Washington Patient Safety Coalition & Surgical Public Health:

Surgical Quality in Washington State
(SCOAP- Surgical Care and Outcomes Assessment Program), Surgical Safety, and the Introduction of the WHO/SCOAP Surgical Checklist

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Professor of Surgery, Chief of General Surgery
University of Washington Medical Center (UWMC), Seattle, Washington
WORLD ALLIANCE for PATIENT SAFETY

Safe Surgery Saves Lives
3 Central Problems in Surgical Safety

1. Unrecognized as a public health issue
2. Lack of data on surgery and outcomes
3. Failure to use existing safety know-how
Problem 1: Unrecognized as public health issue

234 million operations are done globally each year

Problem 1: Unrecognized as public health issue (cont.)

Burden of surgical disease is increasing worldwide:
- Cardiovascular disease
- Traumatic injuries
- Cancer
- Longer life expectancies
Problem 1: Unrecognized as public health issue (cont.)

Known surgical complications of 3-16%
Known death rates of 0.4-0.8% = At least 7 million disabling complications – including 1 million deaths – worldwide each year
Problem 2: Lack of Data on Surgery and Outcomes

Improvements in maternal mortality depended on routine surveillance

Such surveillance is lacking for surgical care
Problem 3: Failure to use existing safety know-how

- High rates of preventable surgical site infection result from inconsistent timing of antibiotic prophylaxis
- Anesthetic complications are 100-1000x higher in countries that do not adhere to monitoring standards
- Wrong-patient, wrong-site operations persist despite high publicity of such events
The Safe Surgery Saves Lives

Strategy

1. Promote surgical safety as a public health issue

2. Create a checklist to improve the standards of surgical safety

3. Collect “Surgical Vital Statistics”
WHO’s 10 Objectives for Safe Surgery

1. The team will operate on the correct patient at the correct site.

2. The team will use methods known to prevent harm from anesthetics, while protecting the patient from pain.

3. The team will recognize and effectively prepare for life-threatening loss of airway or respiratory function.
WHO’s 10 Objectives for Safe Surgery

4. The team will recognize and effectively prepare for risk of high blood loss.

5. The team will avoid inducing an allergic or adverse drug reaction for which the patient is known to be at significant risk.

6. The team will consistently use methods known to minimize the risk for surgical site infection.
WHO’s 10 Objectives for Safe Surgery (cont.)

7. The team will prevent inadvertent retention of instruments or sponges in surgical wounds.

8. The team will secure and accurately identify all surgical specimens.

9. The team will effectively communicate and exchange critical information for the safe conduct of the operation.

10. Hospitals and public health systems will establish routine surveillance of surgical capacity, volume and results.
Advantages of Using a Checklist

• Can be **customized** to local setting and needs
• Can be deployed in an **incremental** fashion
• Is supported by scientific evidence and expert consensus
• Has been evaluated in diverse settings around the world
• **Ensures** adherence to established safety practices
• **Minimal resources** required to implement a far-reaching safety intervention
What is this tool that addresses the 10 objectives?

**Surgical Safety Checklist (First Edition)**

<table>
<thead>
<tr>
<th>Sign In</th>
<th>Time Out</th>
<th>Sign Out</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before induction of anaesthesia</strong></td>
<td><strong>Before skin incision</strong></td>
<td><strong>Before patient leaves operating room</strong></td>
</tr>
<tr>
<td><strong>Patient has confirmed</strong></td>
<td><strong>Confirm all team members have introduced themselves by name and role</strong></td>
<td><strong>Nurse verbally confirms with the team:</strong></td>
</tr>
<tr>
<td>• Identity</td>
<td></td>
<td>• The name of the procedure recorded</td>
</tr>
<tr>
<td>• Site</td>
<td></td>
<td>• That instrument, sponge and needle counts are correct (or not applicable)</td>
</tr>
<tr>
<td>• Procedure</td>
<td></td>
<td>• How the specimen is labelled (including patient name)</td>
</tr>
<tr>
<td>• Consent</td>
<td></td>
<td>• Whether there are any equipment problems to be addressed</td>
</tr>
<tr>
<td></td>
<td><strong>Anticipated critical events</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td><strong>Time out</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Surgeon Reviews:</strong> What are the critical or unexpected steps, operative duration, anticipated blood loss?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Anaesthesia team reviews:</strong> Are there any patient-specific concerns?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Nursing team reviews:</strong> Has sterility (including indicator results) been confirmed? Are there equipment issues or any concerns?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Has antibiotic prophylaxis been given within the last 60 minutes?</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Not applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Is essential imaging displayed?</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

**This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.**
What is this tool that addresses the 10 objectives?

THIS CHECKLIST IS NOT INTENDED TO BE COMPREHENSIVE. ADDITIONS AND MODIFICATIONS TO FIT LOCAL PRACTICE ARE ENCOURAGED.
WHO and the Checklist
Safe Surgery Saves Lives

WHO encourages local institutions to modify the list to address local needs.

Anesthesia machine safety checks are reliably done in the U.S. but not in all other places in the world.
<table>
<thead>
<tr>
<th>SIGN IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ PATIENT HAS CONFIRMED</td>
</tr>
<tr>
<td>□ IDENTITY</td>
</tr>
<tr>
<td>□ SITE</td>
</tr>
<tr>
<td>□ PROCEDURE</td>
</tr>
<tr>
<td>□ CONSENT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>★ SITE MARKED/NOT APPLICABLE</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>★ ANAESTHESIA SAFETY CHECK COMPLETED</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>★ PULSE OXIMETER ON PATIENT AND FUNCTIONING</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>DOES PATIENT HAVE A:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>KNOWN ALLERGY?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ NO</td>
</tr>
<tr>
<td>□ YES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIFFICULT AIRWAY/ASPIRATION RISK?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ NO</td>
</tr>
<tr>
<td>□ YES, AND EQUIPMENT/ASSISTANCE AVAILABLE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RISK OF &gt;500ML BLOOD LOSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(7ML/KG IN CHILDREN)?</td>
</tr>
<tr>
<td>□ NO</td>
</tr>
<tr>
<td>□ YES, AND ADEQUATE INTRAVENOUS ACCESS AND FLUIDS PLANNED</td>
</tr>
<tr>
<td>TIME OUT</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>☐ Confirn all team members have introduced themselves by name and role</td>
</tr>
<tr>
<td>☐ Surgeon, anaesthesia professional and nurse verbally confirm</td>
</tr>
</tbody>
</table>
  - Patient
  - Site
  - Procedure |
| ANTICIPATED CRITICAL EVENTS |
| ☐ Surgeon reviews: What are the critical or unexpected steps, operative duration, anticipated blood loss? |
| ☐ Anaesthesia team reviews: Are there any patient-specific concerns? |
| ☐ Nursing team reviews: Has sterility (including indicator results) been confirmed? Are there equipment issues or any concerns? |
| Has antibiotic prophylaxis been given within the last 60 minutes? |
  - Yes
  - Not applicable |
| Is essential imaging displayed? |
  - Yes
  - Not applicable |
## SIGN OUT

NURSE VERBALLY CONFIRMS WITH THE TEAM:

- [ ] THE NAME OF THE PROCEDURE Recorded
- [ ] THAT INSTRUMENT, SPONGE AND NEEDLE COUNTS ARE CORRECT (OR NOT APPLICABLE)
- [ ] HOW THE SPECIMEN IS LABELLED (INCLUDING PATIENT NAME)
- [ ] WHETHER THERE ARE ANY EQUIPMENT PROBLEMS TO BE ADDRESSED

- [ ] SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE REVIEW THE KEY CONCERNS FOR RECOVERY AND MANAGEMENT OF THIS PATIENT
The Checklist was piloted in 8 cities.

- Toronto, Canada
- London, UK
- Amman, Jordan
- Manila, Philippines
- Seattle, USA
- New Delhi, India
- Ifakara, Tanzania
- Auckland, NZ
### Characteristics of Participating Hospitals

<table>
<thead>
<tr>
<th>Site</th>
<th>Location</th>
<th>No. of Beds</th>
<th>No. of Operating Rooms</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prince Hamzah Hospital</td>
<td>Amman, Jordan</td>
<td>500</td>
<td>13</td>
<td>Public, urban</td>
</tr>
<tr>
<td>St. Stephen’s Hospital</td>
<td>New Delhi, India</td>
<td>733</td>
<td>15</td>
<td>Charity, urban</td>
</tr>
<tr>
<td>University of Washington</td>
<td>Seattle, Washington</td>
<td>410</td>
<td>24</td>
<td>Public, urban</td>
</tr>
<tr>
<td>Medical Center</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St. Francis Designated</td>
<td>Ifakara, Tanzania</td>
<td>371</td>
<td>3</td>
<td>District, rural</td>
</tr>
<tr>
<td>District Hospital</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philippine General Hospital</td>
<td>Manila, Philippines</td>
<td>1800</td>
<td>39</td>
<td>Public, urban</td>
</tr>
<tr>
<td>Toronto General Hospital</td>
<td>Toronto, Canada</td>
<td>744</td>
<td>19</td>
<td>Public, urban</td>
</tr>
<tr>
<td>St. Mary’s Hospital*</td>
<td>London, England</td>
<td>541</td>
<td>16</td>
<td>Public, urban</td>
</tr>
<tr>
<td>Auckland City Hospital</td>
<td>Auckland, New Zealand</td>
<td>710</td>
<td>31</td>
<td>Public, urban</td>
</tr>
</tbody>
</table>

* St. Mary’s Hospital has since been renamed St. Mary’s Hospital–Imperial College National Health Service Trust.
Doing the Checklist at University of Washington Medical Center (UWMC)

- We had been discussing briefing and debriefing in the Division of General Surgery
- I saw the checklist as an opportunity to institutionalize briefing and debriefing
- We had added antibiotic administration to the JCAHO-mandated “time out” many years ago
S C O A P
Surgical Care and Outcomes Assessment Program

- Voluntary collaborative of surgeons in Washington state
- Grassroots organization
- Includes 48 rural small hospitals and large urban referral centers.
- SCOAP surgeons define the metrics for quality
S C O A P
Surgical Care and Outcomes Assessment Program

• Currently following colon/rectal, bariatric operations, appendectomy, & vascular operations with a pediatric module in development
• Quarterly feedback on process compliance and outcome
• Hospitals can compare their performance with other SCOAP hospitals
“Safe Surgery Saves Lives” and SCOAP and UWMC Working Together

• Expanded the WHO checklist to include important SCOAP metrics that we were inconsistently applying

• Collected baseline data
“Safe Surgery Saves Lives-SCOAP Checklist”
Implementation at UWMC

First phase

- Safety attitudes questionnaire collected before introduction of the checklist and again after
- Baseline data on use of checklists among all general surgery cases
  - 500+ cases followed with basic data collected
First Step-UWMC Safety Attitudes Questionnaire, Pre - n=53; Post – n=48
Surgeons, Anesthesia professionals, Nurses, surgical techs, faculty and trainees
- “....Is this what you think?”

• I would feel safe being treated here as a patient
• Briefing OR personnel before a surgical procedure is important for patient safety
• I am encouraged by my colleagues to report any safety concerns I may have
UWMC Safety Attitudes Questionnaire - before and after

• In the ORs here, it is difficult to speak up if I perceive a problem with patient care
• The physicians and nurses here work together as a well coordinated team
• Personnel frequently disregard rules or guidelines that are established for the OR
<table>
<thead>
<tr>
<th>Agree or strongly agree</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feel safe as patient here</td>
<td>83%</td>
<td>85%</td>
</tr>
<tr>
<td>Briefing important before op.</td>
<td>91%</td>
<td>94%</td>
</tr>
<tr>
<td>Encouraged to report concerns</td>
<td>79%</td>
<td>90%</td>
</tr>
<tr>
<td>Difficult to speak, perceived prob.</td>
<td>19%</td>
<td>21%</td>
</tr>
<tr>
<td>Good team - docs &amp; nurses</td>
<td>53%</td>
<td>65%</td>
</tr>
<tr>
<td>Freq disregard rules (others?)</td>
<td>19%</td>
<td>15%</td>
</tr>
</tbody>
</table>
UWMC Safety Attitudes Questionnaire - after

- The checklist was easy to use
- The checklist improved O.R. safety
- The checklist took a long time to complete
- If I were having an operation I would want the checklist to be used
- Communication was improved through use of the checklist
- The checklist helped to prevent errors in the O.R.
### UWMC Safety Attitudes Questionnaire - Results

<table>
<thead>
<tr>
<th>Agree or strongly agree</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checklist easy to use</td>
<td>56%</td>
</tr>
<tr>
<td>Checklist improved O.R. safety</td>
<td>60%</td>
</tr>
<tr>
<td>Took a long time to complete</td>
<td>23%</td>
</tr>
<tr>
<td>I would want checklist for me</td>
<td>88%</td>
</tr>
<tr>
<td>Communication was improved</td>
<td>81%</td>
</tr>
<tr>
<td>Checklist helped to prevent errors</td>
<td>67%</td>
</tr>
</tbody>
</table>
Evaluation of a Preoperative Checklist and Team Briefing Among Surgeons, Nurses, and Anesthesiologists to Reduce Failures in Communication

Lorelei Lingard, PhD; Glenn Regehr, PhD; Beverley Orser, MD, PhD; Richard Reznick, MD, MEd; G. Ross Baker, PhD; Diane Doran, RN, PhD; Sherry Espin, RN, PhD; John Bohner, MD; Sarah Whyte, MA

**Objective:** To assess whether structured team briefings improve operating room communication.

**Design, Setting, and Participants:** This 13-month prospective study used a preintervention/postintervention design. All staff and trainees in the division of general surgery at a Canadian academic tertiary care hospital were invited to participate. Participants included 11 general surgeons, 24 surgical trainees, 41 operating room nurses, 28 anesthesiologists, and 24 anesthesia trainees.

**Intervention:** Surgeons, nurses, and anesthesiologists gathered before 302 patient procedures for a short team briefing structured by a checklist.

Outcomes were the number of checklist briefings that demonstrated “utility” (an effect on the knowledge or actions of the team) and participants’ perceptions of the briefing experience.

**Results:** One hundred seventy-two procedures were observed (86 preintervention, 86 postintervention). The mean (SD) number of communication failures per procedure declined from 3.95 (3.20) before the intervention to 1.31 (1.53) after the intervention (P < .001). Thirty-four percent of briefings demonstrated utility, including identification of problems, resolution of critical knowledge gaps, decision-making, and follow-up actions.
Other Centers Experience with Briefings and Checklists
Communication Failures Before and After Team Briefing

Number of procedures with recorded communication failures

Before Briefing
After Briefing

Number of communication failures recorded during the procedure

Lingard. Arch Surg 2008;143:12-17
Risk-Adjusted Morbidity in Teaching Hospitals Correlates with Reported Levels of Communication and Collaboration on Surgical Teams but Not with Scale Measures of Teamwork Climate, Safety Climate, or Working Conditions

Daniel L Davenport, PhD, William G Henderson, PhD, Cecilia L Mosca, MPH, Shukri F Khuri, MD, FACS, Robert M Mentzer Jr, MD, FACS, and the Participants in the Working Conditions of Surgery Residents and Quality of Care Study

BACKGROUND: Since the Institute of Medicine patient safety reports, a number of survey-based measures of organizational climate safety factors (OCSFs) have been developed. The goal of this study was to measure the impact of OCSFs on risk-adjusted surgical morbidity and mortality.

STUDY DESIGN: Surveys were administered to staff on general/vascular surgery services during a year. Surveys included multiitem scales measuring OCSFs. Additionally, perceived levels of communication and collaboration with coworkers were assessed. The National Surgical Quality Improvement Program was used to assess risk-adjusted morbidity and mortality. Correlations between outcomes and OCSFs were calculated and between outcomes and communication/collaboration with attending and resident doctors, nurses, and other providers.

RESULTS: Fifty-two sites participated in the survey: 44 Veterans Affairs and 8 academic medical centers. A total of 6,083 surveys were returned, for a response rate of 52%. The OCSF measures of teamwork climate, safety climate, working conditions, recognition of stress effects, job satisfaction, and burnout demonstrated internal validity but did not correlate with risk-adjusted outcomes. Reported levels of communication/collaboration with attending and resident doctors correlated with risk-adjusted morbidity.

CONCLUSIONS: Survey-based teamwork, safety climate, and working conditions scales are not confirmed to measure organizational factors that influence risk-adjusted surgical outcomes. Reported communication/collaboration with attending and resident doctors on surgical services influenced patient morbidity. This suggests the importance of doctors’ coordination and decision-making roles on surgical teams in providing high-quality and safe care. We propose risk-adjusted morbidity as an effective measure of surgical patient safety. (J Am Coll Surg 2007;205:778–784. © 2007 by the American College of Surgeons)
Communication Quality and Surgical Morbidity

Davenport. JACS 2007;205: 778-784
Impact of Preoperative Briefings on Operating Room Delays

A Preliminary Report

Shantanu Nundy, MD; Arnab Mukherjee, MD; J. Bryan Sexton, PhD; Peter J. Pronovost, MD, PhD; Andrew Knight, MBA; Lisa C. Rowen, RN, DNSc; Mark Duncan, MD; Dora Sylin, MD; Martin A. Makary, MD, MPH

Hypothesis: Preoperative briefings have the potential to reduce operating room (OR) delays through improved teamwork and communication.

Design: Pre-post study.

Setting: Tertiary academic center.

Participants: Surgeons, anesthesiologists, nurses, and other OR personnel.

Intervention: An OR briefings program was implemented after training all OR staff in how to conduct preoperative briefings through in-service training sessions. During the preoperative briefings, the attending sur-

about unexpected delays during each procedure and the relationship between communication breakdowns and delays. Responses were compared before and after the initiation of the preoperative briefings program.

Results: The use of preoperative briefings was associated with a 31% reduction in unexpected delays; 36% of OR personnel reported delays in the preintervention period, and 25% reported delays in the postintervention period ($P<.04$). Among surgeons alone, an 82% reduction in unexpected delays was observed ($P<.001$). A 19% reduction in communication breakdowns leading to delays was also associated with the use of briefings ($P<.006$).
Preoperative Briefing: Effect on O.R. Delays

Number reporting an unexpected delay (n=422)

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Before Briefing</th>
<th>After Briefing</th>
</tr>
</thead>
<tbody>
<tr>
<td>All O.R. Personnel</td>
<td>36%</td>
<td>25%</td>
</tr>
<tr>
<td>Surgeons (86)</td>
<td>38%</td>
<td>7%</td>
</tr>
</tbody>
</table>
What problems does this checklist address?

Effective Teamwork

Communication is a root cause of nearly 70% of the events reported to the Joint Commission from 1995-2005.¹

A preoperative team briefing was associated with enhanced prophylactic antibiotic choice and timing, and appropriate maintenance of intraoperative temperature and glycemia.², ³

Advantages of Using a Checklist

**Customizable** to local setting and needs

**Deployable** in an incremental fashion

**Supported** by scientific evidence and expert consensus

**Evaluated** in diverse settings around the world

**Ensures** adherence to established safety practices

**Minimal resources** required to implement a far-reaching safety intervention
“Safe Surgery Saves Lives-SCOAP Checklist”
Implementation at UWMC

Second Phase

- Checklist introduced in March 2008—all general surgeons to champion
- Posted (2’ x 3’) in all O.R.s
- 500 Additional cases followed with basic data collected
- Safety attitudes re-surveyed
- 10’ training video made (see SCOAP website)
### Surgical Checklist Initiative

#### "A System for Safer Surgery"

**UWMC version**

#### STEP 1: BRIEFING - PRIOR TO SKIN INCISION

- **Team Members Introduce Themselves by Name and Role**
- **Surgeon, Anesthesia Team and Nurse Confirm Patient (at least 2 identifiers), Site, Procedure, Position**

#### Anesthesia Team Reviews:

- **Airway or Other Patient-Specific Concerns (special meds, health conditions affecting recovery, etc)**
- **Does Patient Have an Allergy?** □ No □ Yes

#### Nursing Team Reviews:

- **Equipment issues (i.e., gas tanks full, all instruments ready) or other patient concerns**

#### Surgeon Reviews:

- **Brief Description of Procedure and Anticipated Difficulties**
- **Expected Duration of Procedure**
- **Single Operative Field, □ Multiple Operative Fields**
- **Need for Instruments/Supplies Beyond Those Normally Used for the Procedure**
- **Risk of Blood Loss > 500 ml □ No □ Yes, and Adequate IV Access Established, Blood Available**

## STEP 2: PROCESS CONTROL - PRIOR TO SKIN INCISION

#### Surgeon Confirms:

- **Essential Imaging Displayed** □ N/A
- **Active Warming in Place** □ N/A (Case < 1 Hour) Last Q SOAP: % Missed
- **Glucose Checked for Diabetics**
  - □ Insulin Started for Glucose > 125 □ N/A Last Q SOAP: % Missed
- **Beta Blocker Planned Postop** □ N/A (Not on Preop Beta Blocker) Last Q SOAP: % Missed
- **DVT/PE Prevention Plan in Place** □ N/A Last Q SOAP: % Missed
- **Antibiotic Prophylaxis Given in Last 60 Minutes** □ N/A Last Q SOAP: % Missed
- **Antibiotic Redosing Plan in Place** □ N/A (Case < 3 Hours)
- **Specialty Specific Checklist Needed** □ N/A
- **The Operating Team Has an Agreed Upon Plan to Prevent Sharps Injury □ N/A (No Sharps)**

## STEP 3: DE-BRIEFING - AT COMPLETION OF CASE

#### Surgeon and Nurse Confirm with the Team:

- **Before Closure Are Instrument, Sponge, and Needle Counts Correct**
- **Name of Procedure and If Applicable, How Is the Specimen Labelled (Correct Patient Name)?**
- **Special Instructions for Pathologist (e.g., 12+ lymph nodes for colon ca)? □ N/A (No Specimen)**
- **Equipment Issues to Be Addressed?** □ No □ Yes, and Response Plan (Who/What/When)
- **What Could Have Been Done Better?** □ Nothing □ Something, and Response Plan (Who/What/When)
- **Beta Blocker Planned Postop** □ N/A (Not on Preop Beta Blocker)
- **What Are Key Concerns for Recovery and Management of the Patient?**

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Adapted from the WHO “Safe Surgery Saves Lives” campaign

SCOAP is a program of the Foundation for Healthcare Quality

[www.scoapchecklist.org](http://www.scoapchecklist.org)
Timing of “Time Out”

Checklist procedures were timed by data collector

Results

<table>
<thead>
<tr>
<th>RANGE</th>
<th>MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:58 seconds to 3:58 minutes</td>
<td>2:16 minutes</td>
</tr>
</tbody>
</table>
Feedback: General Surgeons, Nurses, and Anesthesiologists

“Surgeon leadership is key to taking this seriously and making it a meaningful pause that offers safety.” – General surgeon
Feedback: General Surgeons, Nurses, and Anesthesiologists

“One of the most obvious benefits is that everyone is formally introduced and internal plans or concerns are stated explicitly - We have better communication of what we each thinks is going on and I can call them by name which is a sign of respect” – General surgeon
Feedback: General Surgeons, Nurses, and Anesthesiologists

• “At first it seemed somewhat burdensome due to length. It now takes me about one minute to run through the list, which I don't think is anything excessive.” – General surgeon
“All personnel should announce when they leave the room and all new personnel should introduce themselves on entering – it can be hard to keep track of team members at change of shift/breaks, etc.” – General surgeon
Feedback: General Surgeons, Nurses, and Anesthesiologists

“I was probably one of the most negative of the nurses at the start of this project because I thought it was just one more piece of paper to fill out. But now I find it very helpful, especially if the surgeon takes the lead and actively requests the participation of everyone in the room. You know what to expect for the case and if there are last minute changes, those get communicated in a timely fashion.” – Nurse
Feedback: General Surgeons, Nurses, and Anesthesiologists

“I like the WHO checklist. It makes everyone stop for a few minutes & pay more attention before the case. Now doing the regular "time out" that we normally do seems inadequate.” - Nurse
Feedback: General Surgeons, Nurses, and Anesthesiologists

“In my opinion the checklist is efficient and might prevent errors, because it allows team members (surgeons, nurses and anesthesiologists) to review the most pertinent features of the upcoming procedure, e.g.: relevant medical history, allergies, operative and anesthetic plan, antibiotic requirements.” – Anesthesiologist
Safe Surgery Checklist Coalition

Statewide coalition of professional societies and other interested parties organized with the goal to have a checklist in every O.R. for every operation in the state of Washington by the end of 2009.

Sponsors:
WSMA, WSNA, WANA, Wa State Society of Anesthesiologist, AORN, WSHA, Aetna, HCA, Uniform Plan, First Choice, Group Health, NWONE, Premera, King County, Boeing, PSHA
SCOAP Participating Hospitals

Central Washington Hospital
Evergreen Hospital Medical Center
Grays Harbor Community Hospital
Group Health Cooperative/Eastside Hospital
Group Health Cooperative/Seattle
Harborview Medical Center
Holy Family Hospital
Island Hospital
Jefferson Healthcare
Kadlec Medical Center
Kittitas Valley Community Hospital
Legacy Good Samaritan Hospital & Medical Center
Madigan Army Medical Center
Mt. Carmel Hospital
Olympic Medical Center
Overlake Hospital Medical Center
Peace Health St. John Medical Center
Sacred Heart Medical Center
Samaritan Healthcare
Seattle Children’s

Skagit Valley Hospital
Sunnyside Community Hospital
Swedish Health Services
Univ. of Washington Medical Center
Virginia Mason Medical Center
Wenatchee Valley Medical Center
Yakima Valley Memorial Hospital
Morton General Hospital
Ocean Beach Hospital
Valley Medical Center
Highline Medical Center
Mid-Valley Hospital
Allenmore Hospital and Medical Center
Good Samaritan Hospital
Mary Bridge Children’s Hospital
Tacoma General Hospital
Northwest Hospital & Medical Center
Stevens Hospital
United General Hospital
Whidbey General Hospital
Yakima Regional Medical & Cardiac Center
Surgical Checklist Hospitals in WA

Central WA Hospital
Evergreen Healthcare
Enumclaw Regional Hospital
Everett Clinic (ASC)
Good Samaritan Hospital
Grays Harbor Community Hospital
Harborview Medical Center
Island Hospital
Jefferson Healthcare
Kadlec Medical Center
Kittitas Valley Community Hospital
Legacy Good Samaritan Hospital & Medical Center (Portland, OR)
Madigan Army Medical Center
Mid-Valley Hospital
Morton General Hospital
Northwest Hospital & Medical Center
Ocean Beach Hospital
Olympic Medical Center

PeaceHealth St John Medical Center*
Prosser Memorial Hospital
Providence Sacred Heart Medical Center and Children’s Hospital
Providence Regional Medical Center Everett
Samaritan Healthcare
Seattle Children’s
Skagit Valley Hospital*
Sunnyside Community Hospital
Swedish Health Services
Tacoma General Allenmore Hospital
University of WA Medical Center*
Valley Medical Center
Virginia Mason Medical Center
Wenatchee Valley Medical Center
Whidbey General Hospital
Lake Chelan Community Hospital

*IHI Mentor Hospitals
Challenges Ahead

• Institutionalizing the checklist – Every O.R., Every Case
• Supporting the culture change that the checklist suggests
• Getting the “buy-in” of all Surgeons
• Streamlining the checklist to meet the needs of individual hospitals and specialties while preserving the essentials
• Integrating the checklist into the EMR
Surgical Safety Policies in Place at Participating Hospitals before the Study

**Table 3. Surgical Safety Policies in Place at Participating Hospitals before the Study.**

<table>
<thead>
<tr>
<th>Site No.*</th>
<th>Routine Intraoperative Monitoring with Pulse Oximetry</th>
<th>Oral Confirmation of Patient's Identity and Surgical Site in Operating Room</th>
<th>Routine Administration of Prophylactic Antibiotics in Operating Room</th>
<th>Standard Plan for Intravenous Access for Cases of High Blood Loss</th>
<th>Formal Team Briefing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
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<td>No</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>8</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

* Sites 1 through 4 are located in high-income countries; sites 5 through 8 are located in low- or middle-income countries.\(^{16}\)

## Table 4. Characteristics of the Patients and Procedures before and after Checklist Implementation, According to Site.*

<table>
<thead>
<tr>
<th>Site No.</th>
<th>No. of Patients Enrolled</th>
<th>Age Before</th>
<th>Age After</th>
<th>Female Sex Before</th>
<th>Female Sex After</th>
<th>Urgent Case Before</th>
<th>Urgent Case After</th>
<th>Outpatient Procedure Before</th>
<th>Outpatient Procedure After</th>
<th>General Anesthetic Before</th>
<th>General Anesthetic After</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>524</td>
<td>51.9±15.3</td>
<td>51.4±14.7</td>
<td>58.2</td>
<td>62.7</td>
<td>7.4</td>
<td>8.0</td>
<td>31.7</td>
<td>31.8</td>
<td>95.0</td>
<td>95.2</td>
</tr>
<tr>
<td>2</td>
<td>357</td>
<td>53.5±18.4</td>
<td>54.0±18.3</td>
<td>54.1</td>
<td>56.7</td>
<td>18.8</td>
<td>14.5</td>
<td>23.5</td>
<td>20.5</td>
<td>92.7</td>
<td>93.5</td>
</tr>
<tr>
<td>3</td>
<td>497</td>
<td>51.9±21.5</td>
<td>53.0±20.3</td>
<td>44.3</td>
<td>49.8</td>
<td>17.9</td>
<td>22.4</td>
<td>6.4</td>
<td>9.3</td>
<td>91.2</td>
<td>94.0</td>
</tr>
<tr>
<td>4</td>
<td>520</td>
<td>57.0±14.9</td>
<td>56.1±15.0</td>
<td>48.1</td>
<td>49.6</td>
<td>6.9</td>
<td>1.8</td>
<td>14.4</td>
<td>11.0</td>
<td>96.9</td>
<td>97.8</td>
</tr>
<tr>
<td>5</td>
<td>370</td>
<td>34.3±15.0</td>
<td>31.5±14.2</td>
<td>78.3</td>
<td>78.4</td>
<td>46.1</td>
<td>65.4</td>
<td>0.0</td>
<td>0.0</td>
<td>17.0</td>
<td>10.0</td>
</tr>
<tr>
<td>6</td>
<td>496</td>
<td>44.6±15.9</td>
<td>46.0±15.5</td>
<td>45.0</td>
<td>46.6</td>
<td>28.4</td>
<td>22.5</td>
<td>1.4</td>
<td>1.1</td>
<td>61.7</td>
<td>59.9</td>
</tr>
<tr>
<td>7</td>
<td>525</td>
<td>37.4±14.0</td>
<td>39.6±14.9</td>
<td>69.1</td>
<td>68.6</td>
<td>45.7</td>
<td>41.0</td>
<td>0.0</td>
<td>0.0</td>
<td>49.1</td>
<td>55.9</td>
</tr>
<tr>
<td>8</td>
<td>444</td>
<td>41.9±15.8</td>
<td>39.7±16.2</td>
<td>57.0</td>
<td>52.7</td>
<td>13.5</td>
<td>21.9</td>
<td>0.9</td>
<td>0.2</td>
<td>97.5</td>
<td>94.7</td>
</tr>
<tr>
<td>Total</td>
<td>3733</td>
<td>46.8±18.1</td>
<td>46.7±17.9</td>
<td>56.2</td>
<td>57.6</td>
<td>22.3</td>
<td>23.3</td>
<td>9.9</td>
<td>9.4</td>
<td>77.0</td>
<td>77.3</td>
</tr>
</tbody>
</table>

* Plus-minus values are means ±SD. Urgent cases were those in which surgery within 24 hours was deemed necessary by the clinical team. Outpatient procedures were those for which discharge from the hospital occurred on the same day as the operation. P values are shown for the comparison of the total value after checklist implementation with the total value before implementation.

### Table 5. Outcomes before and after Checklist Implementation, According to Site. *

<table>
<thead>
<tr>
<th>Site No.</th>
<th>No. of Patients Enrolled</th>
<th>Surgical-Site Infection</th>
<th>Unplanned Return to the Operating Room</th>
<th>Pneumonia</th>
<th>Death</th>
<th>Any Complication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td>1</td>
<td>524</td>
<td>598</td>
<td>4.0</td>
<td>2.0</td>
<td>4.6</td>
<td>1.8</td>
</tr>
<tr>
<td>2</td>
<td>357</td>
<td>351</td>
<td>2.0</td>
<td>1.7</td>
<td>0.6</td>
<td>1.1</td>
</tr>
<tr>
<td>3</td>
<td>497</td>
<td>486</td>
<td>5.8</td>
<td>4.3</td>
<td>4.6</td>
<td>2.7</td>
</tr>
<tr>
<td>4</td>
<td>520</td>
<td>545</td>
<td>3.1</td>
<td>2.6</td>
<td>2.5</td>
<td>2.2</td>
</tr>
<tr>
<td>5</td>
<td>370</td>
<td>330</td>
<td>20.5</td>
<td>3.6</td>
<td>1.4</td>
<td>1.8</td>
</tr>
<tr>
<td>6</td>
<td>496</td>
<td>476</td>
<td>4.0</td>
<td>4.0</td>
<td>3.0</td>
<td>3.2</td>
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<tr>
<td>7</td>
<td>525</td>
<td>585</td>
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<td>1.3</td>
<td>0.2</td>
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<tr>
<td>8</td>
<td>444</td>
<td>584</td>
<td>4.1</td>
<td>2.4</td>
<td>0.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Total</td>
<td>3733</td>
<td>3955</td>
<td>6.2</td>
<td>3.4</td>
<td>2.4</td>
<td>1.8</td>
</tr>
</tbody>
</table>

P value <0.001 0.047 0.46 0.003 <0.001

* The most common complications occurring during the first 30 days of hospitalization after the operation are listed. Bold type indicates values that were significantly different (at P<0.05) before and after checklist implementation, on the basis of P values calculated by means of the chi-square test or Fisher’s exact test. P values are shown for the comparison of the total value after checklist implementation as compared with the total value before implementation.
## Table 6. Selected Process Measures before and after Checklist Implementation, According to Site

<table>
<thead>
<tr>
<th>Site No.</th>
<th>No. of Patients Enrolled</th>
<th>Objective Airway Evaluation Performed (N=7688)</th>
<th>Pulse Oximeter Used (N=7688)</th>
<th>Two Peripheral or One Central IV Catheter Present at Incision When EBL ≥500 ml (N=953)</th>
<th>Prophylactic Antibiotics Given Appropriately (N=6802)</th>
<th>Oral Confirmation of Patient’s Identity and Operative Site (N=7688)</th>
<th>Sponge Count Completed (N=7572)</th>
<th>All Six Safety Indicators Performed (N=7688)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td>1</td>
<td>524</td>
<td>598</td>
<td>97.0</td>
<td>98.5</td>
<td>100.0</td>
<td>100.0</td>
<td>95.7</td>
<td>83.6</td>
</tr>
<tr>
<td>2</td>
<td>357</td>
<td>351</td>
<td>72.0</td>
<td>75.8</td>
<td>97.5</td>
<td>98.6</td>
<td>78.8</td>
<td>61.3</td>
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<td>486</td>
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<td>66.3</td>
<td>98.6</td>
<td>100.0</td>
<td>83.8</td>
<td>82.5</td>
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<tr>
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<td>545</td>
<td>94.6</td>
<td>95.8</td>
<td>100.0</td>
<td>100.0</td>
<td>66.7</td>
<td>48.6</td>
</tr>
<tr>
<td>5</td>
<td>370</td>
<td>330</td>
<td>6.2</td>
<td>0.0</td>
<td>68.9</td>
<td>91.2</td>
<td>7.6</td>
<td>2.7</td>
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<tr>
<td>6</td>
<td>496</td>
<td>476</td>
<td>46.2</td>
<td>56.3</td>
<td>76.4</td>
<td>83.0</td>
<td>49.2</td>
<td>57.9</td>
</tr>
<tr>
<td>7</td>
<td>525</td>
<td>585</td>
<td>97.5</td>
<td>99.7</td>
<td>99.4</td>
<td>100.0</td>
<td>32.0</td>
<td>100.0</td>
</tr>
<tr>
<td>8</td>
<td>444</td>
<td>584</td>
<td>0.5</td>
<td>94.0</td>
<td>99.3</td>
<td>99.5</td>
<td>68.8</td>
<td>57.1</td>
</tr>
<tr>
<td>Total</td>
<td>3733</td>
<td>3955</td>
<td>64.0</td>
<td>77.2</td>
<td>93.6</td>
<td>96.8</td>
<td>58.1</td>
<td>63.2</td>
</tr>
</tbody>
</table>

* Prophylactic antibiotics were considered to be indicated for all cases in which an incision was made through an uncontaminated field and appropriately administered when given within 60 minutes before an incision was made. Sponge counts were considered to be indicated in all cases in which an incision was made. P values are shown for the comparison of the total values before and after checklist implementation, calculated by means of the chi-square test. EBL denotes estimated blood loss, and IV intravenous.

### References

“The estimate that up to 23,000 people died in 2004 in Canadian hospitals because of preventable adverse events is staggering. Checklists in aviation have been in use pretty well since the Wright brothers.

One wonders whether such checklists would have been introduced much earlier in medicine if surgeons shared the fate of their patients, as pilots share that of their passengers.”

Adrian Boelen, retired pilot, Dorval, Que
More Information

www.who.int/patientsafety/safesurgery/en.index.html
www.safesurg.org

www.scoap.org
www.nbc.com/ER/video/episodes/#vid=1059351

Surgical Checklist Initiative
“A System for Safer Surgery”