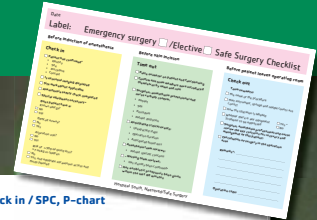


# Reduction in Postoperative Mortality after Safe Surgery Check-List



## Background

- This is a Patient Safety and Quality Improvement project done in Region Zealand, Hospital South, Dept. of Anaesthesiology and Dept. of Surgery, Naestved, Denmark.
- We have applied WHO's Checklist for Safe Surgery.
- The unit treats a mixed population of surgical patients, 7.000/year, both acute and elective surgery.

## Problem

- Not all commonly accepted safety standards are applied to all patients during all surgical procedures.
- WHO has, in a randomized trial involving more than 7000 patients, shown that implementation of the Checklist for Safe Surgery markedly reduces both postoperative morbidity and mortality.

## Method

- Implementation was first conducted as a pilot test during a 4 month period, May through August 2009.
- Before and during implementation there was an ongoing evaluation / correction of the Checklist and also an ongoing instruction of staff members.
- Since September 2009, the Checklist is used with all surgical procedures.
- We are monitoring:
  - Outcome indicators:
    - "Mortality", "Wound rupture", "Re-operations" and "Infections". Using Statistical Process Control (SPC) we monitor all 4 indicators 30 days postoperative.
  - Safe Surgery Checklist compliance / Process compliance:
    - "Check in", "Time-out", "Check out" and "All or nothing", also using SPC as monitor tool.
- As a supplement investigation, we have compared two equally sized patient groups (before and after implementation of Safe Surgery Checklist).

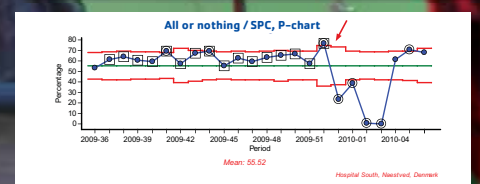
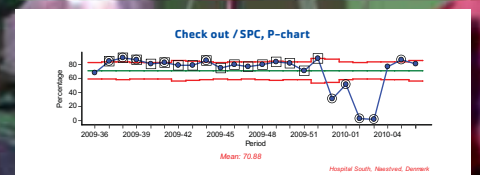
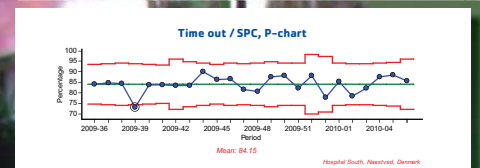
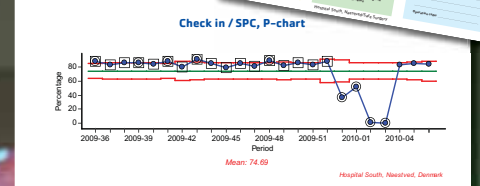
## Results

- 35% reduction in mortality (significant) both when using SPC and Chi Square Test.
- Decrease around New Year 2009 in Checklist compliance ("All or nothing" SPC curve is sharply declining) is coherent with an (non significant) increase in mortality around. Though not significant, this is an interesting finding.
- Our results showed no changes regarding our other chosen endpoint indicators than mortality, that is reoperations and wound ruptures. Infection indicator remains to be seen.

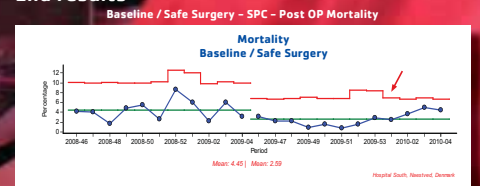
## Discussion / Visions

- We have experienced, that management support, continuous motivation and education of staff members is crucial, both before and during Checklist implementation process.
- Continuous monitoring and evaluation of compliance and outcome is important for ongoing improvement of both process and results.
- Use of, and data from, the Safe Surgery Checklist has proven possible as a tool for risk managing and quality assurance in clinical practice.
- All indicator data, except infection data, has now been extracted from already existing databases. Infection data has been difficult to extract due to particular database access problems. Ongoing dataflow, with regards to this indicator, has just been established. We expect Safe Surgery to have a positive impact on postoperative infection rate. We also expect to find, that postoperative infection rate will be closely correlated with postoperative mortality rate.
- Results from coming clinical audits, with regards to postoperative mortality, will generate focus on new indicators. It will be fairly easy to extract new indicator data using our already established access to existing databases.
- Using above databases furthermore enables cross indicator investigation.
- Process results facilitates documental demands with regard to standards in National Accreditation (IKAS, Denmark) and the International Accreditation Programme (IAP).

## Process results



## End results



Baseline / Safe Surgery - Chi Square Test - Post OP Mortality				
Observed	Dead	Not Dead	Total	(Percentage died)
Baseline (Nov. 10, 2008 - Feb. 1, 2009)	55	1281	1336	4,12 %
Safe Surgery (Nov. 10, 2009 - Feb. 1, 2010)	37	1342	1379	2,68 %
Total	92	2623	2715	

Baseline / Safe Surgery - Chi Square Test - Post OP Mortality				
Expected	Dead	Not Dead	Total	
Baseline (Nov. 10, 2008 - Feb. 1, 2009)	45	1291	1336	
Safe Surgery (Nov. 10, 2009 - Feb. 1, 2010)	47	1332	1379	
Total	92	2623	2715	

P value = 0,039