

# THE WHO SURGICAL SAFETY CHECKLIST BARRIERS AND FACILITATORS TO SUCCESSFUL IMPLEMENTATION

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# TALK OUTLINE

- Effect on patient outcomes
- Barriers and fascilitators
- Road to successful implementation

# Surgical Safety Checklist



World Health Organization

Patient Safety  
A World Alliance for Safer Health Care

## Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?

- Yes

Is the site marked?

- Yes
- Not applicable

Is the anaesthesia machine and medication check complete?

- Yes

Is the pulse oximeter on the patient and functioning?

- Yes

Does the patient have a:

Known allergy?

- No
- Yes

Difficult airway or aspiration risk?

- No
- Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?

- No
- Yes, and two IVs/central access and fluids planned

## Before skin incision

(with nurse, anaesthetist and surgeon)

Confirm all team members have introduced themselves by name and role.

Confirm the patient's name, procedure, and where the incision will be made.

Has antibiotic prophylaxis been given within the last 60 minutes?

- Yes
- Not applicable

Anticipated Critical Events

To Surgeon:

- What are the critical or non-routine steps?
- How long will the case take?
- What is the anticipated blood loss?

To Anaesthetist:

- Are there any patient-specific concerns?

To Nursing Team:

- Has sterility (including indicator results) been confirmed?
- Are there equipment issues or any concerns?

Is essential imaging displayed?

- Yes
- Not applicable

## Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:

- The name of the procedure
- Completion of instrument, sponge and needle counts
- Specimen labelling (read specimen labels aloud, including patient name)
- Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:

- What are the key concerns for recovery and management of this patient?



# GOAL

- Teamwork
- Communication
- Consistency of care
- Improve patient outcome

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.,

## 8 hospitals – 8 countries

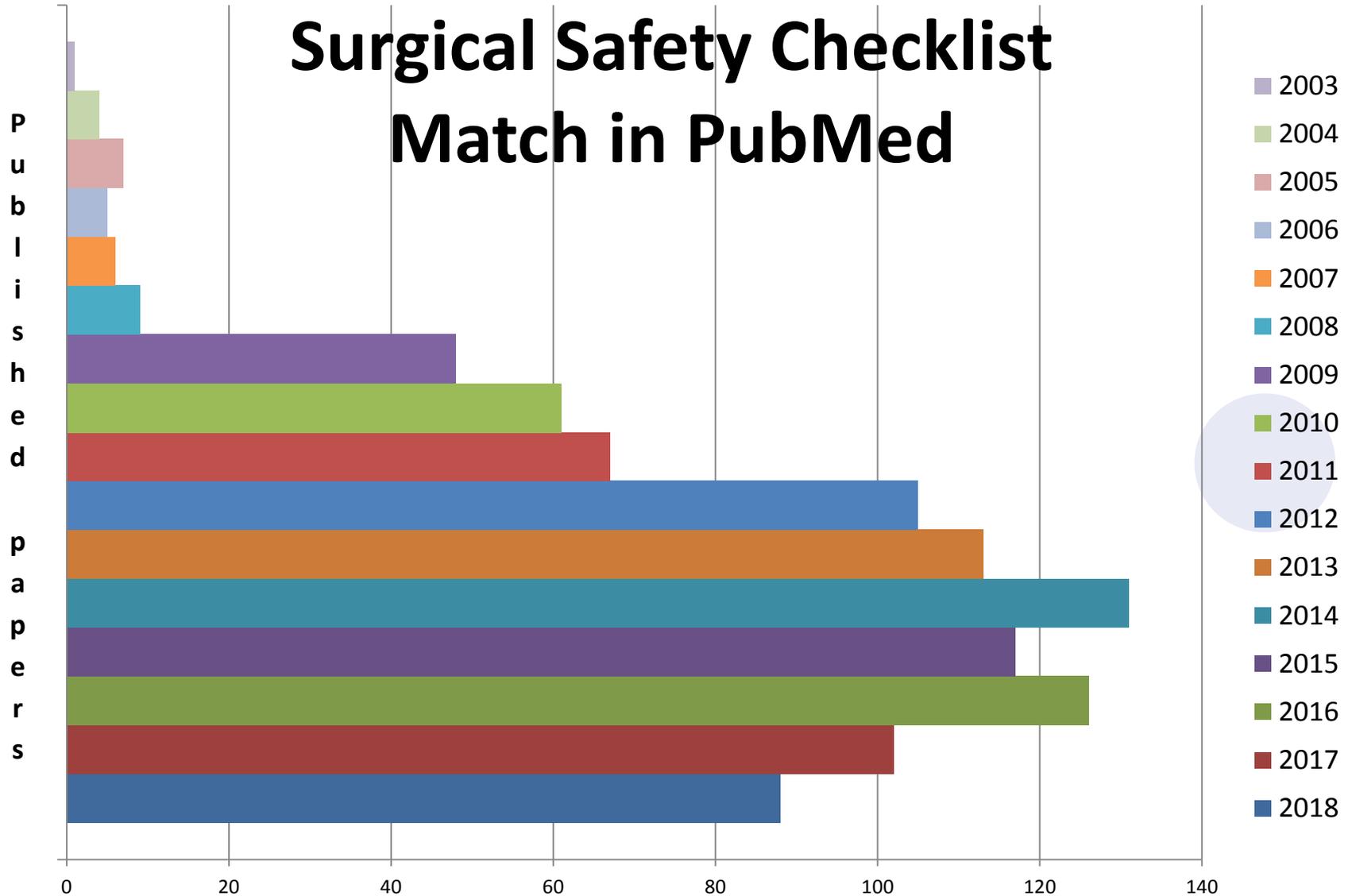
3733 patients before

3955 patients after

Complications 11% vs. 7% ( $P < 0.001$ )

Mortality 1.5% vs. 0.8% ( $P = 0.003$ )

# Surgical Safety Checklist Match in PubMed



SPECIAL ARTICLE

## Introduction of Surgical Safety Checklists in Ontario, Canada

David R. Urbach, M.D., Anand Govindarajan, M.D., Refik Saskin, M.Sc.,

### 101 hospitals in Canada

109,341 procedures before

106,370 procedures after

Complications 3.86% vs. 3.82% ( $P < 0.12$ )

Mortality 0.71% vs. 0.65% ( $P = 0.13$ )

## Effect of the World Health Organization Checklist on Patient Outcomes

*A Stepped Wedge Cluster Randomized Controlled Trial*

Arvid Steinar Haugen, MSc,<sup>\*†</sup> Eirik Søfteland, MD, PhD,<sup>\*</sup> Stian K. Almeland, MD,<sup>‡</sup> Nick Sevdalis, PhD,<sup>§</sup>  
Barthold Voncken, MD, PhD,<sup>¶</sup> Geir E. Eide, PhD,<sup>||\*\*</sup> Monica W. Nortvedt, PhD,<sup>††</sup> and Stig Harthug, MD, PhD<sup>‡‡</sup>



### 2 hospitals i Norway

2212 procedures before  
3083 procedures after

Complications 19.9% vs. 12.4% (P < 0.001)

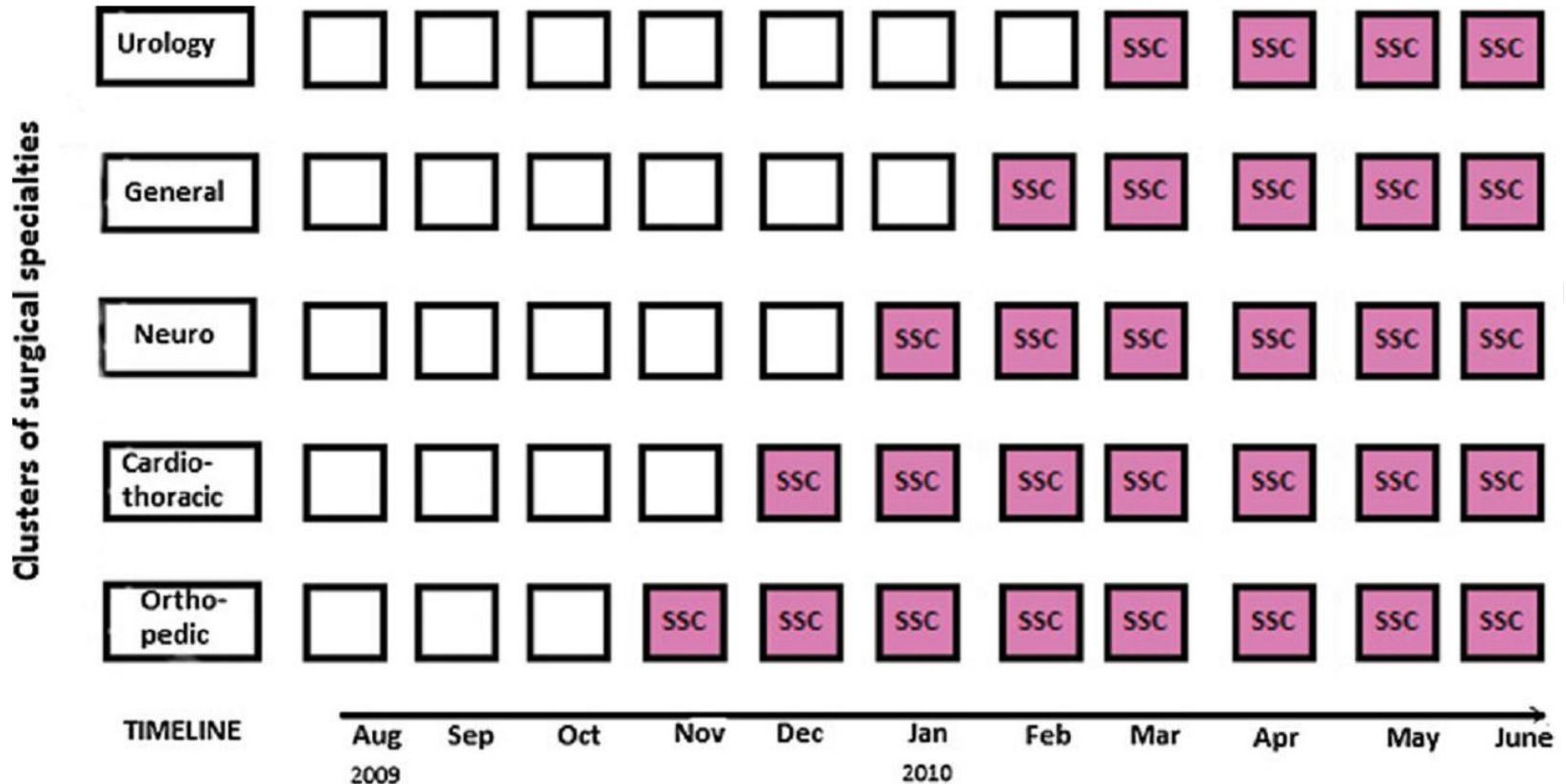
Mortality 1.6% vs. 1.0% (P = 0.151)

Length of stay: 7.8 days vs. 7.0 days (P = 0.022)

<b>Postoperative complications</b>	<b>Before (n=2212)</b>	<b>After (n=2263)</b>	<b>P-value</b>
<b>Respiratory</b>	<b>6.4%</b>	<b>3.2%</b>	<b>&lt;0.001</b>
<b>Cardiac</b>	<b>6.4%</b>	<b>4.3%</b>	<b>&lt;0.001</b>
<b>Infections</b>	<b>6.0%</b>	<b>3.4%</b>	<b>&lt;0.001</b>
<b>Wound rupture</b>	<b>1.2%</b>	<b>0.3%</b>	<b>&lt;0.001</b>
<b>Bleeding</b>	<b>2.3%</b>	<b>1.2%</b>	<b>0.008</b>
<b>Technical/mechanical</b>	<b>1.1%</b>	<b>0.4%</b>	<b>0.005</b>
<b>Unplanned re-operation</b>	<b>1.7%</b>	<b>0.6%</b>	<b>&lt;0.001</b>
<b>Other</b>	<b>2.0%</b>	<b>0.7%</b>	<b>&lt;0.001</b>

# IMPLEMENTATION

## STEPPED-WEDGE CLUSTER RCT



# IMPLEMENTATION

- ✓ Quality Improvement & Research Project
- ✓ Multi-disciplinary
- ✓ Education
  - ✓ Lectures – videos – on site training – learning material available in OR
- ✓ Feedback and evaluation
- ✓ Bottom up and ‘Top down’

Haugen AS et al, *British Journal of Anaesthesia*. 2013; 110 (5): 807-815.

Haugen AS et al. *Annals of Surgery* 2015; 261(5):821-828

# MORE RESEARCH



Hilde Valen Wæhle, RNA   Stian K. Almeland, Surgeon   Arvid Haugen, RNA  
Photo: Haukeland University Hospital

ORIGINAL ARTICLE

OPEN

# Causal Analysis of World Health Organization's Surgical Safety Checklist Implementation Quality and Impact on Care Processes and Patient Outcomes

*Secondary Analysis From a Large Stepped Wedge Cluster Randomized Controlled Trial in Norway*

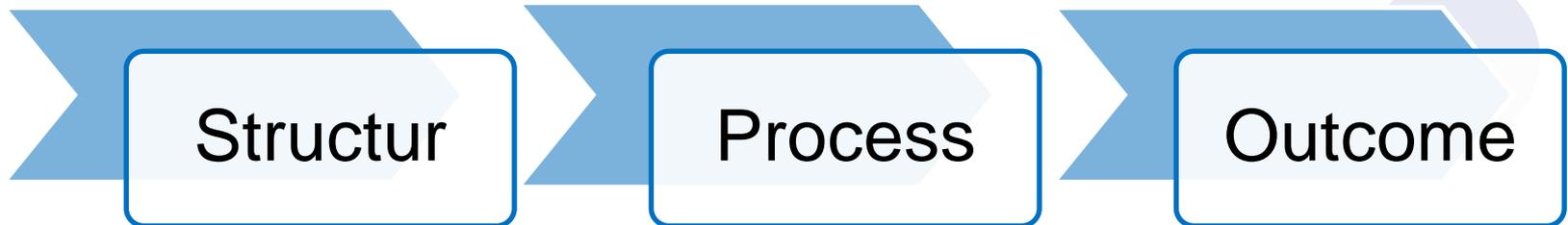
Arvid Steinar Haugen, MSc, PhD,\*† Hilde Valen Wæhle, MSc,‡§ Stian Kreken Almeland, MD,¶||  
Stig Harthug, MD, PhD,‡§ Nick Sevdalis, PhD,† Geir Egil Eide, PhD,\*\*††  
Monica Wammen Nortvedt, MSc, PhD,§‡‡ Ingrid Smith, MD, PhD,‡§ and Eirik Sjøfteland, MD, PhD\*

## ONE HOSPITAL - 3 SURGICAL CLUSTERS

**1398 PROCEDURES BEFORE**

**2304 PROCEDURES AFTER**

# HYPOTHESIS



# HOW DOES IT WORK?

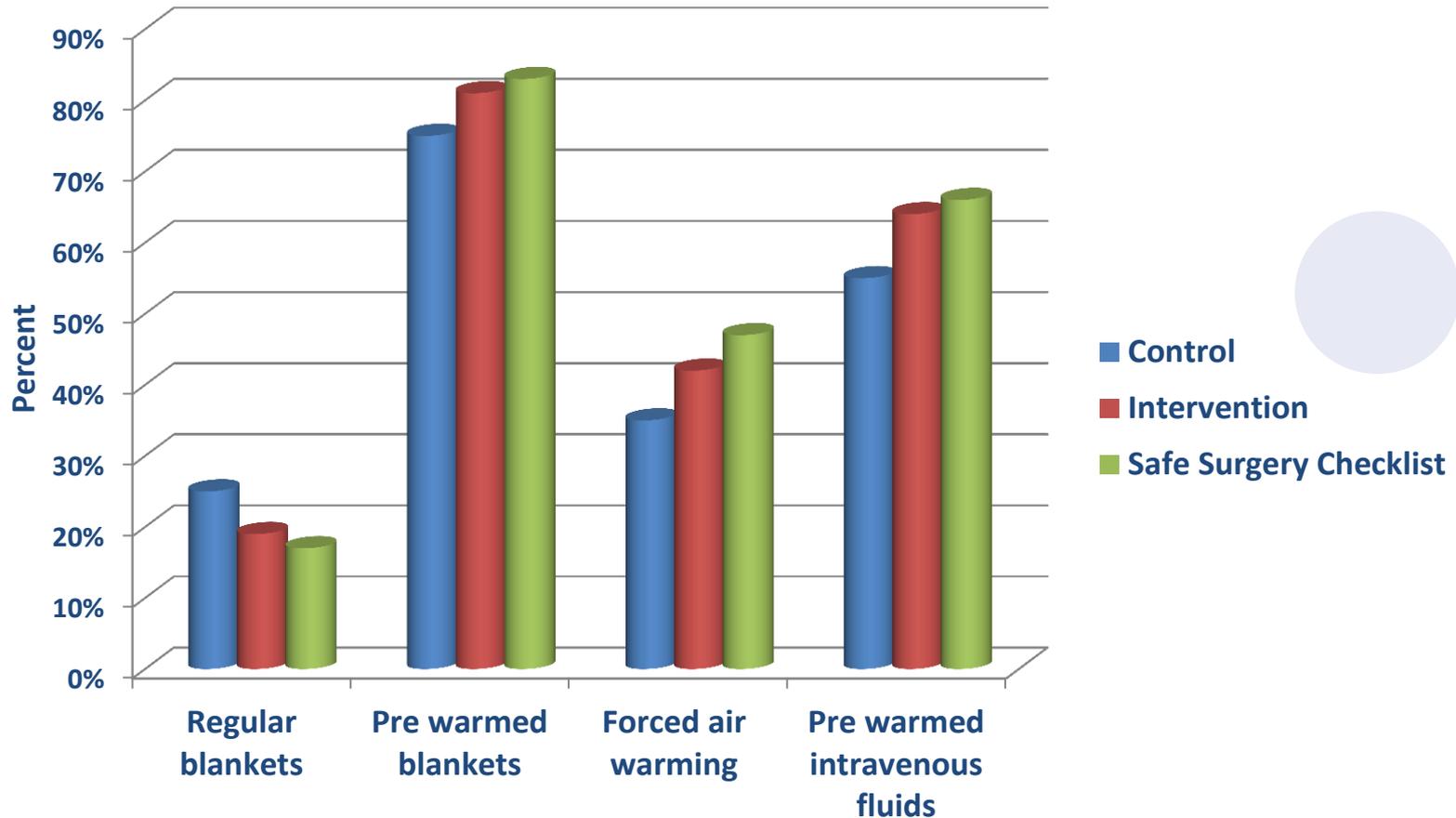


<b>Sign-in</b> <i>Before induction of anaesthesia</i>	<b>Time-out</b> <i>Before starting the operation</i>	<b>Sign-out</b> <i>Before the team leaves the operating room</i>
<p><b>Has the patient confirmed?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identity</li> <li><input type="checkbox"/> Operation site</li> <li><input type="checkbox"/> Type of procedure</li> </ul> <hr/> <p><b>Is the operation site marked?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes</li> <li><input type="checkbox"/> Not applicable</li> </ul> <hr/> <p><b>Has anaesthesia been checked and medication controlled?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes</li> </ul> <hr/> <p><b>Does the patient have:</b></p> <p><b>Known allergy?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes</li> <li><input type="checkbox"/> No</li> </ul> <p><b>Difficult airways / risk of aspiration?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes, and equipment/ assistance is available</li> <li><input type="checkbox"/> No</li> </ul> <p><b>Risk of &gt;500 mL blood loss (&gt;7 mL/kg in children?)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes, and adequate intravenous access and fluid is available</li> <li><input type="checkbox"/> No</li> </ul> <p><b>Risk of hypothermia?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes, and actions are planned or implemented</li> <li><input type="checkbox"/> No</li> </ul> <hr/> <p><b>Are the required diagnostic images available?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes</li> <li><input type="checkbox"/> Not applicable</li> </ul>	<p><b>Has everyone in the team been presented by name and function?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes</li> </ul> <hr/> <p><b>The surgeon, anaesthesia professional and surgical nurse have orally confirmed:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The patient's name?</li> <li><input type="checkbox"/> Planned procedure, operation site, and body side?</li> <li><input type="checkbox"/> Is the patient correctly positioned?</li> </ul> <hr/> <p><b>Are any critical events expected?</b></p> <p><b>Surgeon:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What is the expected blood loss?</li> <li><input type="checkbox"/> Are there any risk factors that the team should be aware of?</li> <li><input type="checkbox"/> Is any special equipment or additional diagnostic procedure needed?</li> <li><input type="checkbox"/> What is the expected duration of the operation?</li> </ul> <p><b>Anaesthesiologist and nurse:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What is the patient's ASA classification?</li> <li><input type="checkbox"/> Are there any special risk factors related to anaesthesia that the team should be aware of?</li> </ul> <p><b>Surgical nurse:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Is instrument sterility confirmed (including indicators)?</li> <li><input type="checkbox"/> Are there challenges associated with use of the equipment?</li> </ul> <hr/> <p><b>Have prophylactic measures been taken against infections?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Not applicable</li> <li><input type="checkbox"/> Antibiotic prophylaxis completed within the last 60 minutes?</li> <li><input type="checkbox"/> Have measures been implemented to keep the patient warm?</li> <li><input type="checkbox"/> Hair removal completed?</li> <li><input type="checkbox"/> Blood sugar check completed?</li> </ul> <hr/> <p><b>Is thrombosis prophylaxis required?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes</li> <li><input type="checkbox"/> No</li> </ul>	<p><b>The team reviews orally:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Which procedure has been performed?</li> <li><input type="checkbox"/> Is the number of instruments, dressings/drapes and needles correct (or not applicable)?</li> <li><input type="checkbox"/> Are biological samples correctly labeled, including the patient's identity?</li> <li><input type="checkbox"/> Have there been problems with the equipment that should be reported?</li> <li><input type="checkbox"/> What is important for postoperative treatment of this patient?</li> </ul> <hr/> <p><b>Remarks/ findings:</b></p> <hr/> <p><b>Which procedure has been performed?</b></p> <hr/> <p><b>Date, patient name and national identifying number.</b></p>

# HYPOTHERMIA PROTECTION



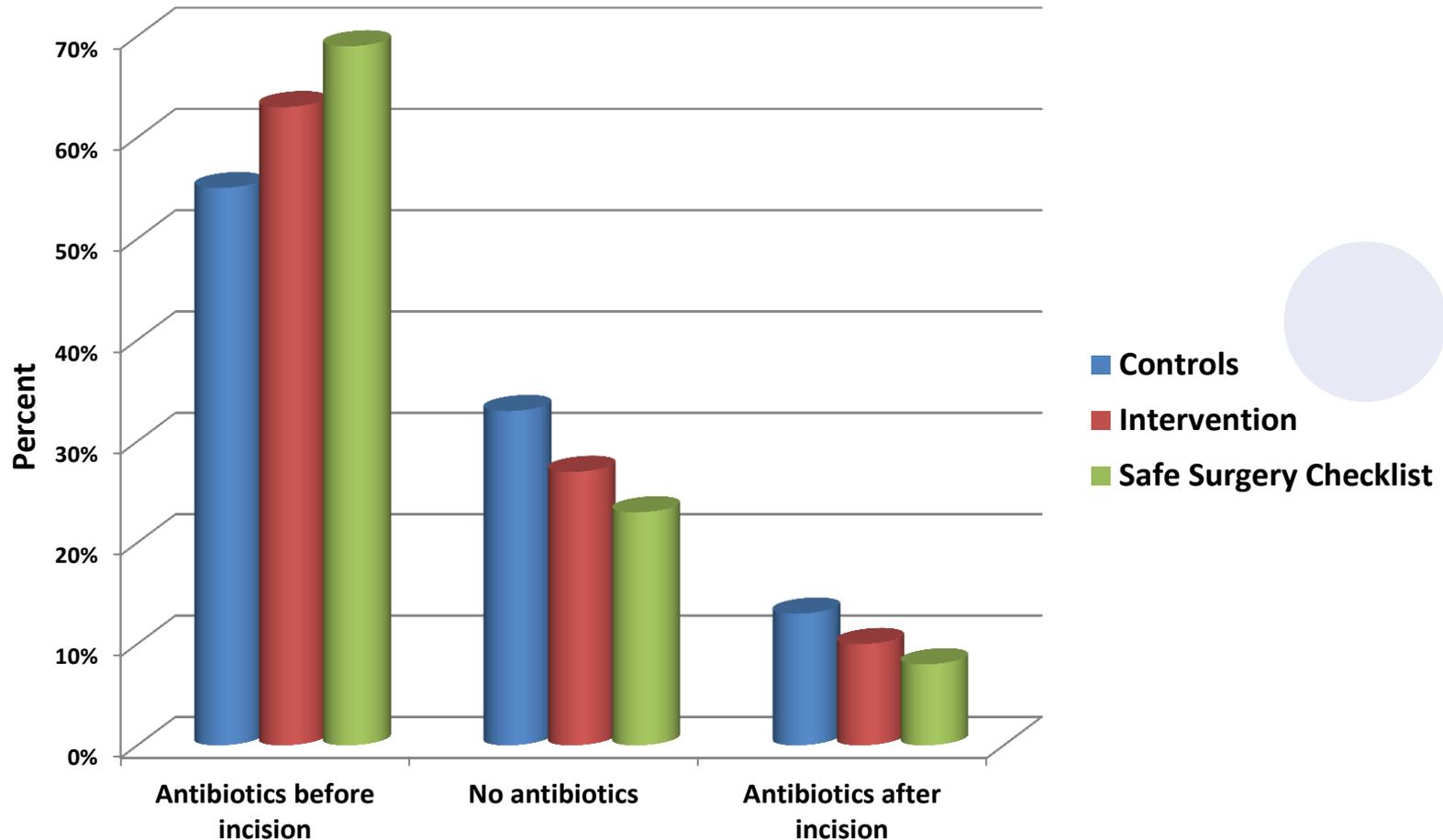
# IMPROVED CARE PROCESSES



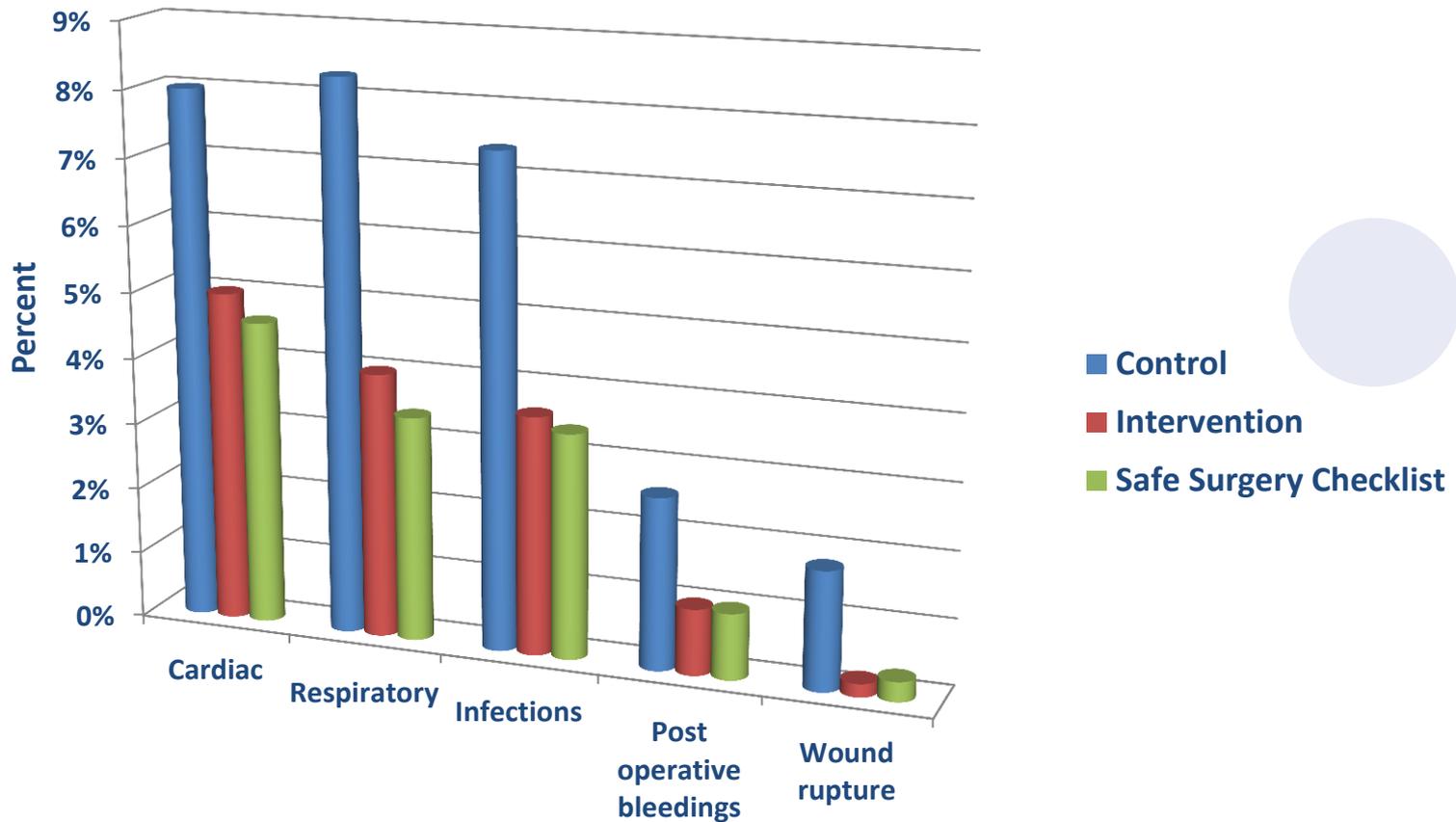
# ANTIBIOTIC PROPHYLAXIS



# IMPROVED TIMING



# REDUCTION OF COMPLICATIONS

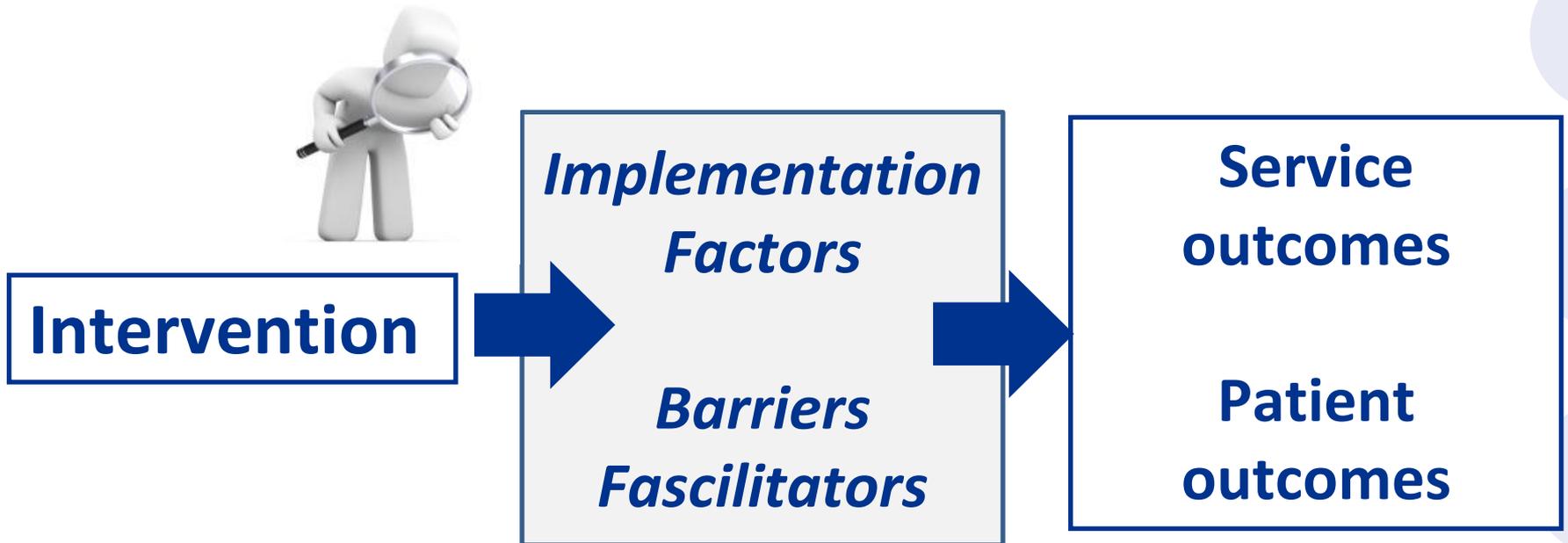


# HOW IT WORKS

- Surgical Safety Checklist
- Improve work processes
- Improve patient outcome



# WHAT INFLUENCE USE?



# Evidence vs. Implementation

FIND THE GAP



BELLE MELLOR 2012  
ADAPTED FROM AN ORIGINAL BY E. MELLOR

# BARRIERS

- Limited implementation approach
- Imposed implementation approach
- Lack of culture for change
- Time wasting
- Repetition
- Resistance and noncompliance
- Design problems (content/structure)

# BARRIERS

- Not applicable to all surgeries
- Unsuitable timing of checks
- Unintended negative effects
- Patient perceptions
- Lack of integration to preexisting processes
- Scepticism regarding the evidence base

# FASCILITATORS

- Planned implementation approach
- Education/training
- Feedback on local data
- Accountability for non-compliance
- Support from hospital management

# FASCILITATORS

- Leadership skills
- Senior clinical buy-in
- Integration with existing processes
- Multidisiplinary involvment
- Modifying the checklist

Treadwell et al. *BMJ Qual Saf* 2014;23:299–318.

Russ et al., *Ann Surg* 2014, 261(1):81-91.; Conley et al. *J Am Coll Surg* 2011;212:873–9.

# ROAD TO SUCCESSFUL IMPLEMENTATION

**I trygge hender** 24  
pasientsikkerhetsprogrammet.no 7

Om oss    Aktuelt    Forbedringskunnskap    Ledelse    Målinger    Resultater

HJEM / OM OSS / ENGLISH / THE NORWEGIAN PATIENT SAFETY PROGRAMME: IN SAFE HANDS



(Photo: Stig Marlon Weston)

## The Norwegian Patient Safety Programme: In Safe Hands

Publisert 12.08.2011 12:21 Oppdatert 09.11.2016 12:43

**In Safe Hands** was originally launched in 2011 as a patient safety campaign by the Norwegian Ministry of Health and Care Services. From 2014, the campaign continued as a five-year programme. The aim of the programme is to reduce patient harm.

# ROAD TO SUCCESSFUL IMPLEMENTATION

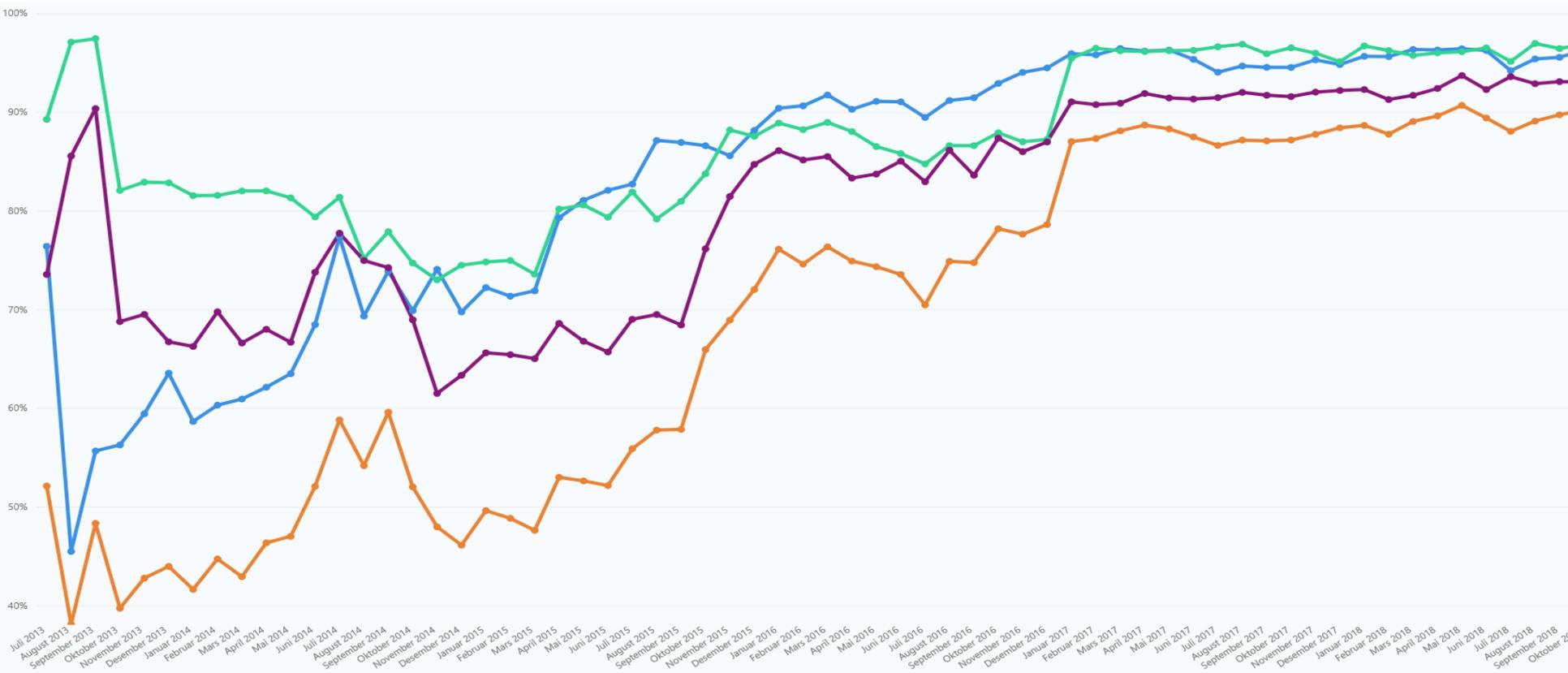
- ✓ Ensure use of all parts
- ✓ Record compliance/fidelity
- ✓ Establish monitoring system (quality indicator)
- ✓ Provide feedback to CEOs, managers, clinical staff
- ✓ Make CEOs and managers accountable

# ROAD TO SUCCESSFUL IMPLEMENTATION

- ✓ Establish multidisciplinary agreement
- ✓ Modify content with care – involve stakeholder
- ✓ Establish standards and writing rules
- ✓ Use clinical audits to ensure fidelity
- ✓ Record and report on care processes  
and clinical outcome

# CHECKLIST COMPLIANCE 2013-2018

(N = 153,602)



- Sign in
- Time out
- Sign out

● Used all three checklists

**“It is not the act of ticking off a checklist  
that reduces complications, but  
performance of the actions it calls for.”**

**Lucian L. Leap**

(March 13, 2014, Editorial in NEJM)

