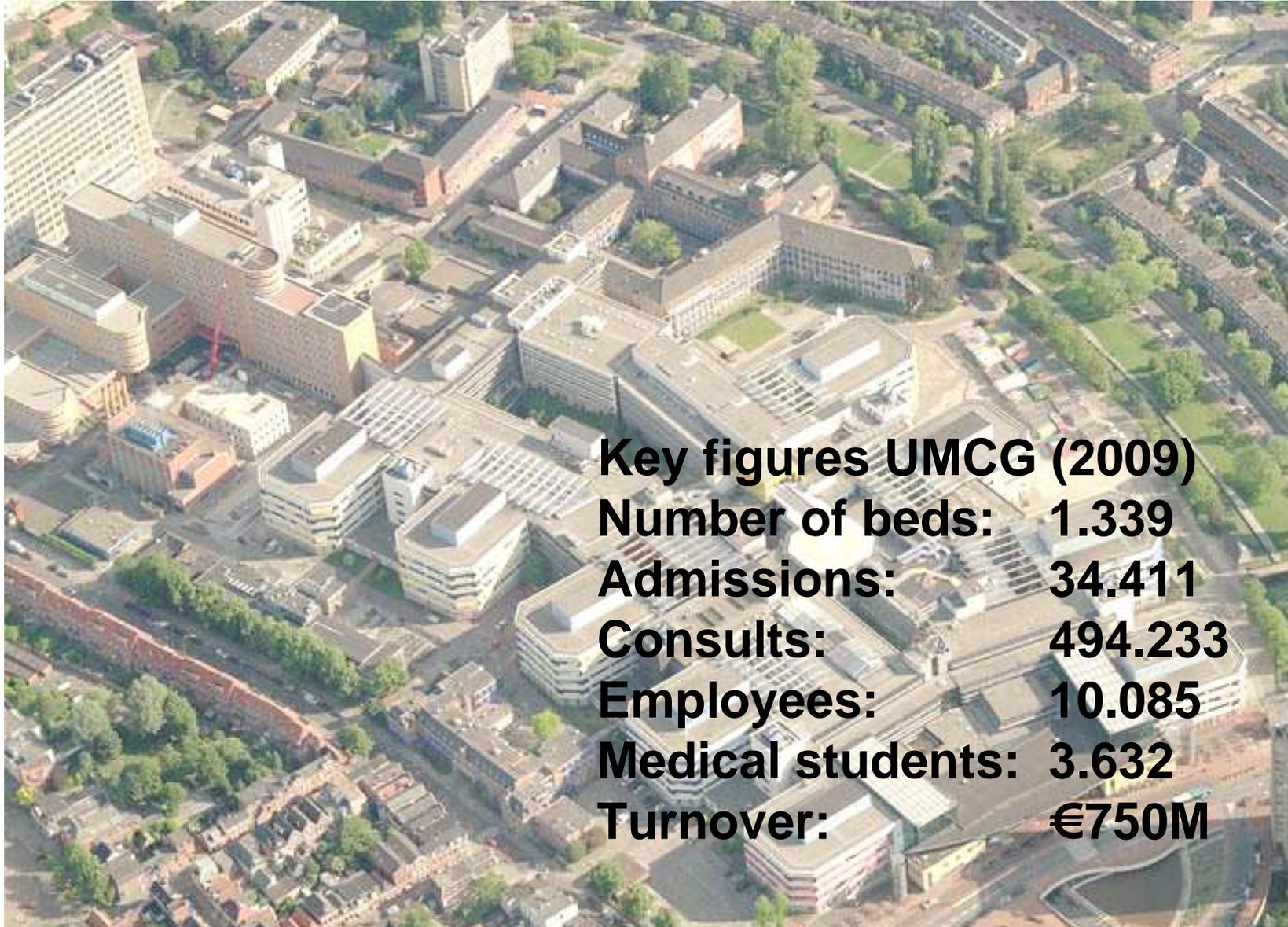




University Medical Center Groningen

Lean Six Sigma a Tool for Applied OR at the University Medical Center Groningen

Albert Trip
Master Black Belt



Key figures UMCG (2009)

Number of beds: 1.339

Admissions: 34.411

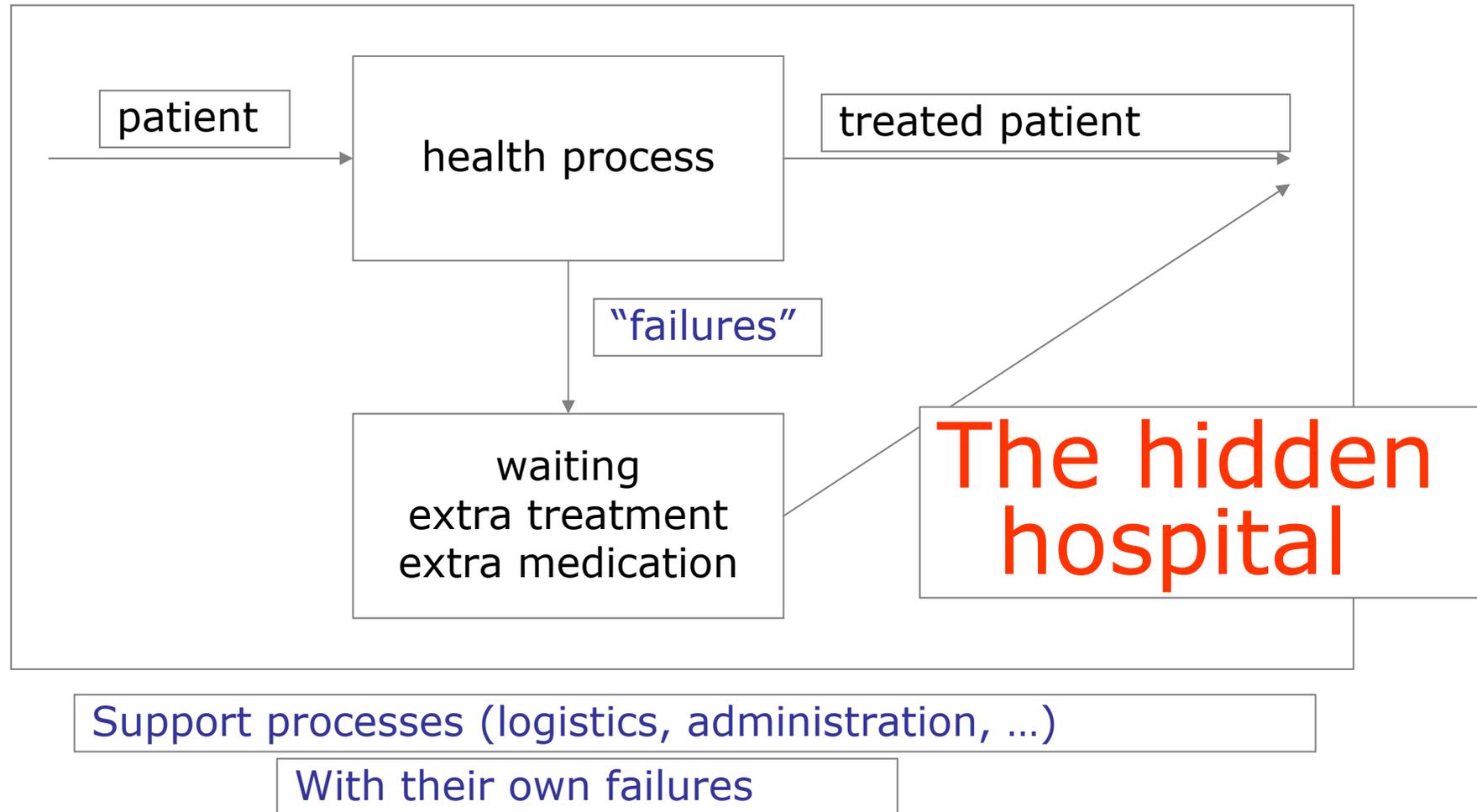
Consults: 494.233

Employees: 10.085

Medical students: 3.632

Turnover: €750M

Background of LSS



LSS and the hidden hospital

- LSS uncovers the hidden hospital
- ... and makes it smaller



DMAIC Method

Define	0. Project identification & selection and Project management
Measure	1. Define the CTQ's 2. Validate the measurement procedures
Analyze	3. Diagnose the current process 4. Identify potential influence factors
Improve	5. Establish the effect of influence factors 6. Design improvement actions
Control	7. Improve process control 8. Close the project

focus

primary process

Supporting processes

134 projects

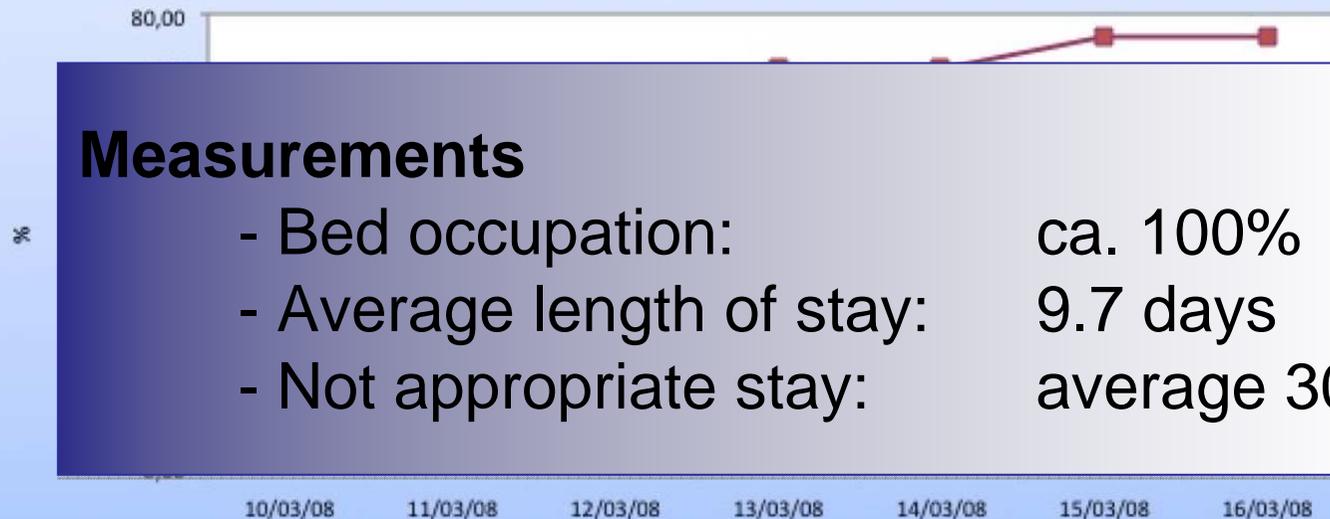
(from the summer 2007 onwards)

Safety	2
<i>Length of stay</i>	24
<i>Nursing efficiency</i>	20
Medical personnel	5
Support personnel	12
Medical administration	4
Capacity	13
Diagnostics	5
Purchasing & maintenance	9
Storage & use (medical)	10
Storage & use (non medical)	3
Policlinic	6
Digitalization	10
Registration	9
Patient satisfaction	2

Case 1. Reduced Length of stay

Appropriate hospital stay

(Niet) noodzakelijkverblijf (NNV) A3VA traumatologiepatienten in week 11 gemeten met DAEP



Measurements

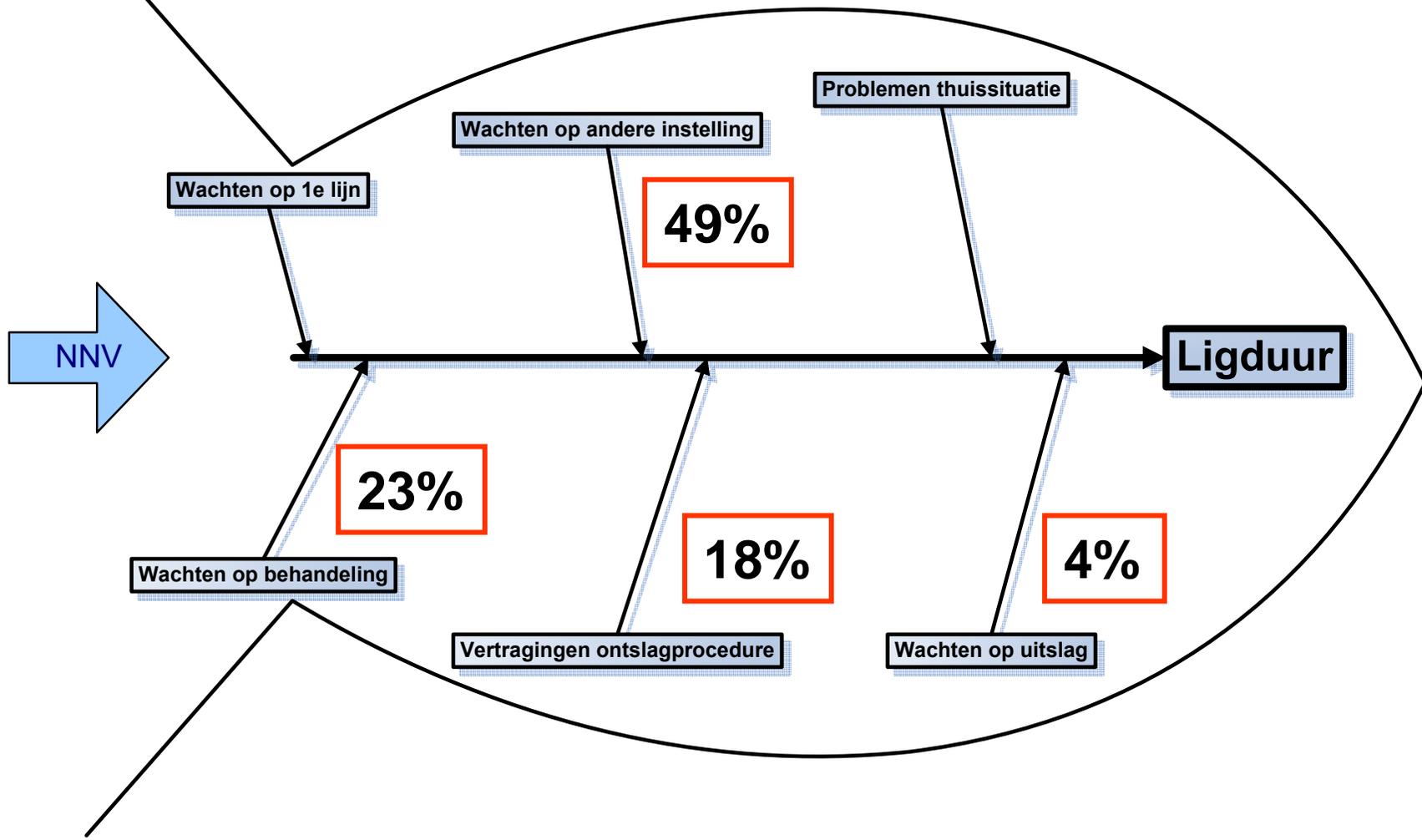
- Bed occupation: ca. 100%
- Average length of stay: 9.7 days
- Not appropriate stay: average 30%

10/03/08 11/03/08 12/03/08 13/03/08 14/03/08 15/03/08 16/03/08

7 dagen (167 gemeten ligdagen traumatologiepatienten)

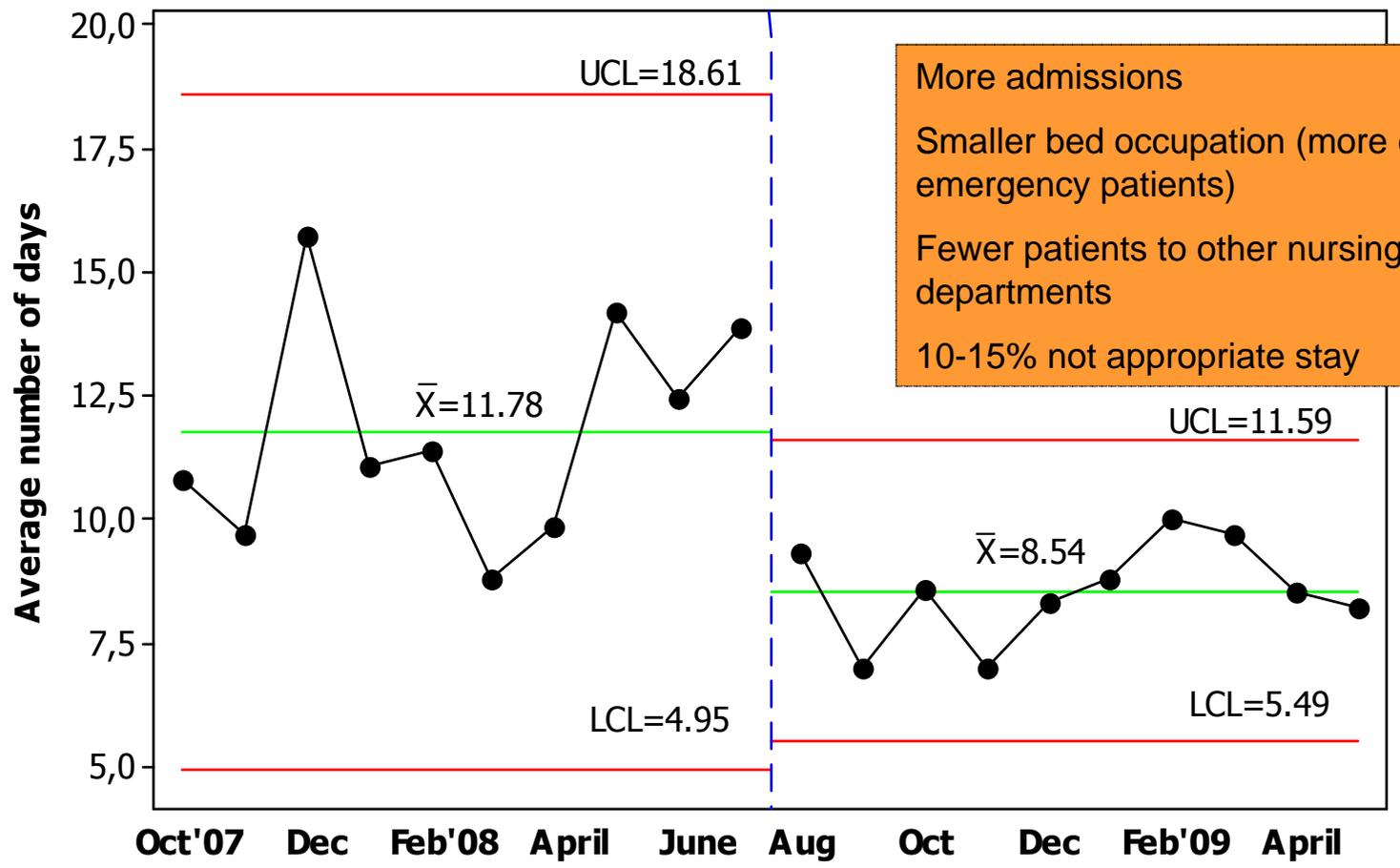
DAEP: Dutch Appropriateness Evaluation Protocol
(o.a. Panis et al., Validity $K_f=0,76$ Confidence $K_f=0,84$)

Influence factors



Results

Length of stay (before and after intervention)



More admissions
 Smaller bed occupation (more capacity for emergency patients)
 Fewer patients to other nursing departments
 10-15% not appropriate stay

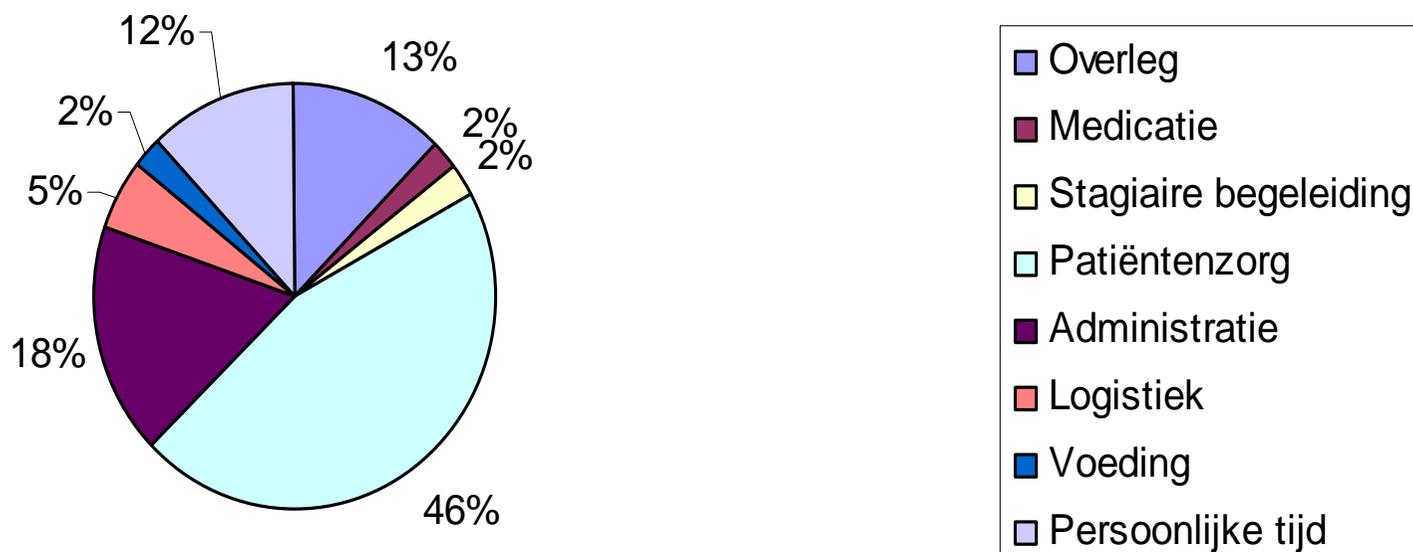
Case 2: higher nursing efficiency

AIMS:

- Efficient use of nursing staff
- Reduce personnel cost
- More care for patients
- To create a stimulating work place

Time measurements: an example

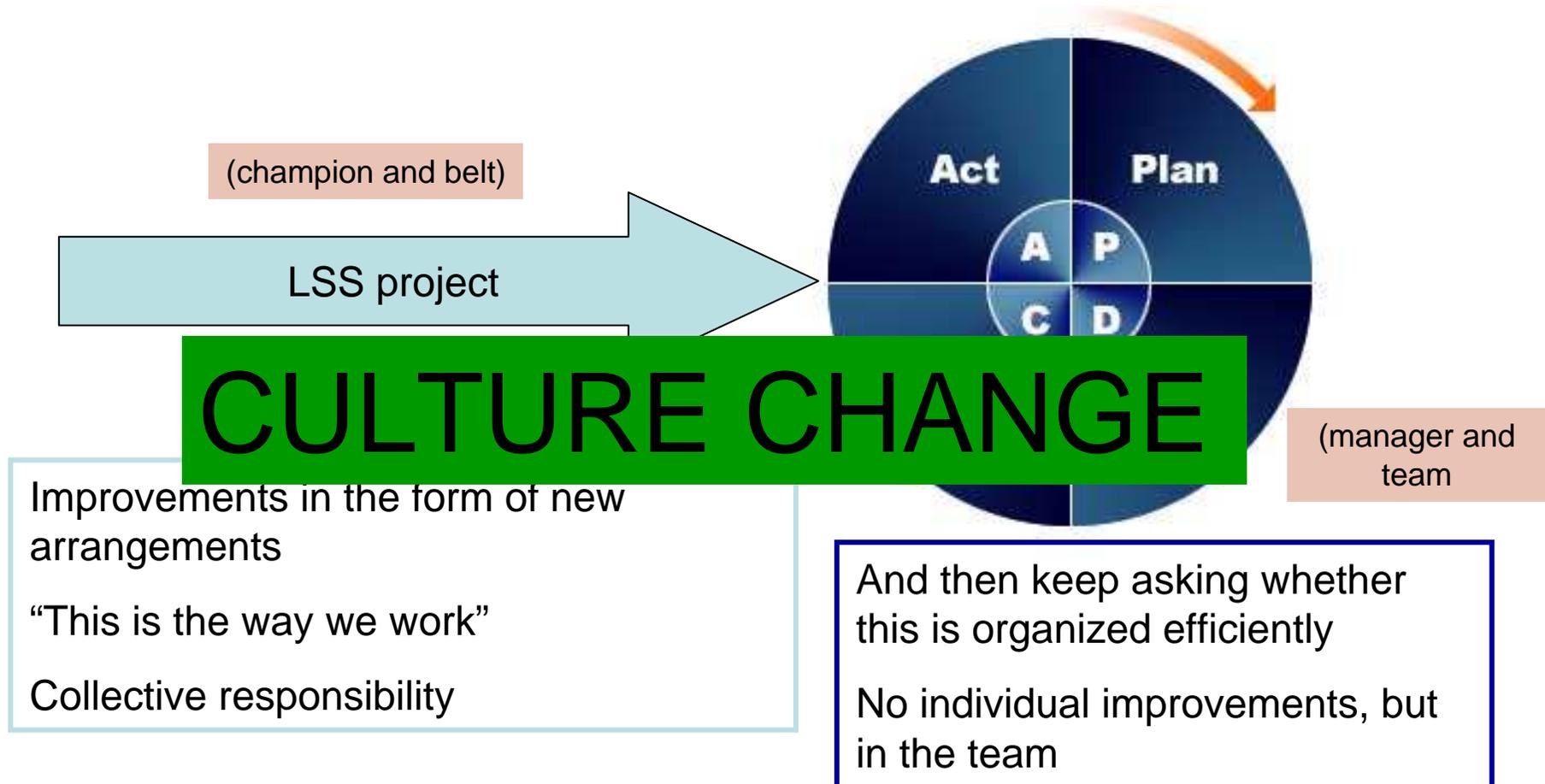
Verdeling werkzaamheden verpleegkundigen K3VA



Improvements

- Brainstorm by the team: why are these the results? → Influence factors
- Improvements (a selection)
 - Less disruptions and more structure during meetings
 - Reduce the amount of “double” work and standardize reports
 - Rearrange the tasks and responsibilities

Continuous improvement





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THANK YOU!

