

# Implementation of the WHO Surgical Safety Checklist

Groote Schuur Hospital



A Journey.....

1935

# Boeing 299 prototype long-range bomber



**Invited to US Army Corps competition**

**Investigation: no mechanical fault  
Pilot had forgotten to release “anti gust lock”**



# Aftermath

*“A few months later, army pilots were convinced the plane could fly and invented something that would be used on the few planes that had been purchased...*

***.....A checklist,***

*with step-by-step checks for takeoff, flight, landing, and taxiing”.*



*“With the checklist in hand, the pilots went on to fly the model (B- 17) many million miles through several conflicts, with minimal accidents.”*

*“The delivery of healthcare is complex and riddled with the potential for errors due to human factors, system failures and more commonly, a combination of the two.”*

Institute of Medicine: Crossing the quality chasm. A new health system for the 21<sup>st</sup> Century Washington DC: National Academy Press; 2001

# Surgical Mortality

## ▶ Anaesthetic mortality

- Developed countries decreased from 1:5000 to 1:200 000
- Developing countries published 1:150 – 1:3000

## ▶ Surgical mortality (major surgery)

- 0.4 – 0.8% in developed countries
- 5 – 10% in developing countries

## ▶ WHO estimates:

- 1 million die during or immediately after surgery
- 50% preventable

# United Kingdom

- 4.2 million operations p.a. (one op / 12 people p.a.)
- Surgery is categorized as a “very unsafe undertaking”
  - Rate of fatal adverse events– 1 / 10,000 surgical procedures
  - In trauma surgery, the rate of serious complications is substantially higher at an estimated 1 per 100 surgical exposures
- Civil aviation, rail transport and nuclear power the rate of death is less than 1 per million exposures

# WHO safe surgical guidelines 2008

## ▶ 10 Aims

- Correct patient & site
- Prophylactic antibiotics
- Avoid known allergens
- Identify risk factors that would modify practice
  - Anaesthetic practice
  - Airway
  - Blood loss
- Prevent inadvertent swab retention
- Secure & ID specimens
- Improve communication
- Audit



Geneva – Jan 2008

WHO safe surgical  
guidelines



# Geneva – Jan 2008

## WHO safe surgical guidelines



### SURGICAL SAFETY CHECKLIST (DRAFT)

SAFE SURGERY SAVES LIVES  
GLOBAL PATIENT SAFETY CHALLENGE  
WORLD HEALTH ORGANIZATION

#### SIGN IN - PRIOR TO INDUCTION OF ANAESTHESIA, VERIFY:

- PATIENT CONFIRMED IDENTITY, SITE, PROCEDURE AND CONSENT
- SITE MARKED/NOT APPLICABLE
- ANAESTHESIA SAFETY CHECK COMPLETED
- PULSE OXIMETER ON PATIENT AND FUNCTIONING

#### DOES PATIENT HAVE A:

- KNOWN ALLERGY
  - NO     YES
- DIFFICULT AIRWAY/ASPIRATION RISK
  - NO     YES, AND NEEDED EQUIPMENT AND ASSISTANCE AVAILABLE
- RISK OF >500CC BLOOD LOSS (7cc/kg IN CHILDREN)
  - NO     YES, AND ADEQUATE IV ACCESS AND FLUIDS PLANNED

#### TIME OUT - PRIOR TO SKIN INCISION:

- CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE
- SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM PATIENT, SITE, PROCEDURE, POSITION
- ANTICIPATED CRITICAL EVENTS
  - SURGEON REVIEWS: WHAT ARE THE CRITICAL OR UNEXPECTED STEPS, OPERATIVE DURATION, ANTICIPATED BLOOD LOSS?
  - ANAESTHESIA TEAM REVIEWS: WHAT ARE CRITICAL RESUSCITATION PLANS, PATIENT-SPECIFIC CONCERNS, IF ANY?
  - NURSING TEAM REVIEWS: WHAT ARE THE STERILITY INDICATOR RESULTS, EQUIPMENT ISSUES, OTHER PATIENT CONCERNS?
- ANTIBIOTIC PROPHYLAXIS GIVEN IN LAST 60 MINUTES
  - YES     NOT APPLICABLE
- ESSENTIAL IMAGING DISPLAYED
  - YES     NOT APPLICABLE
- OTHER CHECKS: \_\_\_\_\_

#### SIGN OUT - PRIOR TO THE PATIENT LEAVING THE OPERATING THEATRE:

##### NURSE VERBALLY CONFIRMS WITH THE TEAM:

- WHAT PROCEDURE WAS PERFORMED?
- ARE THE INSTRUMENT, SPONGE AND NEEDLE COUNTS CORRECT?
- HOW IS THE SPECIMEN LABELLED (INCLUDING PATIENT NAME)?
- ARE THERE ANY EQUIPMENT MALFUNCTIONS OR ISSUES TO BE ADDRESSED?

##### SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE REVIEW:

- WHAT ARE THE KEY CONCERNS FOR RECOVERY AND MANAGEMENT OF THIS PATIENT?

\_\_\_\_\_  
SIGNATURE (ON BEHALF OF ENTIRE TEAM)

\_\_\_\_\_  
DATE



An aerial photograph of Groote Schuur Hospital in Cape Town, South Africa. The hospital complex, consisting of several large, multi-story buildings with red-tiled roofs, is situated in a valley. In the background, there are rolling hills and mountains under a clear blue sky. The foreground shows a residential area with smaller houses and a parking lot filled with cars.

## Groote Schuur Hospital

- 27 Operating Theatres
- 26000 operations p.a.
- Anaesthetists – rotate
- Nurses
  - Rotate
  - Shortages
  - Often junior
- Hierarchical background
- Patriarchal society
- Apartheid era
  - Disempowered

# Pre-implementation



## Involve Role-Players

- ▶ Theatre Management Committee
  - Nursing
  - Department of Anaesthesia
  - Department of Surgery
  - Department of Neurosurgery

SPECIAL ARTICLE

# A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population

Alex B. Haynes, M.D., M.P.H., Thomas G. Weiser, M.D., M.P.H.,  
William R. Berry, M.D., M.P.H., Stuart R. Lipsitz, Sc.D.,  
Abdel-Hadi S. Breizat, M.D., Ph.D., E. Patchen Dellinger, M.D.,  
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SPECIAL ARTICLE

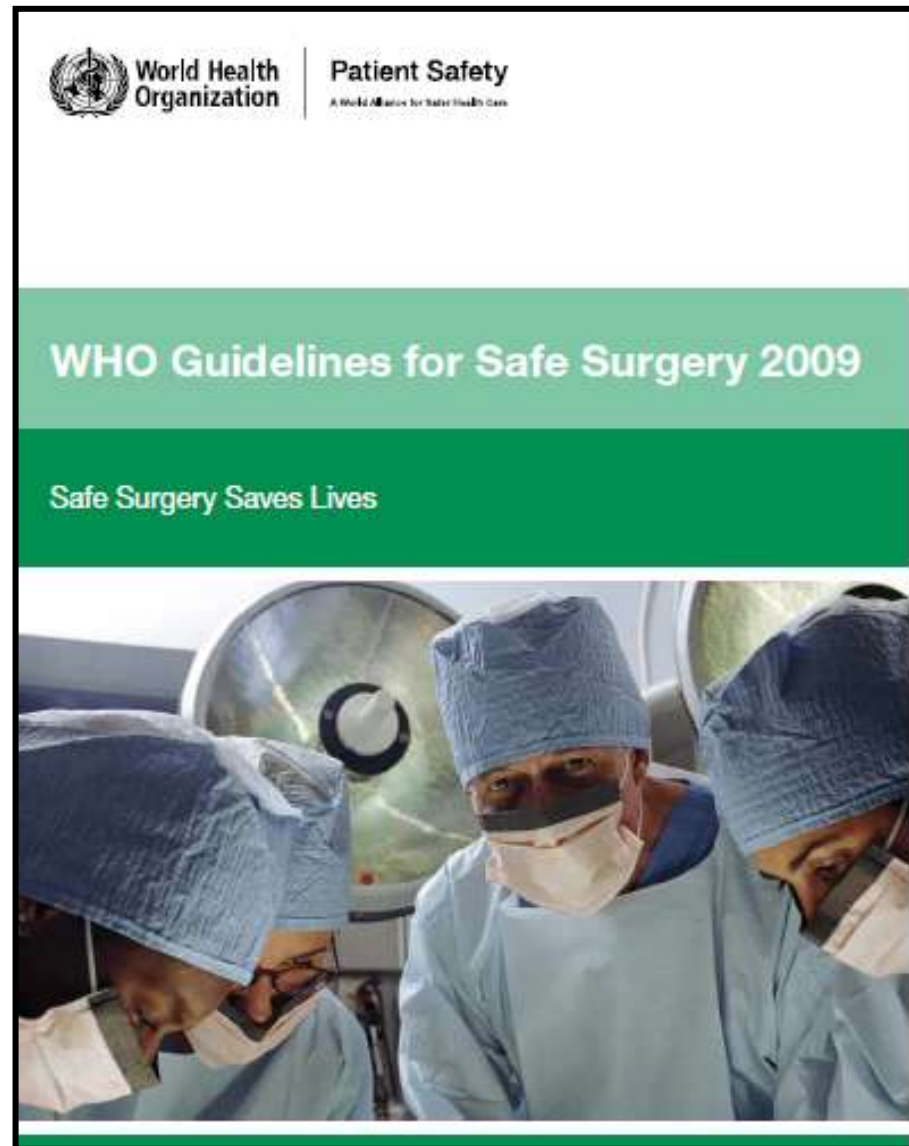
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**8 pilot sites**

**Complication rate decreased from 11% – 7% [p<0.0001]**

**Mortality decreased from 1.5 – 0.8% p < 0.047]**



# Theatre Management



- ▶ TMC “redesigned” the form
- ▶ Hospital Memorandum
- ▶ Posters in Theatre
- ▶ NEJM article, BBC and Lancet editorial distributed widely via email and on theatre notice boards

# GSH Theatre Safety Check List



**On 2<sup>nd</sup> February 2009** Groote Schuur Hospital will be introducing a Theatre Safety Check List into theatres. The check list is simple to implement and designed to increase patient safety and improve communications between all theatre users. It has been developed by the World Health Organization's Alliance for Patient Safety and was launched internationally in June 2008.

## HOW TO IMPLEMENT THE CHECKLIST

To implement the checklist during surgery, a single individual must be made responsible for checking the boxes on the list. The Theatre Management Committee have decided that **the anaesthetist** will be the best person for this task.

**PGWC Standard Operating Procedure No: A/005**  
**Category: Operating theatre quality improvement 2009/10**  
**Implementation of W.H.O. Surgical Safety Checklist for each surgical operation performed.**  
**To be revised in 2010**

**Compiled by: Theatre Efficiency Task Team (Policies Task Team)**

- ▶ **Contact Persons: Dr Anthony Reed, Dr Stephan Fourie**
- ▶ **Date: March 2009**
  
- ▶ **Target group:**
  - Hospital Managers
  - Quality assurance directorate
  - Theatre managers
  - Theatre Nursing Directors
  - Theatre management committee
  - Surgical and anaesthetic departments
  
- ▶ **Policy requirements**
  - ▶ All PGWC hospitals required to implement and monitor the utilisation of the WHO Surgical Safety Checklist
  
- ▶ **Policy Purpose**
  - ▶ To improve patient care and outcomes through improved communication and compliance with antibiotic prophylaxis



# Strategies to widen acceptance

- ▶ GSH QA involvement
- ▶ Invitation to world wide launch in Washington
  - Association of Surgeons of SA
  - SA Society of Anaesthesiologists
  - Nursing Council
- ▶ National Department of Health

APPLICATION FOR REGISTERING A PROJECT AS PART OF THE  
1000 – FACILITIES QUALITY IMPROVEMENT PROJECT INITIATIVE

# Audit





# Monthly Audit May 2009 – Nov 2010



Date of Survey	No surveyed	Forms completed	Forms partially completed	Forms not completed	% Forms filled in (completely or partially)
27-May-09	32	13	1	18	43.8
23-Jul-09	35	13	3	19	45.7
28-Jul-09	32	10	0	21	32.3
20-Aug-09	38	20	1	17	55.3
27-Aug-09	28	19	5	4	85.7
22-Sep-09	38	16	5	17	55.3
28-Oct-09	26	8	9	9	65.4
12-Nov-09	46	12	11	23	50.0
February 2010	136	42	49	45	66.0
24-Jun-10	30	7	5	18	40.0
02-Aug-10	21	5	14	2	33.3
11-Aug-10	34	23	8	3	91.0
12-Aug-10	27	7	15	5	81.5
08-Sep-10	35	16	9	10	71.4
06-Oct-10	35	13	6	16	54.3
14-Oct-10	22	7	8	7	68.2
1-4 Nov - 10	155	119	15	21	86.5

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33%



World Health Organization

# Surgical Safety Checklist

Groote Schuur Hospital



## Before induction of anaesthesia

*Nurse & Anaesthetist*

### Reception Area or Induction Room

Patient identity, procedure, site, consent confirmed

Yes

### Induction Room

Operation site / side marked

Yes  No  N/A

### Theatre

Anaesthesia machine check complete

Yes

Does the patient have a:

Known allergy

No  Yes

Difficult airway or aspiration risk

No  Yes

Risk of > 500 ml blood loss

No  
 Yes, and adequate IV access planned

Essential imaging present

Yes  N/A

Special equipment / prostheses available & checked

Yes  N/A

## Before skin incision

*Scrub Nurse*

Confirm all team members have introduced themselves by name and role

### Planned surgery and anticipated critical events

**Surgeon review:**

- Procedure
- Estimated duration
- Estimated blood loss
- Critical or non-routine steps

**Anaesthetist review:**  
Patient specific concerns

**Nursing team review:**

- Sterility confirmed
- Equipment / consumable concerns

Antibiotic prophylaxis administered within 60 min.

Yes  N/A

## Before surgeon leaves theatre

*Surgeon*

**Nurse verbally confirms:**

- Completion of swab & needle count

**Surgeon verbally confirms:**

- Name of procedure *performed*
- Specimens:
  - Correctly labelled
  - Correct preservative
  - Forms completed correctly
- Equipment / consumable issues to be addressed

**Anaesthetist and Surgeon**

- Review patient recovery & management

Date: .....

Name .....

PATIENT STICKER

GSH No. ....

# Monthly Audit May 2009 – Nov 2010



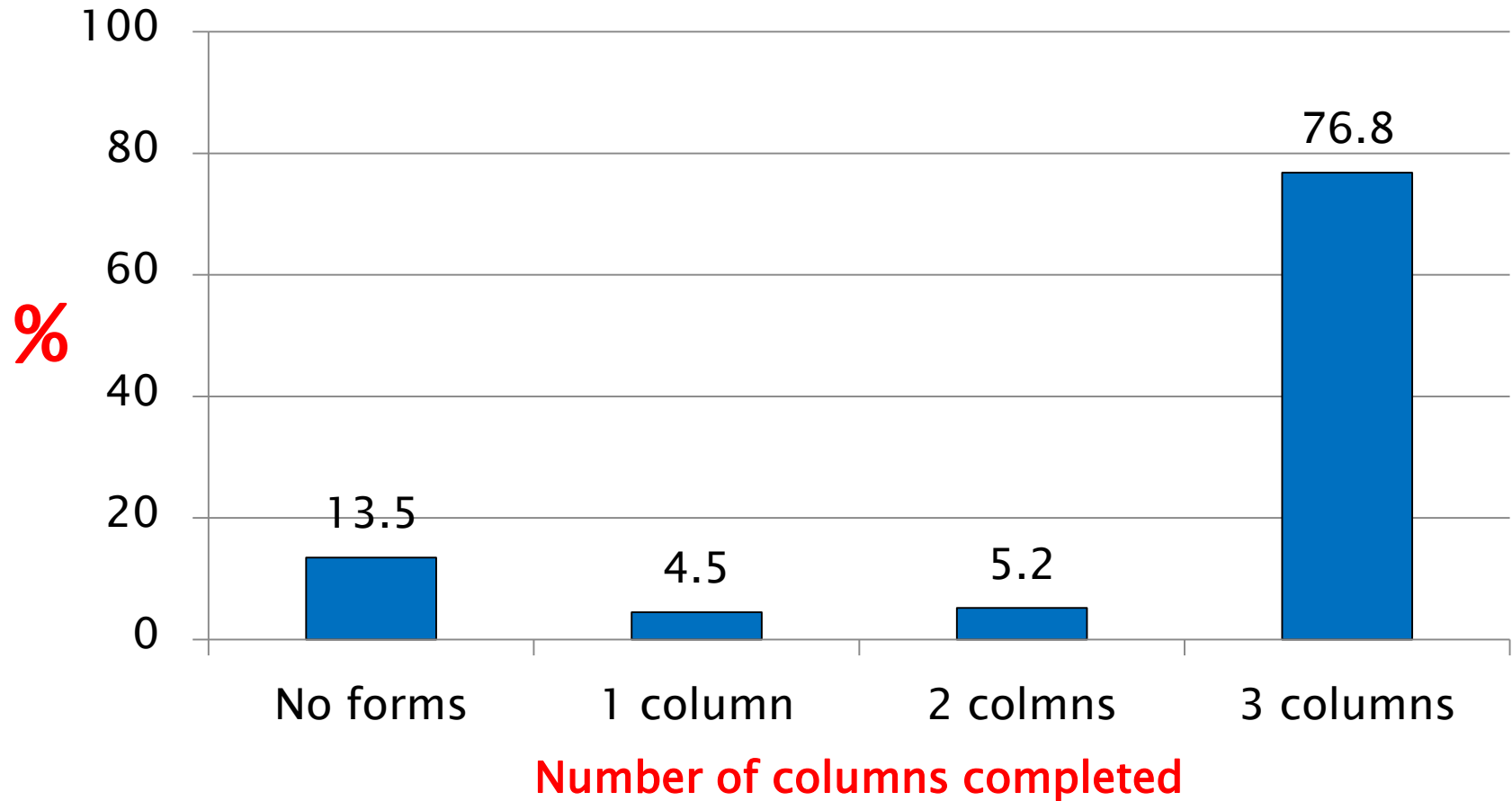
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91%


# Audit November 2010



155 surgeries assessed



# Problems

- ▶ Attitude of some staff
    - Nursing “disempowered” – don’t initiate Time Out
    - Attitudinal resistance by clinicians
    - “Unnecessary repetition”
    - “Wastes time”
  - ▶ Tick form without full check
  - ▶ Responsibility
  - ▶ Signature?
  - ▶ Introductions often don’t achieve the aim
- 

# Successful strategy


- ▶ Checklist: a clinical governance goal
- ▶ Local champions
- ▶ Education
- ▶ Involve all role players
  - ▶ Have to understand benefits to group & patient
  - ▶ Clarify the role of each professional group
    - ▶ Scrub nurse is key person for “Time out”
    - ▶ Anaesthetist probably best person to fill in column 1 & 2
- ▶ Start small
- ▶ Support local adaptations
- ▶ Audit
- ▶ Feedback

Has WHO Checklist made  
a difference at GSH?



- ▶ Team building ✓
- ▶ Improved communication ?
  - Nameboards in theatres
- ▶ Improved patient safety
  - Antibiotic prophylaxis improved ✓
  - Reducing risk of wrong side operations ✓
  - Reducing wrong operations?
  - Focus's attention on preparation for possible difficult airway, XS blood loss, aspiration risk ✓

# The future at GSH

- ▶ Theatre Management has commenced an ongoing audit of compliance
  - ▶ Data capturer identified
  - ▶ Improved feedback to theatres as to compliance rate
  - ▶ Checklist Subcommittee
  - ▶ Improve site of surgery marking
  - ▶ Nameboards
- 

# WHO SSCL latest work

- ▶ Brazil tertiary facility (Oct 2009 – Sept 2010)
  - Early compliance 1,3%, 7%, 20%, 62%, 73%, 95% up to 98%
  - Surgical site infection down from 2.8% to 0.99%
- ▶ Toronto Sick Kids (from May 2010)

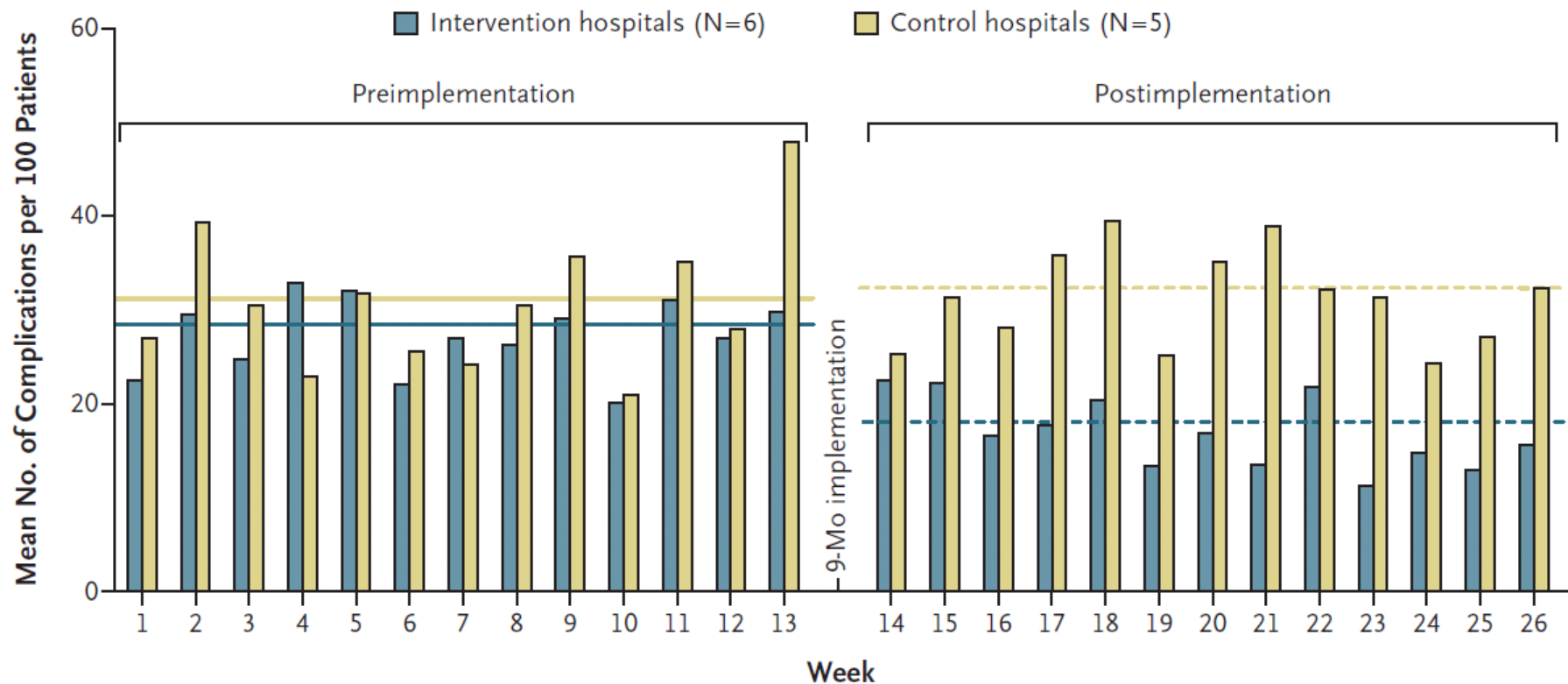


SPECIAL ARTICLE

## Effect of a Comprehensive Surgical Safety System on Patient Outcomes

Eefje N. de Vries, M.D., Ph.D., Hubert A. Prins, M.D., Ph.D.,

- ▶ Checklist from admission to discharge
- ▶ Multidisciplinary approach
- ▶ 5 hospitals with high standards in Netherlands
  
- ▶ Medication
- ▶ Site marking
- ▶ Use of post operative instructions
  
- ▶ Complications before after implementation of control



**Figure 1.** Mean Number of Complications in Intervention Hospitals and Control Hospitals before and after Implementation of the Surgical Safety Checklist.

The solid horizontal lines show the overall mean number of complications before implementation of the checklist, and the dashed horizontal lines show the mean number after implementation. The change in the mean number of complications from the preimplementation period to the postimplementation period was significant in the intervention hospitals ( $P < 0.001$ ) but not in the control hospitals ( $P = 0.81$ ).

# Pre-flight checklist builds a safety culture



*We can choose to fly safely or ....*

**...to crash!!**




# WHO SSCL latest work

- ▶ UK orthopaedics/trauma study
- ▶ 2008 year data from NPSA
  - 133 were really “wrong side” incidents
  - 12/133 actual wrong side, 121/133 near misses
- ▶ WHO SSCL utility would have prevented:
  - 10/12 actual incidences
  - 18/121 “near misses”



# WHO SSCL Western Cape implementation

- ▶ **GSH lead the way**
    - Nurses, surgeons and anaesthetists included in communication
    - Evidence provided
  - ▶ **Province-wide**
    - Theatre efficiency task team and management
    - H-circular and SOP
  - ▶ **Success variable**
  - ▶ **Monitoring**
- 

# Strategies for successful implementation

1. Training and learning materials
2. Organizational priority and leadership
3. Checklist: a clinical governance goal
4. Local champions
5. Clarify the role of each professional group
6. Regular audits and feedback
7. Encourage local measurement of effectiveness
8. Support local adaptations