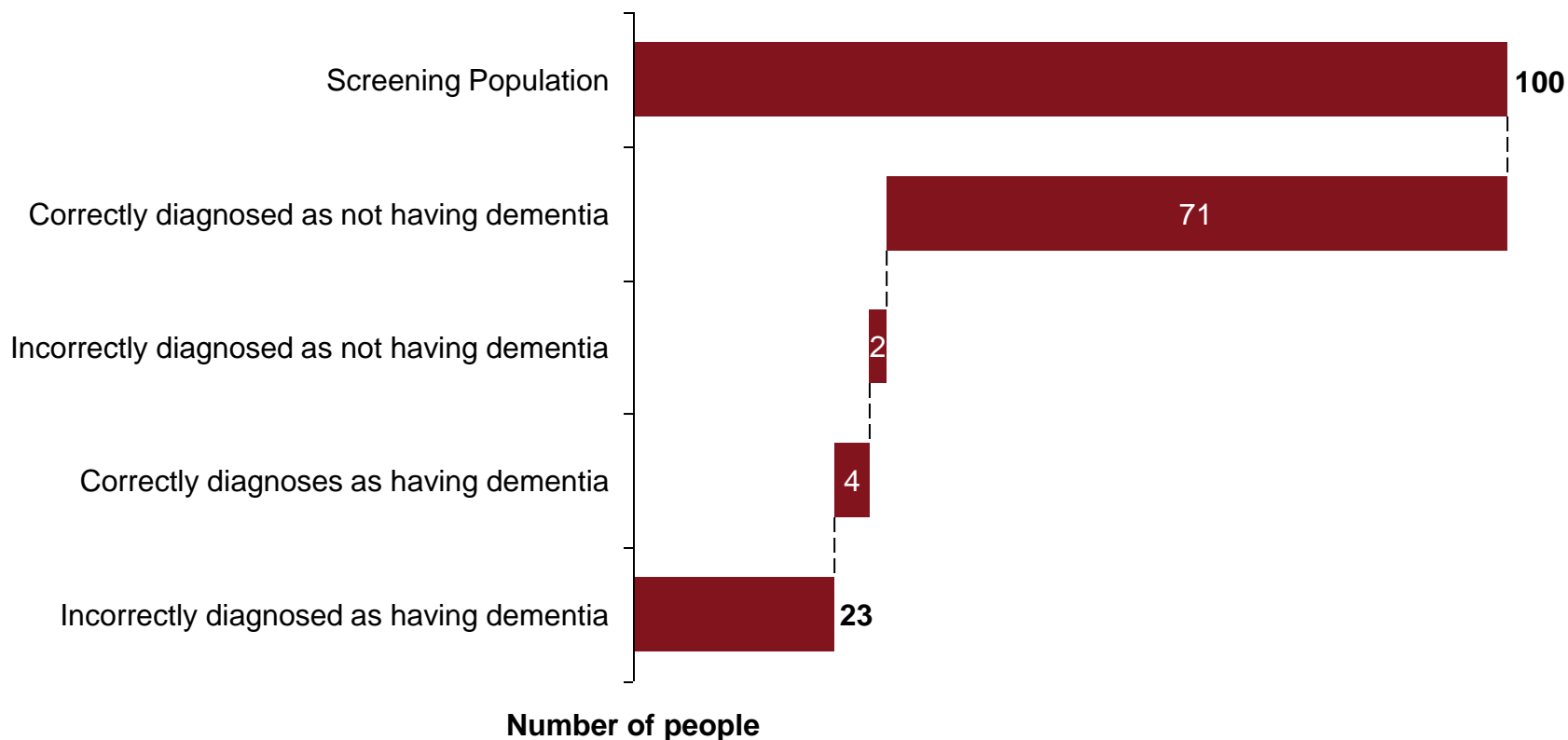
Results from a 25 year randomized clinical trial in Canada suggest that breast cancer screening does not save lives

	Breast exams	Breast exams and mammography
Population	44.910 women	44.925 women
Diagnoses with breast cancer	3.133 women	3.250 women
Died with breast cancer	500 women	505 women

‘And the screening had harms: One in five cancers found with mammography and treated was not a threat to the woman’s health and did not need treatment such as chemotherapy, surgery or radiation’

Screening for dementia: are patients aware that they are risking to be overdiagnosed

A BMJ study



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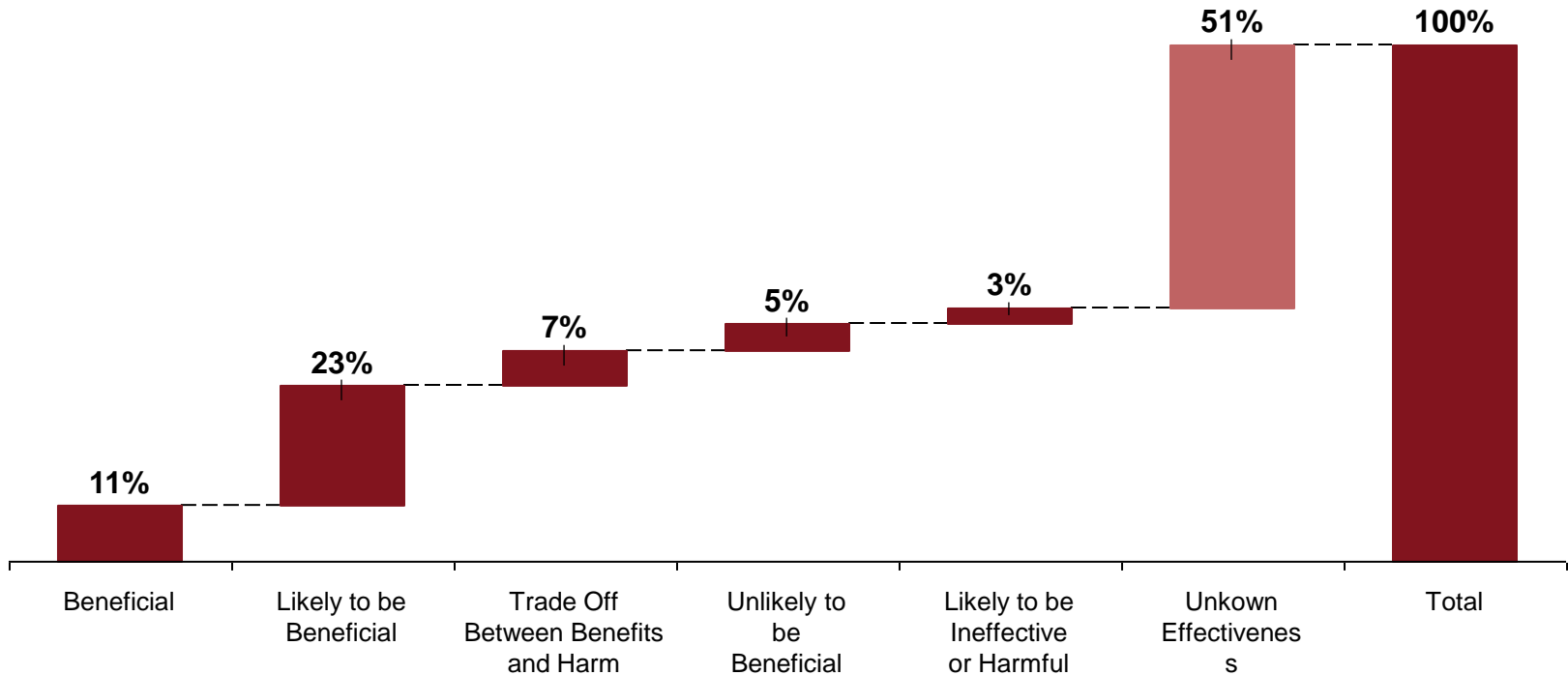
Alignment doctor
and patient
preferences

- The doctor will know what is best for me

No evidence for more than half of our common medical treatments

51% of ~3,000 commonly used treatments in the U.K. Was of unknown effectiveness

Rating by a team of advisors, peer reviewers, experts, information specialists, and statisticians

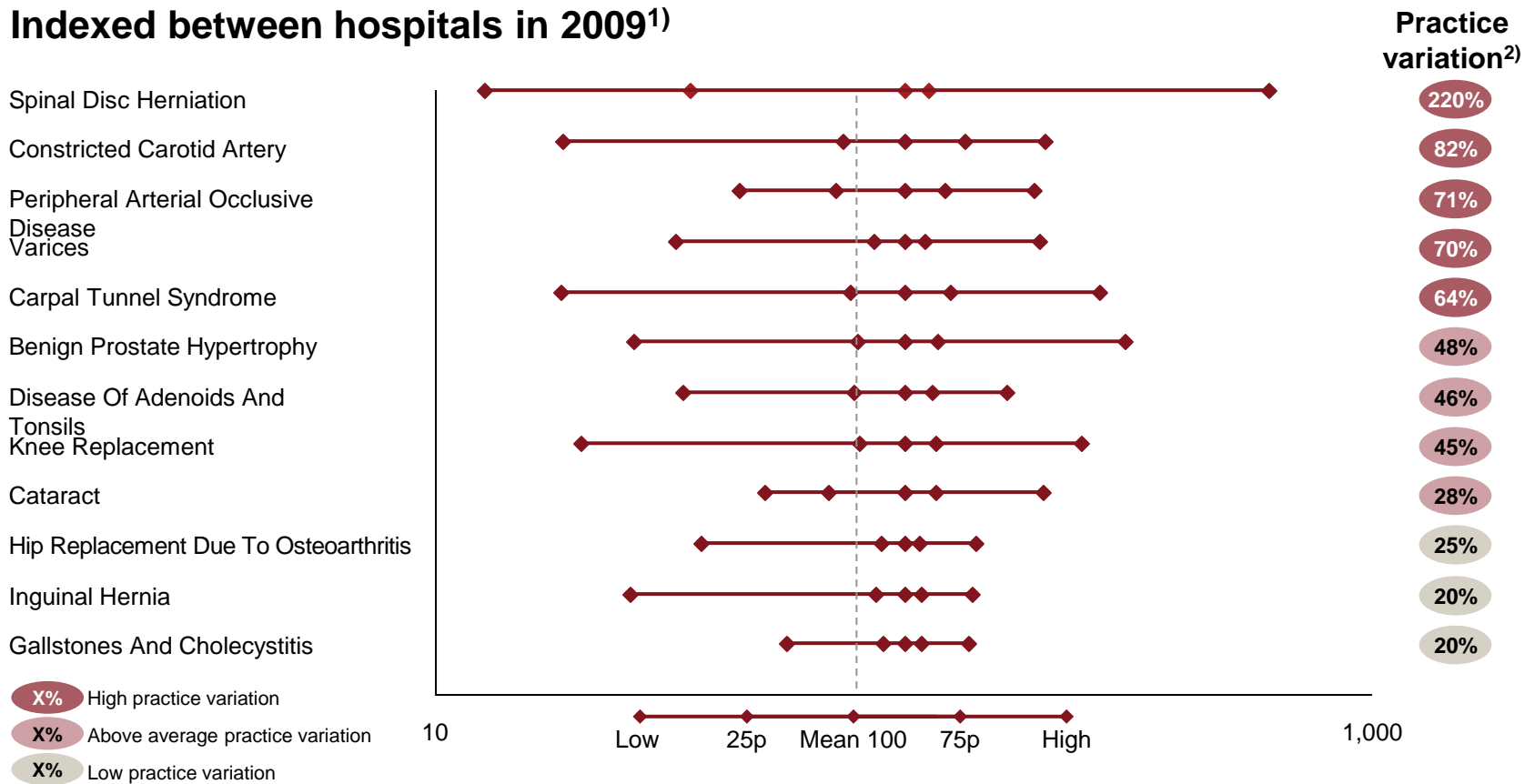


Note: Study based on ~ 3,000 treatments

Sources: Clinical Evidence website 2011; How much of orthodox medicine is evidence based? 2007; Strategy& analysis

Practice variation for common elective surgeries

Indexed between hospitals in 2009¹⁾

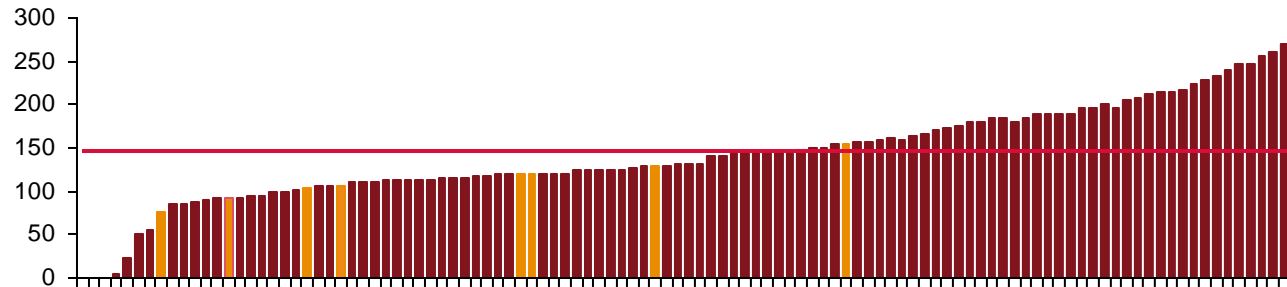


1) Corrected for Sex, Age, and SES 2) Difference between p25 and p75 > 50% are regarded high practice variation, differences > 25% and < 50% are regarded mediocre variations Note: Hospitals with 10 or less operative DBC's are not taken into account Sources: Rapport indicator indication setting Plexus; Strategy& analysis

Practice variation is common in health care – Also in The Netherlands

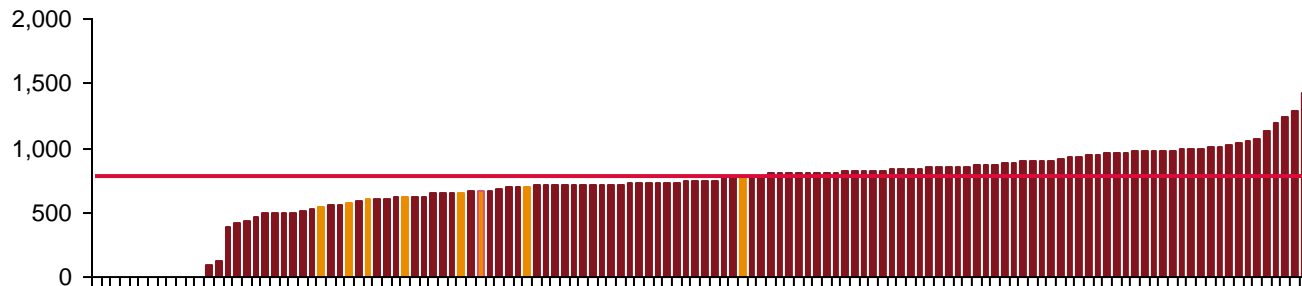
Risk adjusted conversion ratio benign prostatic hyperplasia per hospital

Number of surgeries per 1,000 BPH-patients per year



Risk adjusted conversion ratio cataract surgeries

Number surgeries per 1,000 cataract patients



The differences between high and low conversion ratio's are too large to be interpreted as care of the same quality

Academic institutions Average

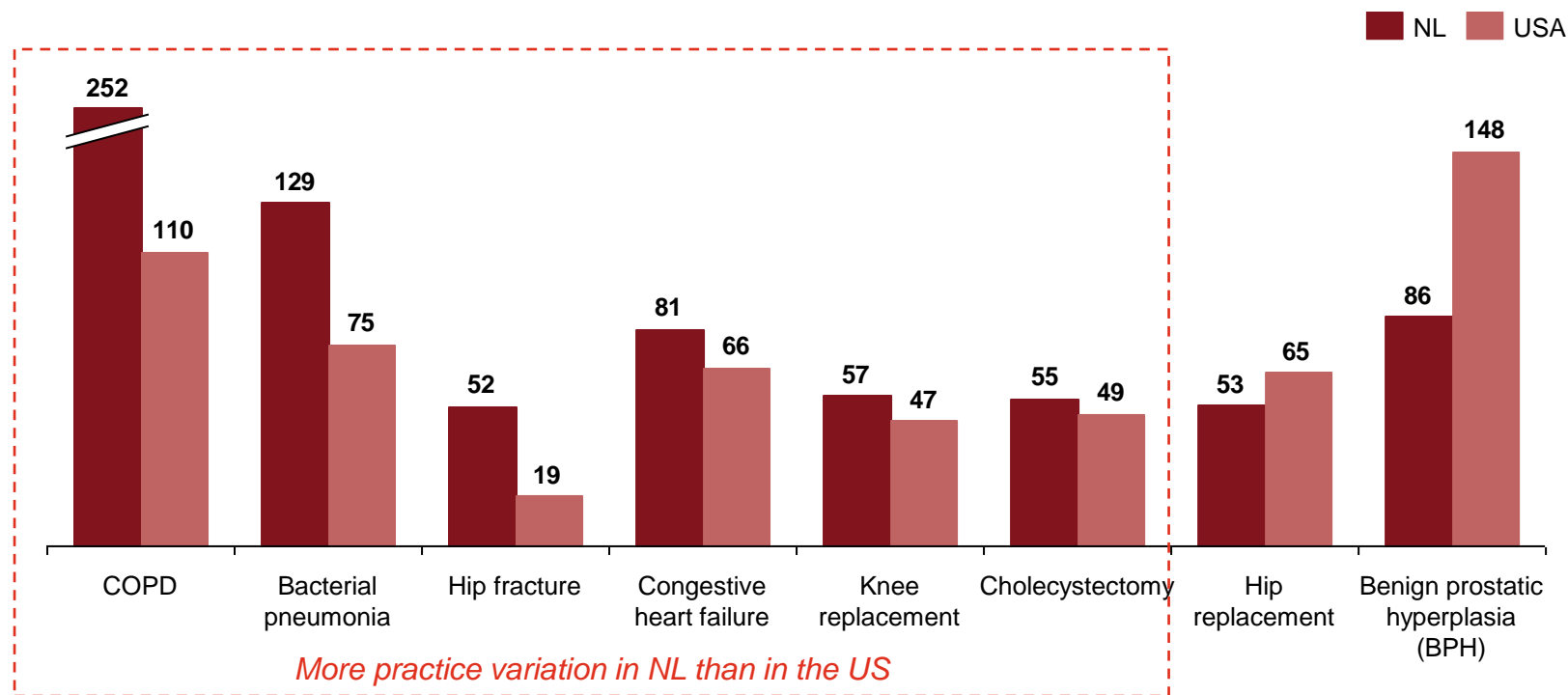
Hospitals (in The Netherlands)

Source: Plexus

Practice variation is as much a Dutch problem as a US problem

Practice variation

Systemic Component of Variation (SCV) – 2006-2007



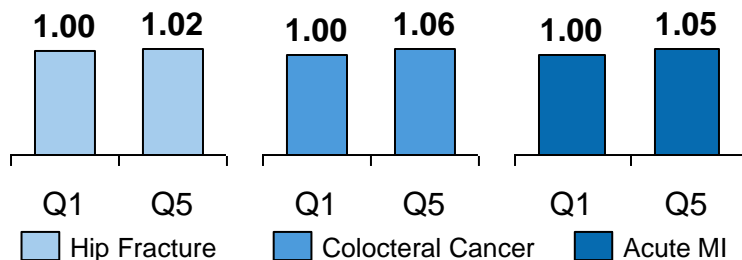
Note: NL variation determined over about 450 municipalities. Population corrected for age and income differences; USA variation determined over average treatment rates per Hospital Referral Region (200). Population corrected for age, sex and race differences

Source: Plexus 'Voorstudie naar praktijkvariatie in Nederland', Dartmouth Atlas of Healthcare, Strategy& analysis

Supply induced demand, and investing in health care does not necessarily buy quality

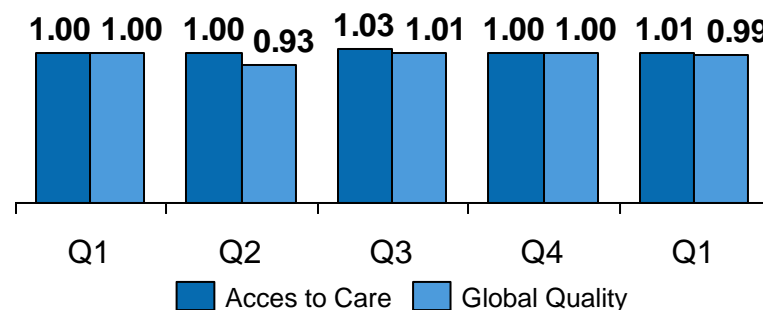
Mortality rates are higher for higher healthcare spending regions

Adjusted relative risk for death during follow up for every 10% spending increase



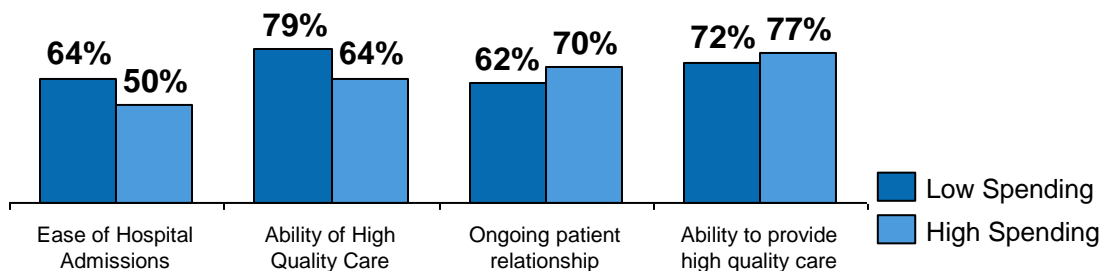
Patient-reported quality is lower for higher healthcare spending regions

Change in satisfaction relative to quintile 1 in percentage points

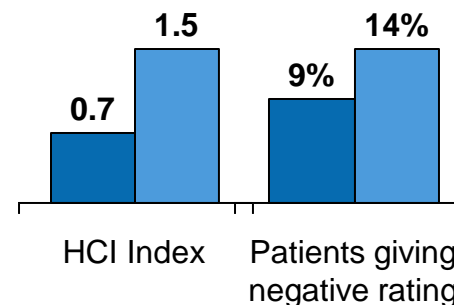


Physicians perception of quality is lower for higher healthcare spending regions

% of 10.000 interviewed physicians



HCI index is higher for higher spending regions. However more patient rate their health care negatively



Note: HCI index measured by inpatient care intensity. Calculated as the simple average of the ratios to the national average of time spent in the hospital and the number of inpatient physician visits

Source: The Dartmouth Institute for Health Policy and Clinical Practice - Health Care Spending, Quality and Outcomes; Booz & Company analysis

Prepared for VGZ

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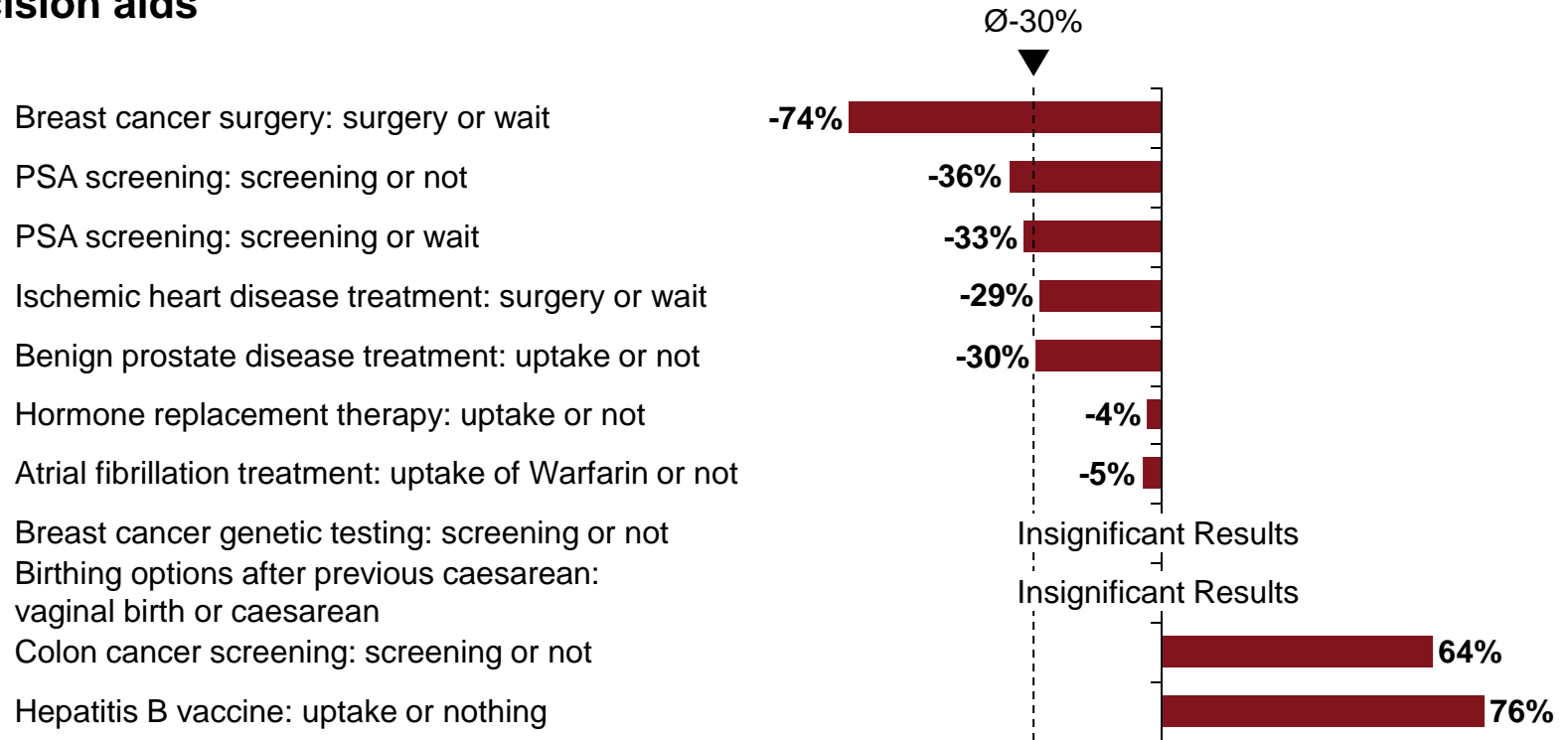
3

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and patient
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Patients usually chose differently (and more conservatively) than their doctors

Change in number of treatments after shared decision making with simple decision aids



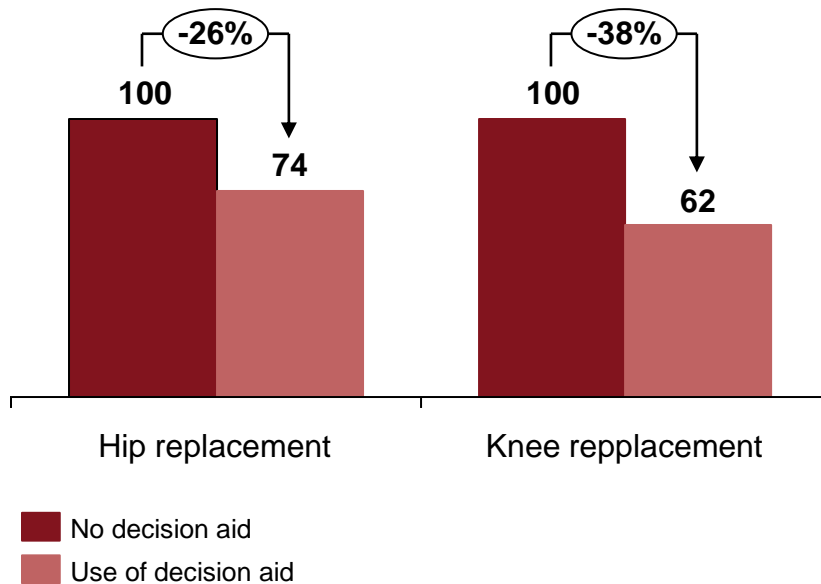
Source: The Cochrane Collaboration (Wolf; 1996; Volk; 1999; Man-Son-Hing; 1999; Morgan; 2000; Dodin; 2001; Auvinen; 2002; Frosch; 2003; Whelan; 2004); Strategy& analysis

Saving lives and costs

Enhancing the quality and appropriateness of care has the potential to lower costs and increase the sustainability of health care

Decision aid also have substantial impact in practice

Informed patients choose more conservatively (~9500 patients in Washington State)



12-22% lower costs

Nijmegen: IVF Patiënten kiezen vaker voor de doelmatige optie

- Keuze tussen dubbele embryo transfer (hogere zwangerschap kans, ook hogere kans op medische complicaties van meerling) en single embryo transfer
- Cyclus 1: 43% van de patiënten voor een single transfer versus 32% in de controlegroep
- Cyclus 2: 26% van de patiënten voor een single transfer versus 16% in de controlegroep

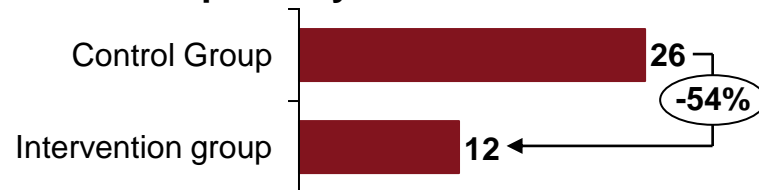
Person centered care increase quality and lowers costs: Example hip fractures Sweden

Patient centred care for Hip fractures

- Care pathway tailored to the individual's needs
- Starting point: Tailored to the patient's needs?
 - What was the patient capable of before the fracture?
 - What is the social network of the patient?
 - What are her objective in life?
 - Which steps to independence are mostly valued (e.g., taking care of personal hygiene)
- Differentiated care for different personality types, e.g.,
 - Autonomous patients
 - Modest patients
 - Detached people



Fewer hospital days



Successful rehabilitation



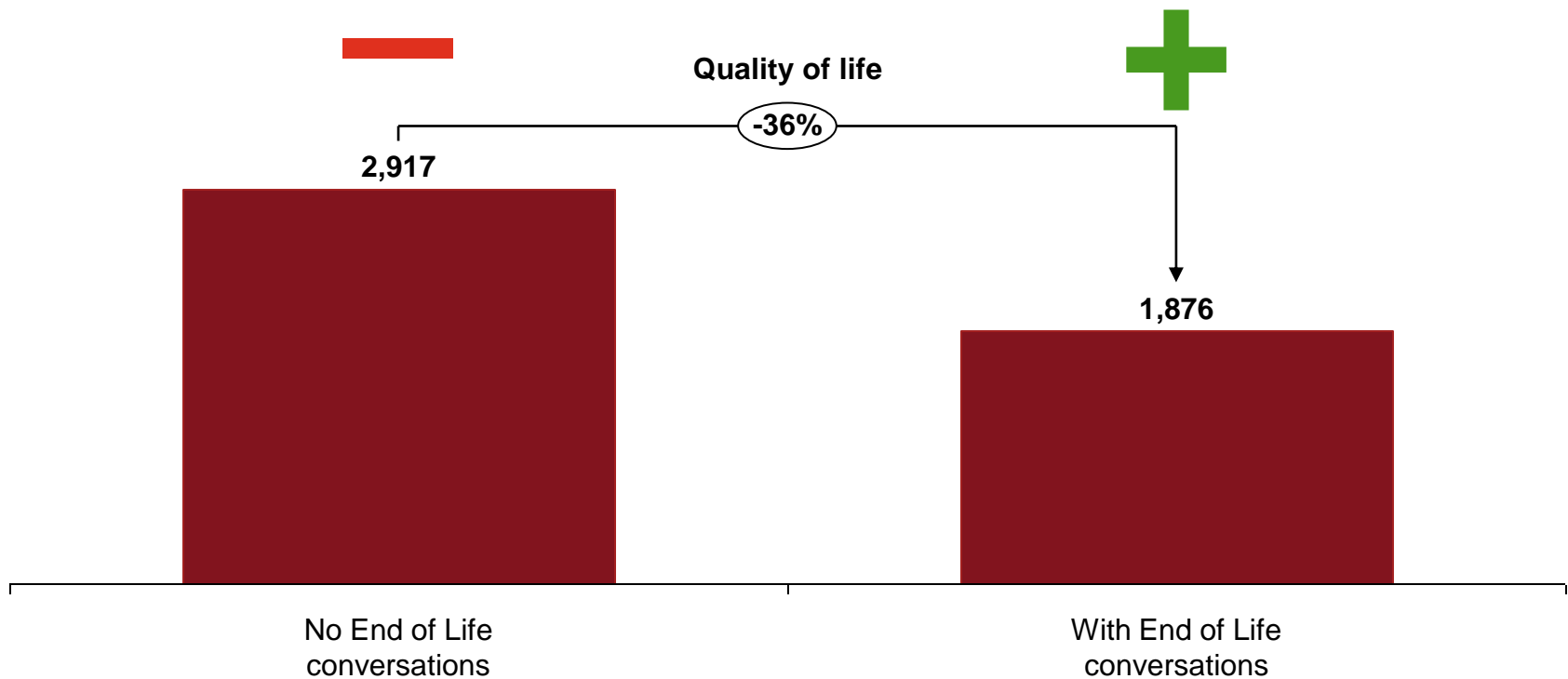
Lower costs (€)



Source: Patients with acute hip fractures, motivation, effectiveness, and costs in two different care systems

Patient centeredness is especially important in end of life settings

Quality of live and health care costs last week of life (2008, US\$)

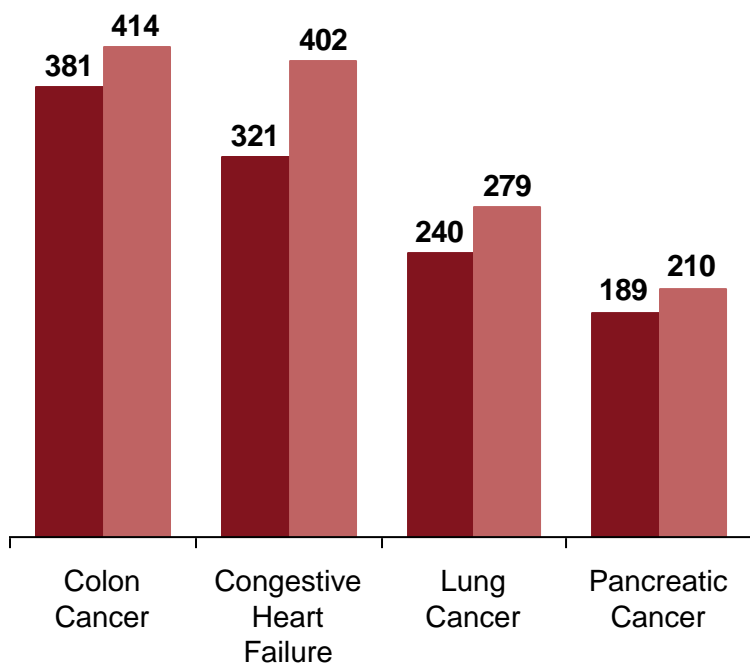


Source: Health Care Costs in the Last Week of Life, 2009; Strategy& analysis

End of life care can actually increase life

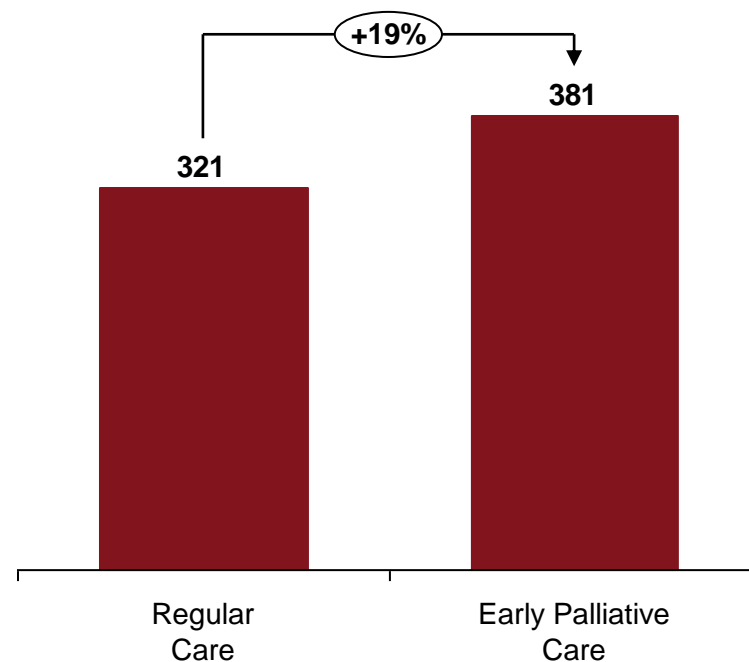
Hospice care increases survival time ¹⁾ ...

Average number of survival days after diagnosis



... as does early palliative care ²⁾

Average number of survival days after diagnosis



■ Non-hospice care ■ Hospice care

1) n = 4493

2) n = 151

Source: Comparing hospice and non-hospice patient survival among patients who die within a three-year window; Journal of pain and symptom management; March 2007; Early palliative care for patients with metastatic non-small-cell lung cancer; The new England journal of medicine; 2010; Strategy& analysis

The 2005-2006 reform paradigm: Lower prices via competition to pay for inevitable volume growth

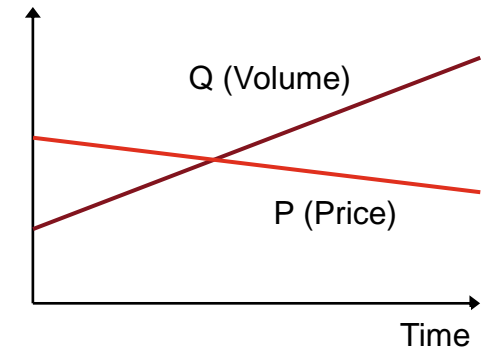
System pre-2006: Macro effective but micro inefficient

- Effective macro instrument
 - Cost containment on macro (national) level
 - Policy implementation through intervening in the system
- But problematic on the micro level
 - Micro inefficiency
 - Lack of spirit of enterprise & innovative climate
 - Rationing → waiting lists

Growing pressure on the system to change

- Cost growth
- Demographics (ageing and labour market)
- Technology developments
- Law suits

The 2005-06 reform: More efficiency to accommodate volume

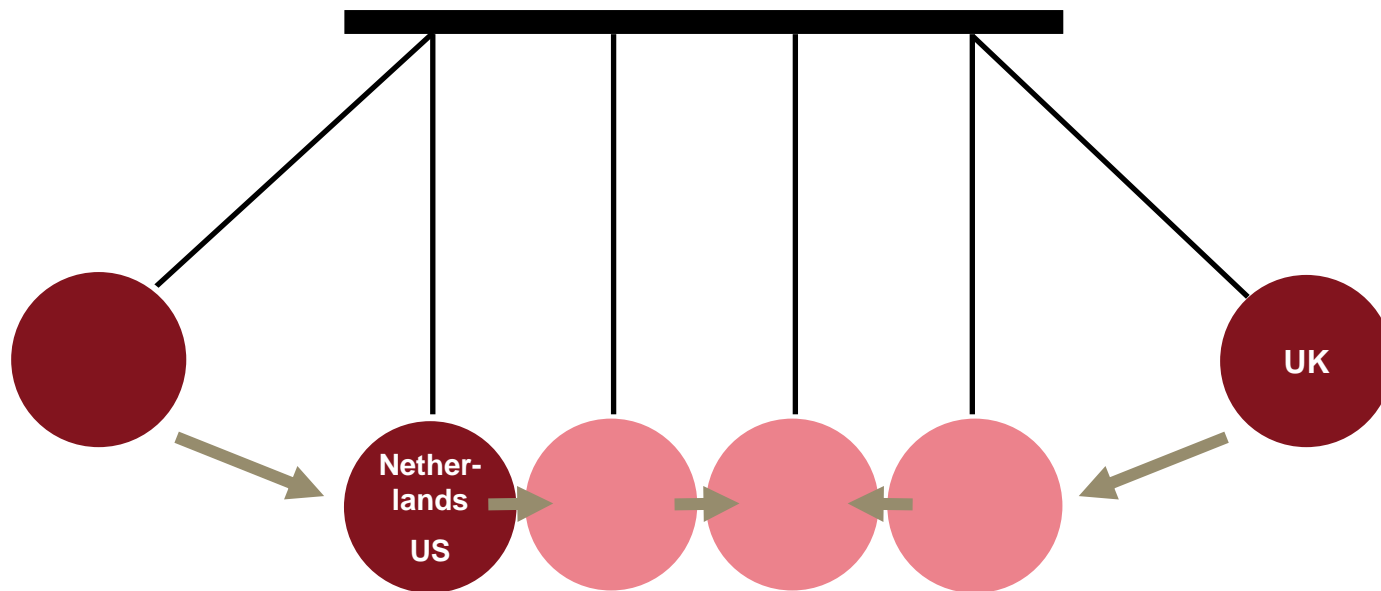


- Volume growth is a fact of life: ageing, innovation
- More efficiency is needed to deal with volume growth
- Competition will lead to more efficiency and lower prices

We see health care systems move continuously in between forms of budgeting and fee for service

Pay for services

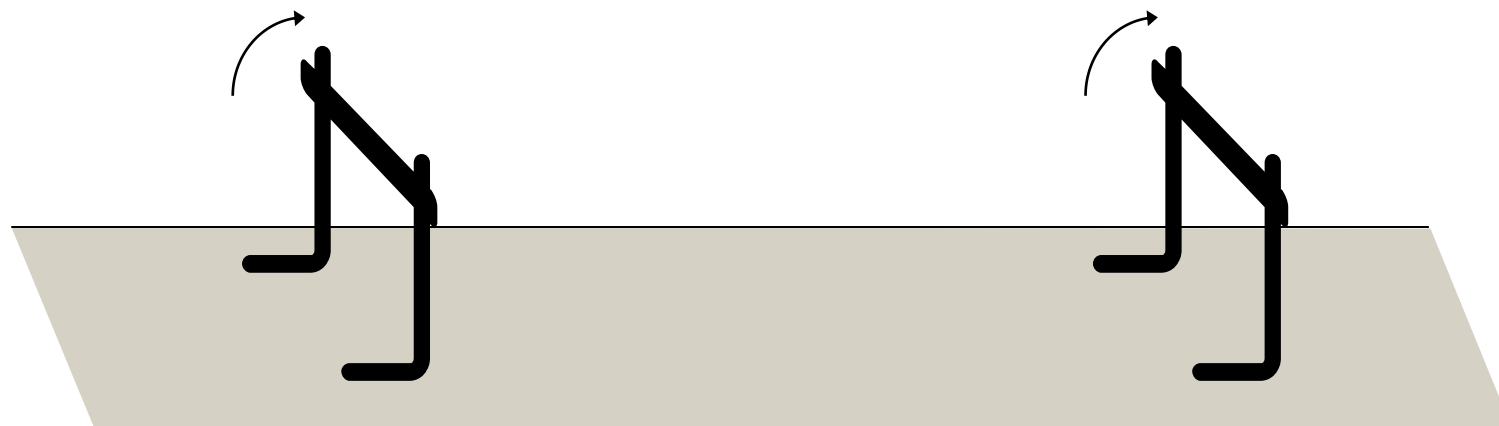
Budgeting



The challenges to overcome for the payors

We pay volume instead of quality

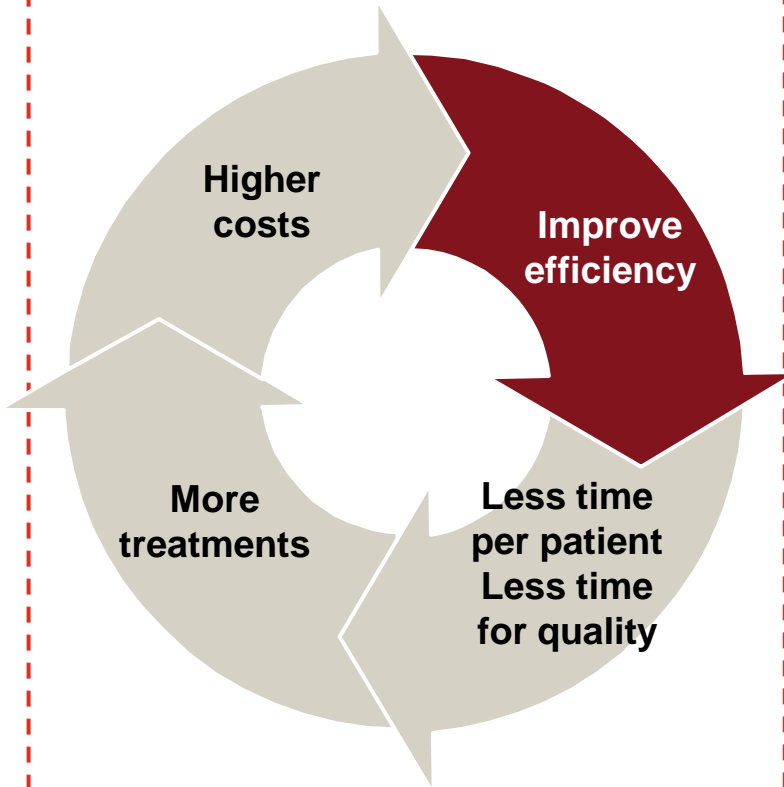
We pay in a fragmented way



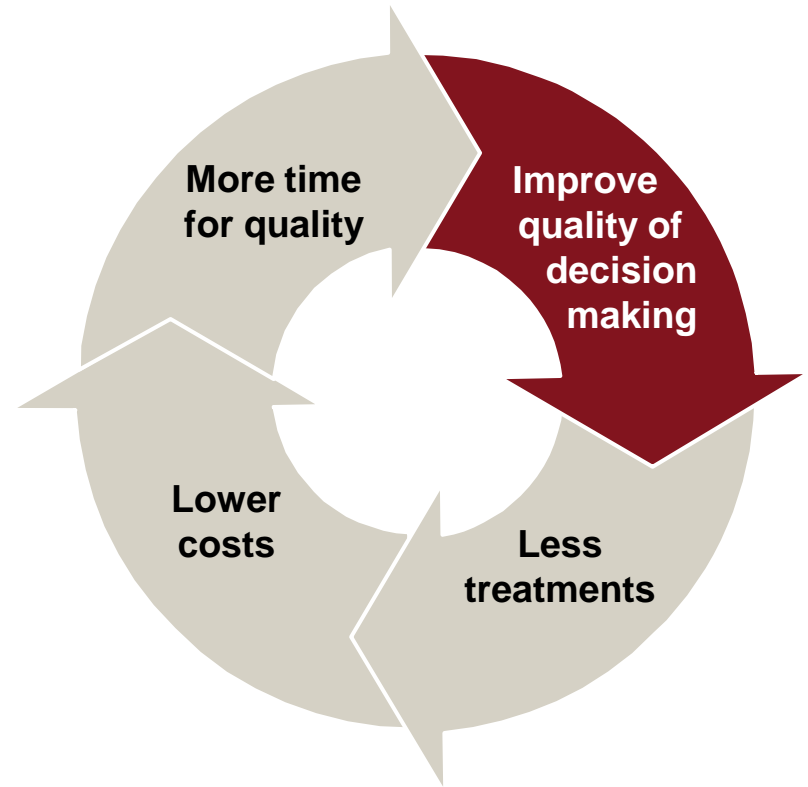
Bron: Strategy&

The challenge is to use contracting and reimbursement to create a flywheel from quality

The doom circle of efficiency



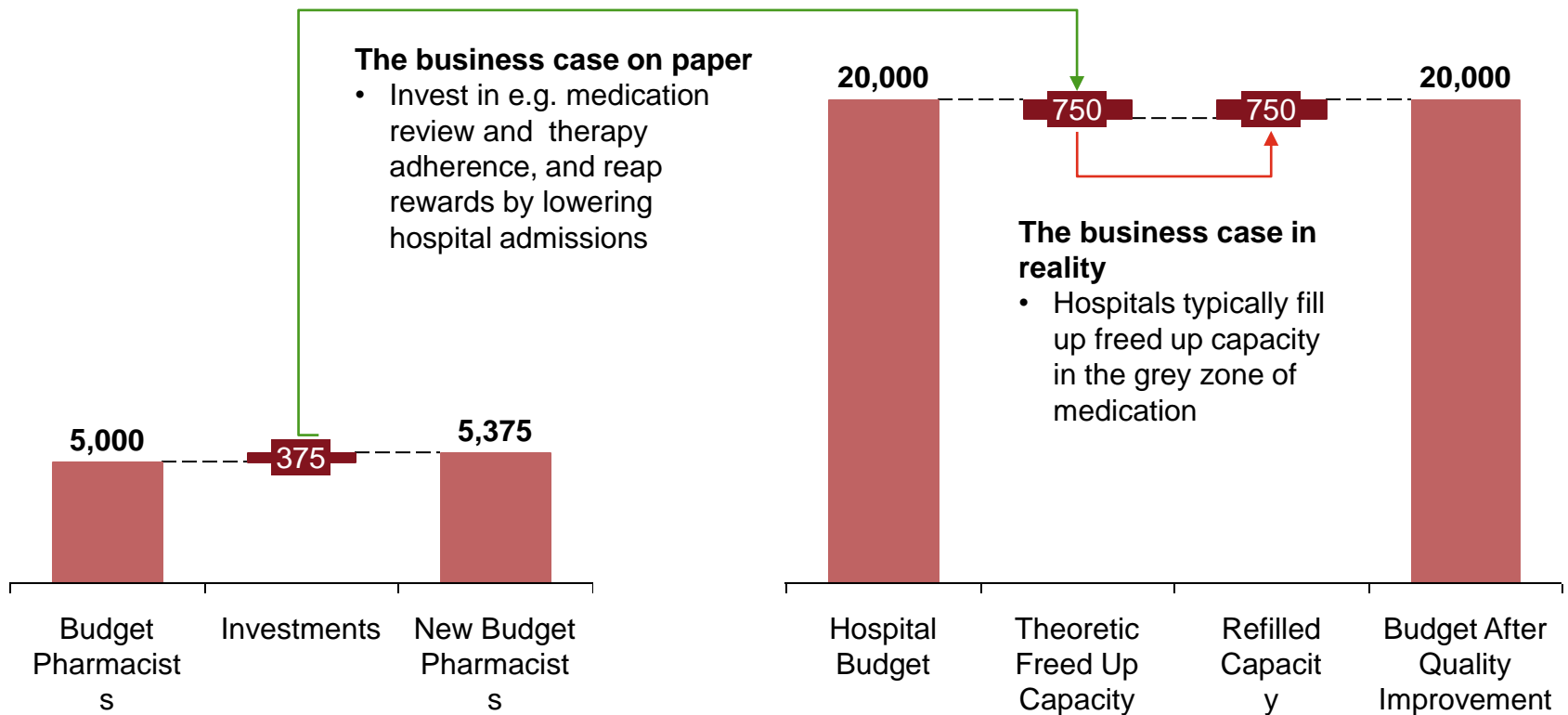
Quality as flywheel for better health care



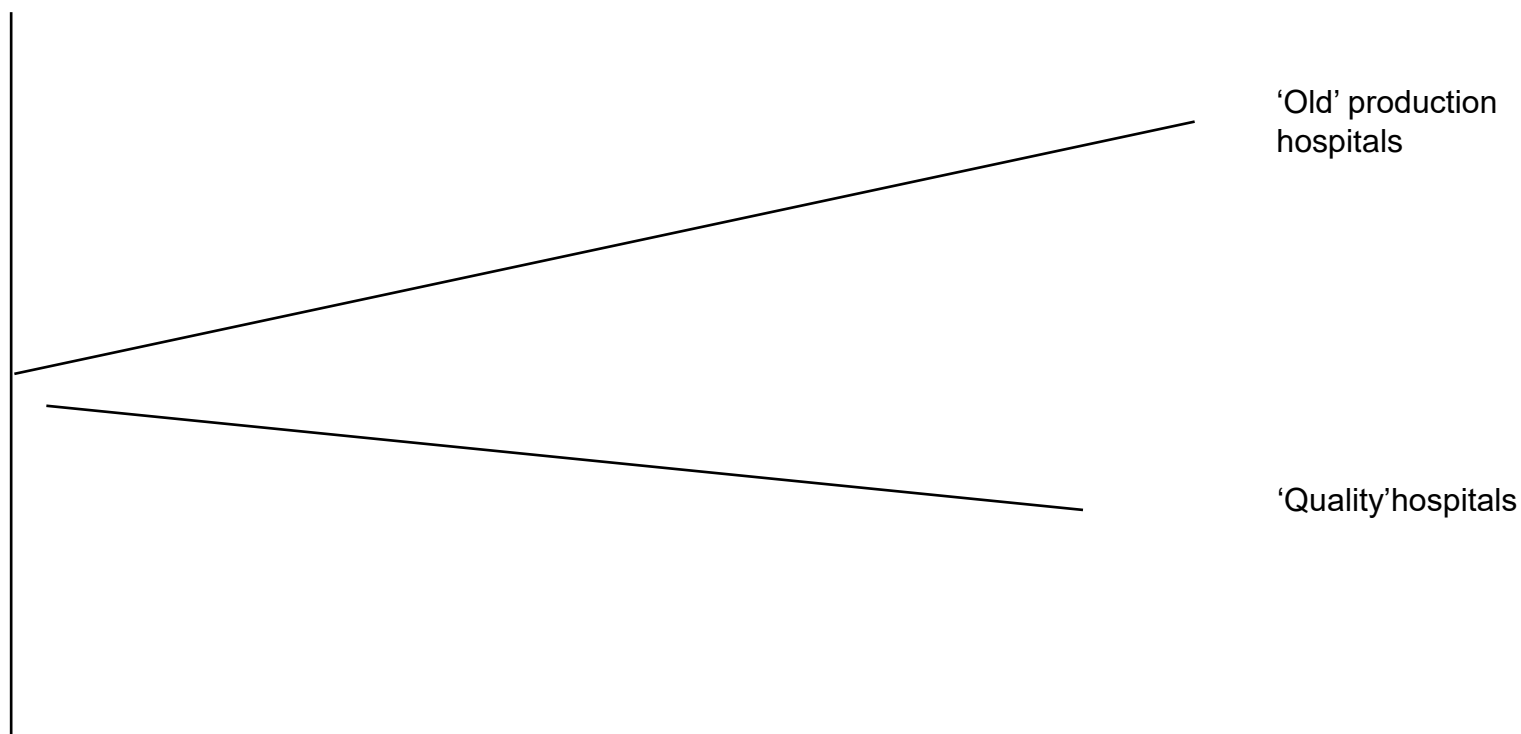
Fragmentation needs to be solved in order to capture the benefits of investing in quality

The theoretical business case versus the fragmented business case

Illustrative money flows

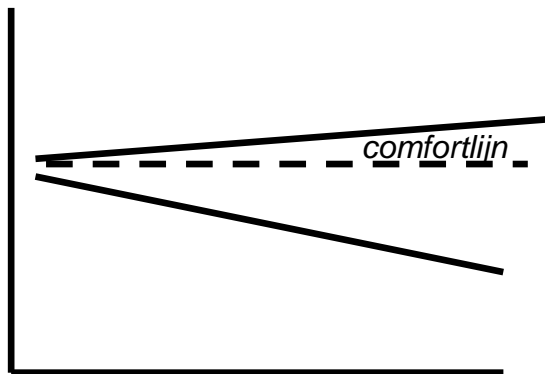


But hospitals investing quality will see a revenue reduction



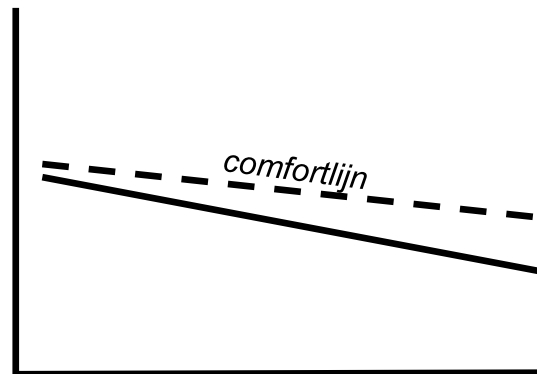
How do we encourage and accommodate revenue decline

Partners in living labs



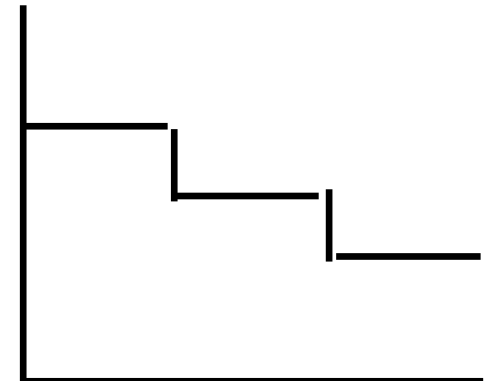
- long term contract: **guaranteed budget** during 5 years
- margins are 100% for the hospital
- we learn from the interventions (medical and financial impact)

Early adopters



- long term contract: **slightly declining budget** during 3-4 years
- margins are partly for the hospital (gain sharing)
- we learn from the interventions

Others



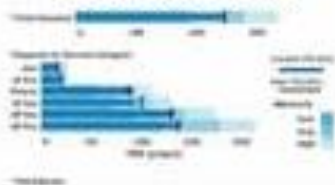
- annual contract: **declining budgets**
- no gain sharing

Scaling up initiatives: creating a network of (early) adaptors

Components of the AQC Support Model



intervention



organisation



network



tools



Doctors developed and implemented >1000 initiatives leading to higher quality and lower volumes – selected examples



Example initiative	Description	Result
Specialists in the Emergency Room	<ul style="list-style-type: none"> Deploying specialist on the ER by investing in the quality and level of experience of medical staff Result: reduction of the number of hospitalizations 	<p>Hospital admissions from ER</p> <p>Before After</p>
Shared Decision Making	<ul style="list-style-type: none"> Joint decision making and information provision about risks leads to more conservative treatment choices Result: number of procedures and lay days decreases 	<p>Groin rupture procedures</p> <p>Before After</p>
Outpatient review	<ul style="list-style-type: none"> Actively referring back patients to the General Practitioners Result: Shift of repeat consultations from the hospital to the (cheaper) General Practitioner 	<p>Repeat consultations cardiology</p> <p>Before After</p>
“Work is the best care”	<ul style="list-style-type: none"> Supporting clients to find employment instead of having mental healthcare treatment (“daytime activities”) Result: Shortened required treatment minutes (and increased employment rate – not in chart) 	<p>Treatment time per patient (min) - pilot</p> <p>Before After</p>

PwC Strategy& has a repository with >1000 Good Practices to improve quality and lower volumes

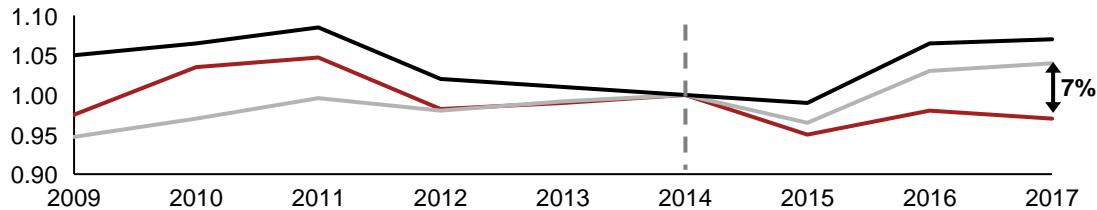
Summary outcomes independent study

An independent study by Dutch government institution CPB demonstrated appropriate care reduced volume with 7-13%

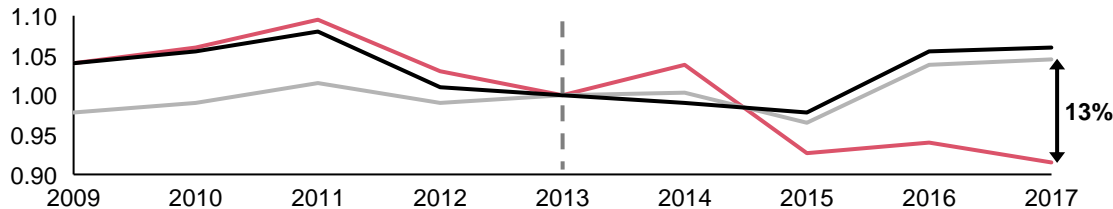


Value treatment volume on hospital level¹ (2009 – 2017, indexed)

Value of treatment volume at Bernhoven was 7% lower



Value of treatment volume at Rivas was 13% lower



— Beatrixziekenhuis — Average hospital — Bernhoven — Control hospitals

- Beatrixziekenhuis and Bernhoven implemented quality initiatives to improve effectiveness and efficiency of care
- Both hospitals reduced the number of treatments as well as treatment intensity compared to other hospitals. People did not visit other hospitals for treatment instead
- The medical quality of care in both hospitals is similar as peers (medium to high) and has not changed
- The quality of decision making and the customer-perceived quality improved significantly



Example of redefining product definitions in order to encompass quality instead of volume

Performance definitions

- 1 Medication dispensing (Receptregel)**
 - Distribute prescription medication in standard/weekly form
 - Check correctness/safety of prescription
- 2 Medication instructions**
 - Provide usage instructions in case of first time issuance or non-compliance with user instructions
- 3 Medication review**
 - Periodically review individual (elderly) medication therapy of patients with chronic medication use
- 4 Continuity of care hospitalization**
 - Conduct one-on-one interview with patient
 - Ensure correct transition of medication details to other providers of care
- 5 Continuity of care discharge**
 - Conduct one-on-one interview with patient
 - Provide clear guidance on medication therapy, including changes due to hospitalization
- 6 Self management education**
 - Provide education in group format on self-management to optimize medication utilization (medication adherence/ utilization)
- 7 Self management counseling**
 - Provide counseling per individual patient's request on potential drug-drug interactions in medication therapy (e.g., combination prescription/OTC)
- 8 Medication related travel counseling**
 - Provide counseling per individual patient's request on medication utilization and storage during travelling
- 9 Disease prevention travel counseling**
 - Provide information per individual patient's request on risk of diseases for certain travel destinations
- 10 Mutual services**
 - Support other healthcare providers in execution of activities as defined under performance definitions