



**Innovations in Healthcare Management  
Quality and Cost Optimization  
February 5, 2016  
New Delhi**

# **INNOVATE COST OPTIMIZATION AND QUALITY IMPROVEMENT**

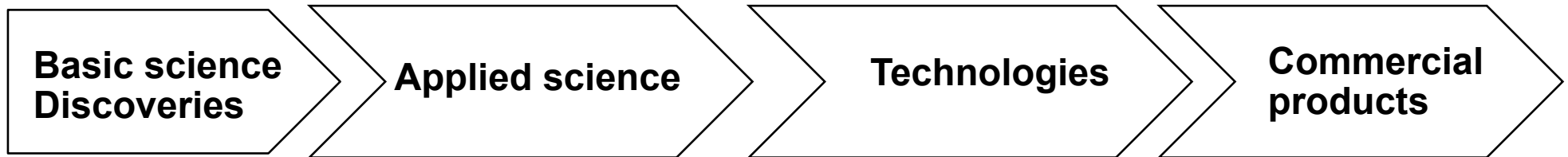
**Paul Lilrank**

**Professor  
Department of Industrial Engineering and Management  
Aalto University School of Science**

**Chairman  
Nordic Healthcare Group Oy**

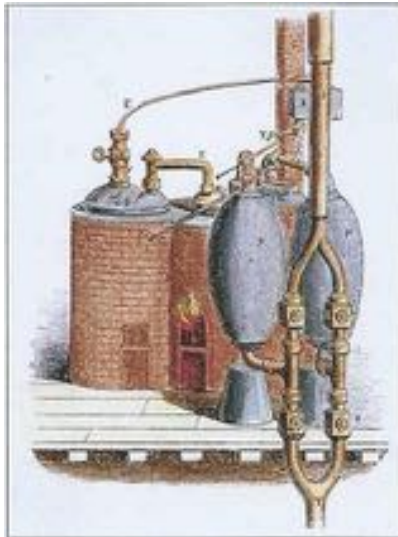


# WHICH COMES FIRST: THEORY OR PRACTICE?



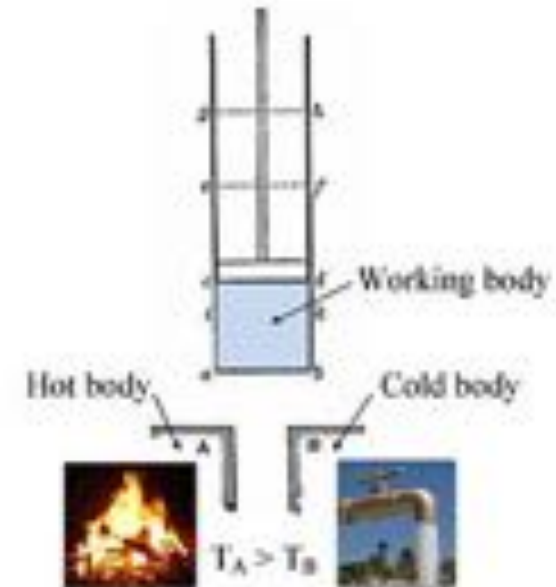
# PRACTICE CAME FIRST

## The Steam Engine



**Thomas Savery 1678**  
**Thomas Newcomen 1711**  
**James Watts 1765**

## Thermodynamic theory



**Sadi Carnot 1824**  
**Lord Kelvin 1854**

# FIRST THERE WAS PRACTICE

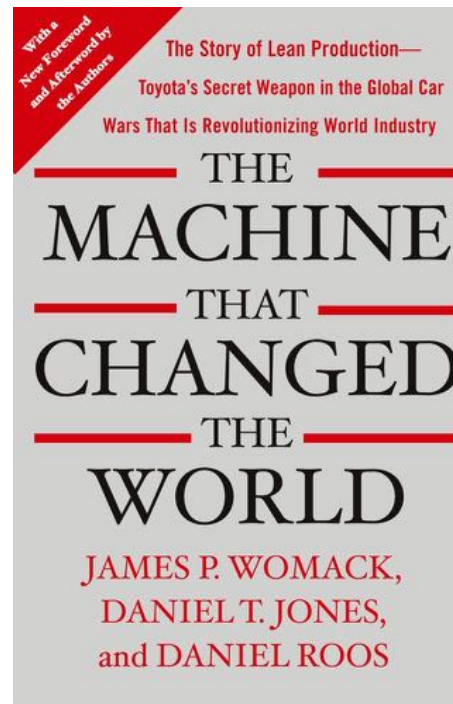
**Toyota  
production  
system,  
1955→**

**Export  
success  
1975→**

**Theoretical explanation:  
Lean Production 1990**

**Successful diffusion  
across nations and  
industries**

**Lean healthcare**



## PATIENTS DO NOT CARE ABOUT CARE

*“The purpose of health systems is health, not care.*

*From the patient perspective... care is a means to achieve and maintain good health outcomes.*

*The only goal that reflects the true purpose of any health care system is maximizing value for patients, with value defined as the health outcomes achieved by dollar spent.*

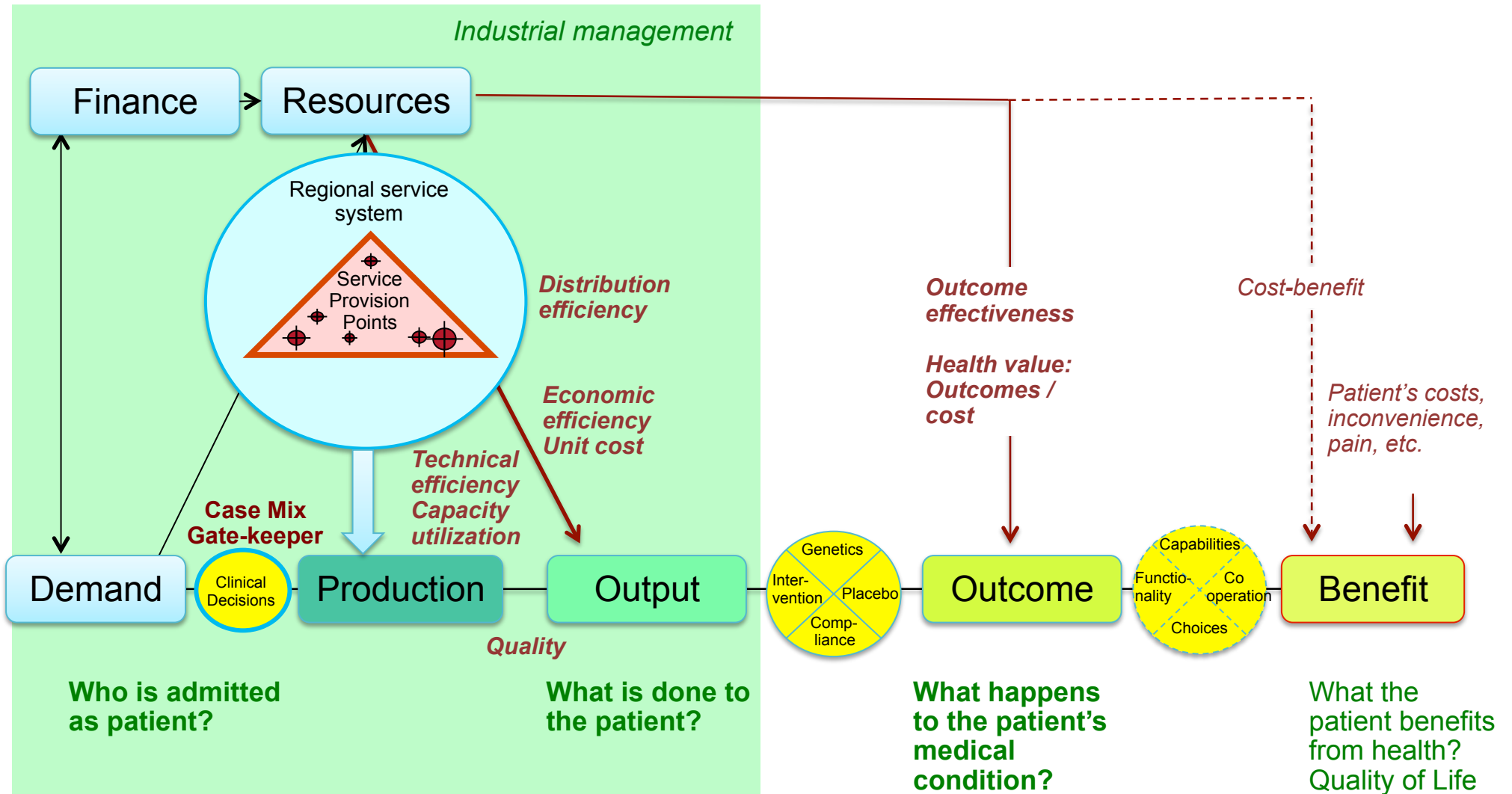
*The patient’s medical condition is the fundamental unit of value creation in the health care system.”*

Porter ME, Teisberg EO (2006) Redefining Healthcare. Harvard Business School Press.

Porter ME, Guth C (2012) Redefining German Health Care – Moving to a Value-Based System.

Springer

# HEALTHCARE AS A PRODUCTION SYSTEM



## WHERE DO YOU DRAW THE LINE?

### Company XYZ Co.Ltd. Profit and Loss Statement

Revenue from sales	aaa.aaa
Cost of goods sold	bbb.bbb
Gross margin	xxx.xxx
Operating cost	ccc.ccc
Operating margin	yyy.yyy
Interest paid	ddd.ddd
Depreciation	eee.eee
Amortization	fff.fff
Earnings after financial	zzz.zzz
Taxes	ggg.ggg
Net profit	ååå.ååå

## WHERE DO YOU DRAW THE LINE?

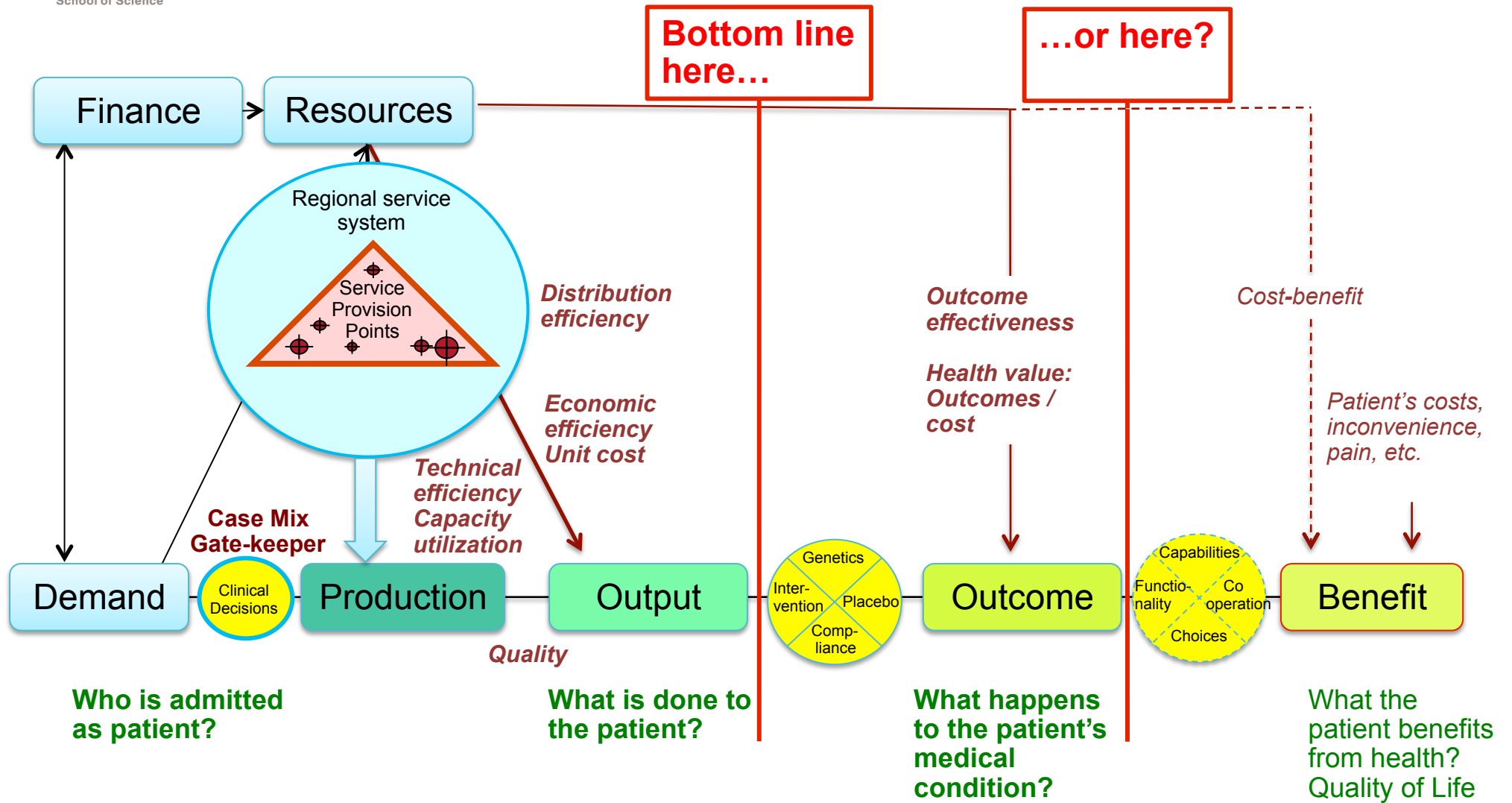
### Company XYZ Co.Ltd. Profit and Loss Statement

Revenue from sales	aaa.aaa	
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Gross margin		xxx.xxx
<u>Operating cost</u>	<u>ccc.ccc</u>	
Operating margin		yyy.yyy
Interest paid	ddd.ddd	
Depreciation	eee.eee	
<u>Amortization</u>	<u>fff.fff</u>	
Earnings after financial		zzz.zzz
<u>Taxes</u>	<u>ggg.ggg</u>	
Net profit		âââ.âââ

*The top line*

*The bottom line*

# HEALTHCARE AS A PRODUCTION SYSTEM



## Omasairaala case

In Finland all employers are required by law to insure their employees for work-related injuries.

OP-Pohjola is the largest insurer in the field.

A major cost-driver is the length of absence from work  
- Cost per day about 300€

Partner hospitals not eager to improve

Pohjola established a wholly owned orthopedic hospital Omasairaala in January 2013

Interest to reduce

- total cost per patient
- time back to work

Incentives to innovate: integrated care, outcome – based thinking.



# Performance metrics for doctors

## Throughput time

- Days from injury to return to work

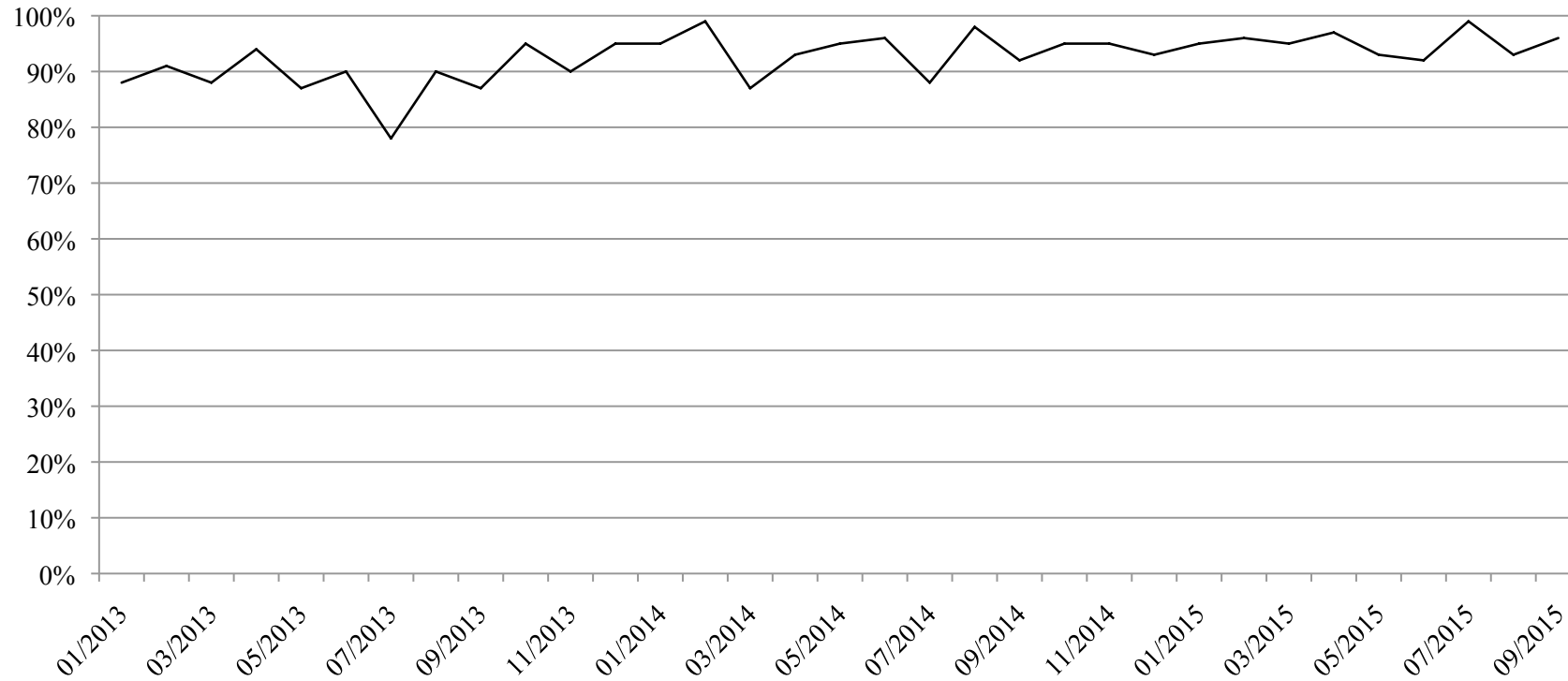
## Patient satisfaction

- Net promoter score (NPS)



Markus Torkki, Chief Medical Officer

## The monthly Net Promoter Score (NPS)



(n=4,241)

## Care innovations

### Integrated care – teamwork

### New customer-oriented professions:

- **Care Master to improve patient guidance between different services, such as examinations, operations, and rehabilitation and to help in insurance issues.**
- **Work Master to help patients and their employers to tailor return to work according to the individual working conditions and progress of rehabilitation. The service was first focused on high-volume-operated patient groups and patients with multiple problems. The process consisted of guidance meetings before surgery, regular communication, and, where applicable, adopting work conditions to partial inability.**



# Omasairaala performance evaluation

•  
**Research problem: Is Omasairaala performing better than other partner hospitals used by Pohjola's clients?**

**Research question 1: Are Omasairaala's patients returning to work faster?**

**Research question 2: Is the cost of care at Omasairaala lower than in other partner hospitals**

**Data: Cases insured by Pohjola 1.1. - 31.12.2013**

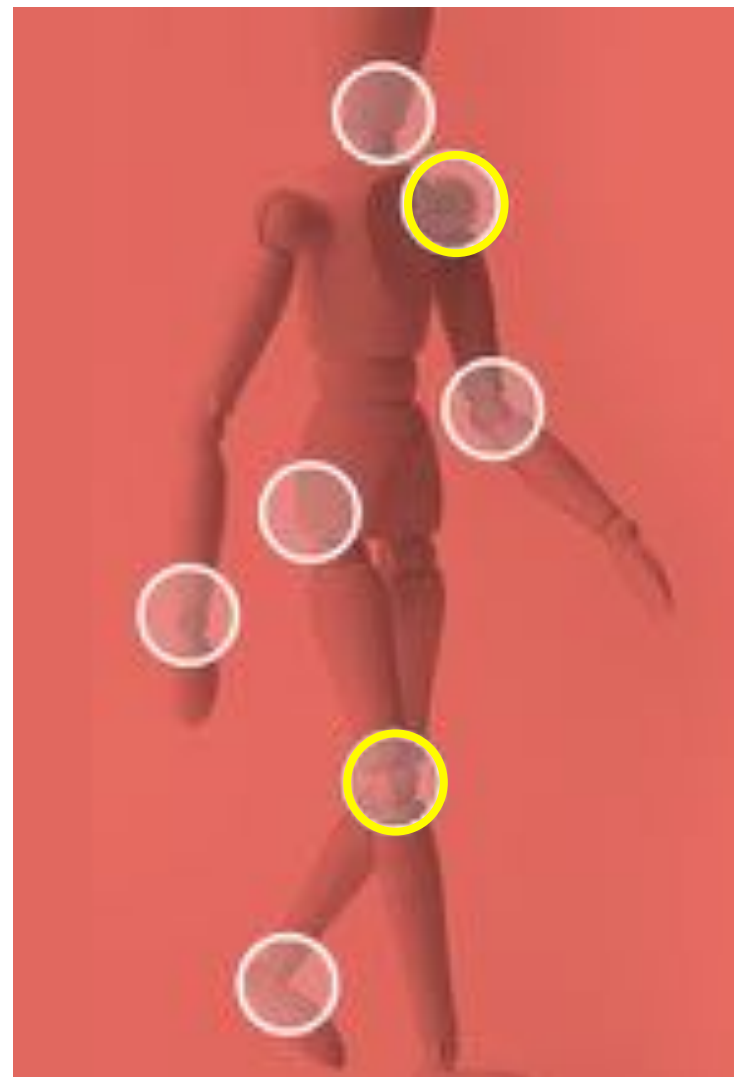
- Caregiver, diagnosis, days of care, procedures, cost, days of inability ,
- Patientss age, sex, occupation, residency

## Examined cases

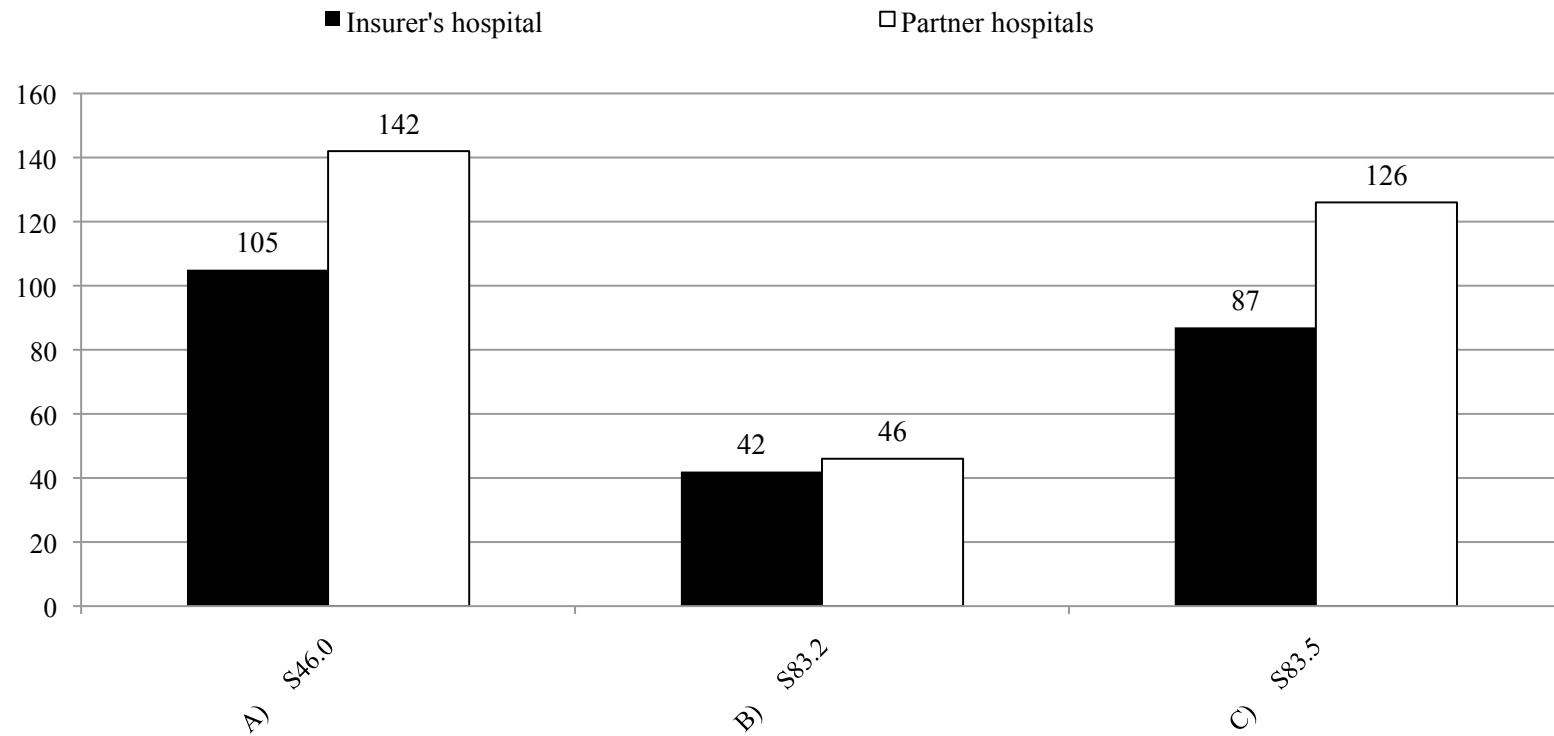
**S46.0: Injury of tendon of the rotator cuff of shoulder**

**S83.2: Tear of meniscus, current**

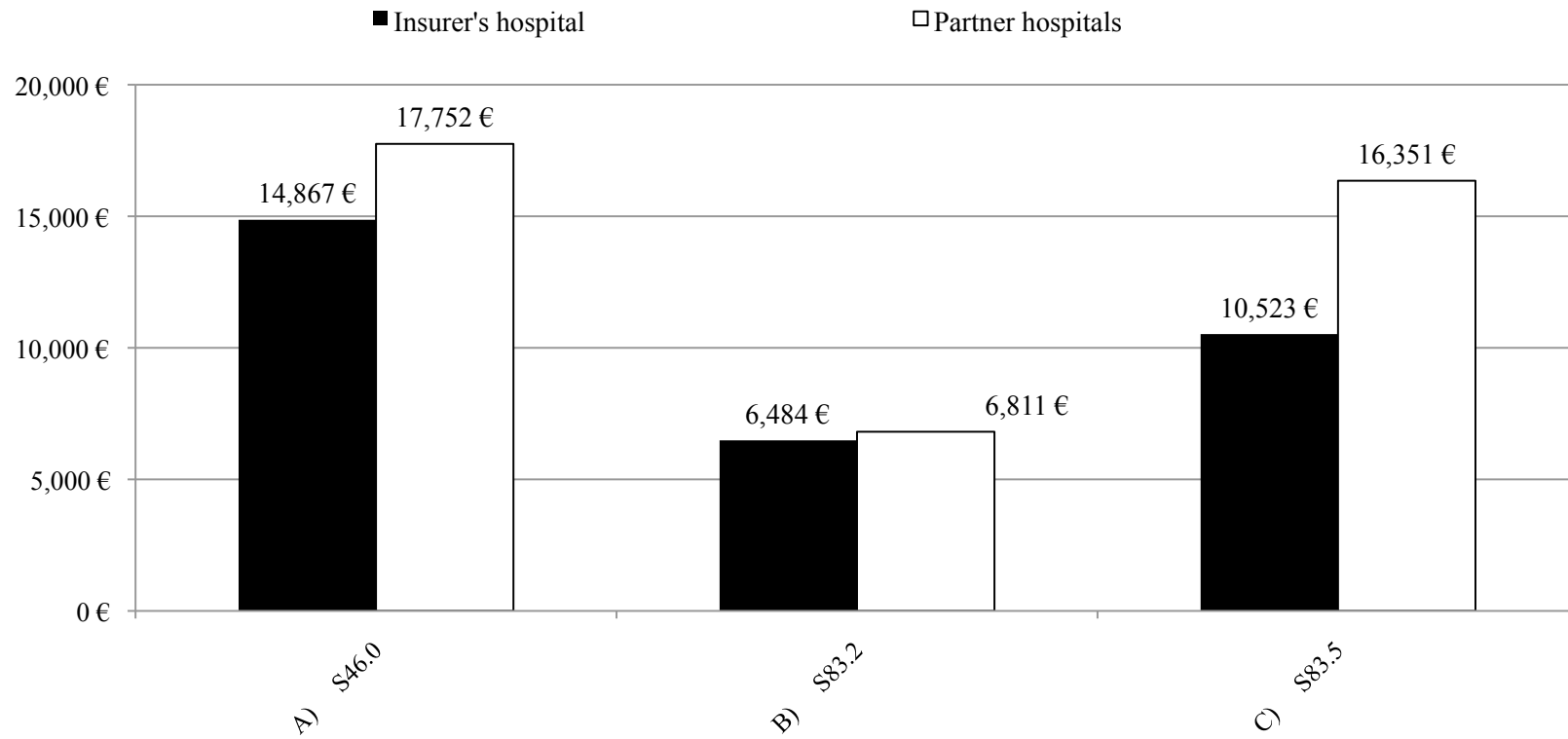
**S83.5: Rupture of cruciate ligament of knee**



# Average duration of the periods of disability (days) of accidents occurred in 2013



# Total compensated costs (€) during 12 months of accidents occurred in 2013



## Cost indicators

Patient group	Omasairaala	Partner hospitals
A) S46.0: Injury of tendon of the rotator cuff of shoulder	n=59	n=123
Total length of periods of disability (days)	105	142
Total compensated costs (€)	14 867 €	17 752 €
Service costs (€)	4 606 €	5 046 €
Costs of disability (€)	10 261 €	12 706 €
Share of operated patients (%)	49 %	64 %
Time from accident to first examinations (days)	39	59

## Preliminary conclusions from the data

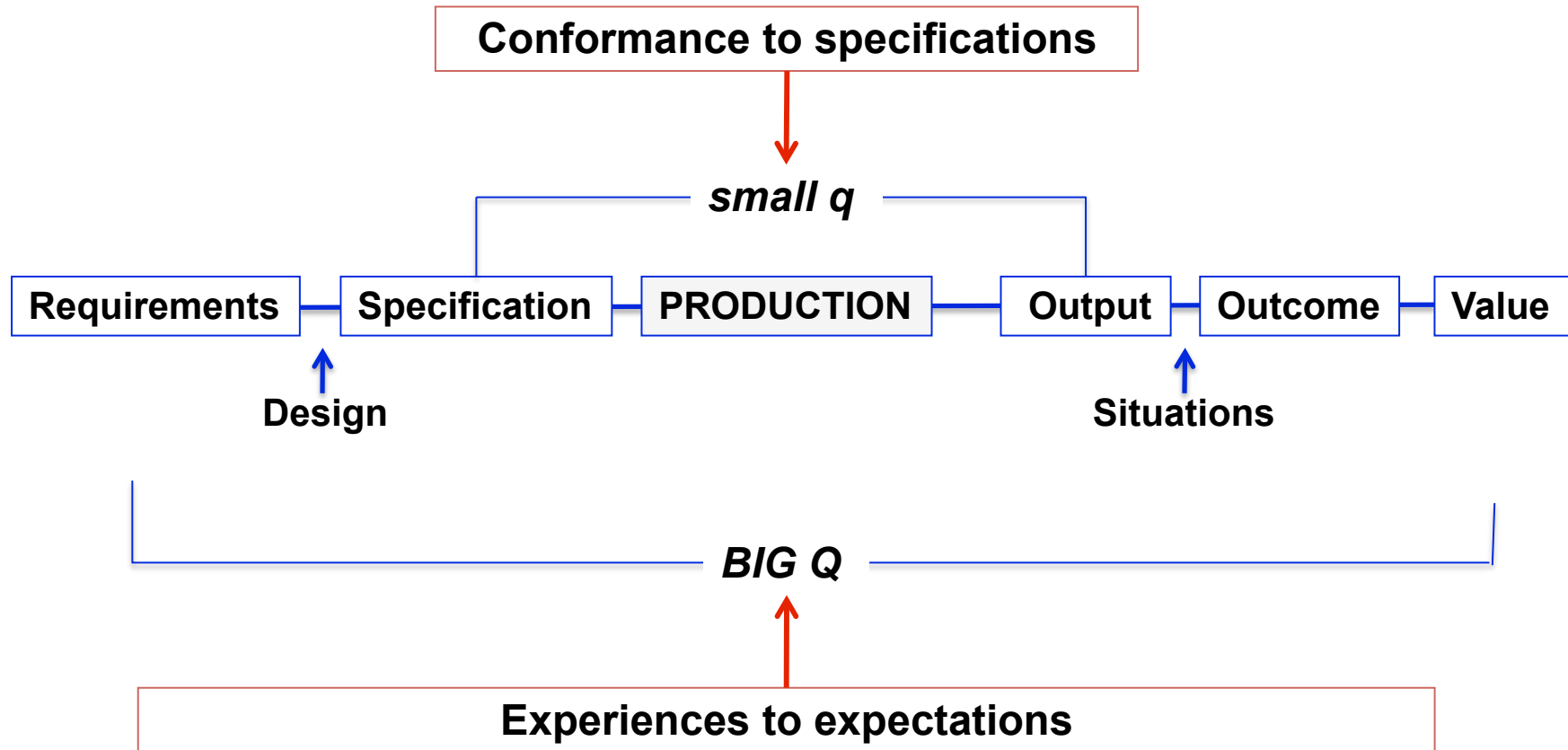
**The care process in Omasairaala is more efficient compared to other hospitals**

- **Differences between diagnostic groups**

**Cost difference explained by shorter throughput time, i.e. patient returns to work faster and disability days are fewer**

**No significant differences in cost per procedure.**

# THE QUALITY RELATIONS



## TYPES OF QUALITY IN HEALTHCARE

	<b>What is it?</b> <i>(Ontology)</i>	<b>How is it known and measured?</b> <i>(Epistemology)</i>	<b>What to do about it?</b> <i>(Technology)</i>	<b>Time</b>	<b>Relevant objective</b>
Clinical quality (BIG Q-1)	How an individual care episode is designed following rules.	For individual patients ex post outcomes  For populations: benchmarking	Professional knowledge, experience, peer support, teamwork, continuous education	Ex post	Relative performance (benchmarking), documented progress
Process quality Patient safety (small q)	How a care episode is executed following best practices.	Adverse events	Quality assurance, standardization, error prevention, checklists,	Ex ante	Zero defect
Patient experience (BIG Q-2)	The patient's subjective perception of a care episode.	Interviews, surveys, NPS, observation of behavior	Patient-centric service culture, responsiveness	Ex nunc	Situational, case-by-case