Safe Surgery Saves Lives: A National Initiative to Improve Surgical Safety in Canada

Chris W. Hayes
Medical Officer, CPSI
Medical Director, Quality & Patient Safety, St. Michael’s
The 2\textsuperscript{nd} Global Patient Safety Challenge

- 234 million surgeries globally\textsuperscript{1}
- Death 0.4-0.8\%\textsuperscript{2,3}
- Complications 3-16\%\textsuperscript{2,3}
- 1 million deaths
- 7 million disabling complications

1. Weiser, TG. Lancet 2008
2. Gawande, AA. Surgery 1999
Ten Objectives of Safe Surgery Saves Lives

1. Correct patient / correct site
2. Prevent harm from anaesthetics
3. Prepare for airway emergencies
4. Prepare for high blood loss
5. Avoid allergic reactions
6. Minimize surgical site infections
7. Prevent retention of instruments/ sponges
8. Accurately secure and identify specimens
9. Effectively communicate critical information
10. Establish surveillance of capacity/ volume/ results

Reliably do what we think we should be doing

Decrease harm
How to Achieve the Objectives?

Use a Checklist!
Aviation and Checklists
ICU and Checklists

Catheter-related Blood Stream Infection
Care Team Checklist

Purpose: To work as a team to decrease patient harm from catheter-related blood stream infections
When: During all central venous or central arterial line insertions or re-wires
By whom: Bedside nurse

1. Today's date: ___/___/____
   month day year

2. Procedure:
   □ New line □ Rewire

3. Is the procedure:
   □ Elective □ Emergent

4. Before the procedure, did the housestaff:
   Wash hands (chlorhexidine or soap) immediately prior
   Sterilize procedure site
   Drape entire patient in a sterile fashion
   □ Yes □ No □ Don't know

   During the procedure, did the housestaff:
   Use sterile gloves
   Use hat, mask and sterile gown
   Maintain a sterile field
   □ Yes □ No □ Don't know

   Did all personnel assisting with procedure follow
   the above precautions
   □ Yes □ No □ Don't know

   After the procedure:
   Was a sterile dressing applied to the site
   □ Yes □ No □ Don't know

Please return completed form to the designated location in your ICU.
### Table 3. Rates of Catheter-Related Bloodstream Infection from Baseline (before Implementation of the Study Intervention) to 18 Months of Follow-up.

<table>
<thead>
<tr>
<th>Study Period</th>
<th>No. of ICUs</th>
<th>No. of Bloodstream Infections per 1000 Catheter-Days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Overall</td>
</tr>
<tr>
<td>Baseline</td>
<td>55</td>
<td>2.7 (0.6–4.8)</td>
</tr>
<tr>
<td>During implementation</td>
<td>96</td>
<td>1.6 (0.4–4.4)†</td>
</tr>
<tr>
<td>After implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–3 mo</td>
<td>96</td>
<td>0 (0–3.0)‡</td>
</tr>
<tr>
<td>4–6 mo</td>
<td>96</td>
<td>0 (0–2.7)‡</td>
</tr>
<tr>
<td>7–9 mo</td>
<td>95</td>
<td>0 (0–2.1)‡</td>
</tr>
<tr>
<td>10–12 mo</td>
<td>90</td>
<td>0 (0–1.9)‡</td>
</tr>
<tr>
<td>13–15 mo</td>
<td>85</td>
<td>0 (0–1.6)‡</td>
</tr>
<tr>
<td>16–18 mo</td>
<td>70</td>
<td>0 (0–2.4)‡</td>
</tr>
</tbody>
</table>
OR and Checklists

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 Bohnen, MD; Sarah Whyte, MA
Table 2. Number of Communication Failures With and Without at Least 1 Visible Consequence in the Preintervention and Postintervention Phases

<table>
<thead>
<tr>
<th></th>
<th>Preintervention</th>
<th>Postintervention</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failures with no visible consequence</td>
<td>133</td>
<td>38</td>
<td>171</td>
</tr>
<tr>
<td>Failures with at least 1 visible consequence</td>
<td>207</td>
<td>75</td>
<td>282</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>340</strong></td>
<td><strong>113</strong></td>
<td><strong>453</strong></td>
</tr>
</tbody>
</table>
How to Achieve the Objectives?

Let's Use a Checklist!

Let's Use a Tool to Improve Team Communication!
Testing the WHO Checklist

- **PAHO I**
  - Toronto, Canada

- **PAHO II**
  - Seattle, USA

- **EURO**
  - London, UK

- **EMRO**
  - Amman, Jordan

- **WPRO I**
  - Manila, Philippines

- **WPRO II**
  - Auckland, NZ

- **AFRO**
  - Ifakara, Tanzania

- **SEARO**
  - New Delhi, India
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.,
Teodoro Herbosa, M.D., Sudhir Joseph, M.S., Pascience L. Kibatala, M.D.,
Marie Carmela M. Lapitan, M.D., Alan F. Merry, M.B., Ch.B., F.A.N.Z.C.A., F.R.C.A.,
Krishna Moorthy, M.D., F.R.C.S., Richard K. Reznick, M.D., M.Ed., Bryce Taylor, M.D.,
and Atul A. Gawande, M.D., M.P.H., for the Safe Surgery Saves Lives Study Group*
## 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>0.8</td>
<td>12.0</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>11.6</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>13.5</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>7.5</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>21.4</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>10.1</td>
</tr>
<tr>
<td>7</td>
<td>525</td>
<td>585</td>
<td>9.5</td>
<td>5.8</td>
<td>1.3</td>
<td>12.4</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>6.1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>6.2</td>
<td>3.4</td>
<td>2.4</td>
<td>11.0</td>
</tr>
<tr>
<td>P value</td>
<td>&lt;0.001</td>
<td></td>
<td>0.047</td>
<td>0.46</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 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.
So we have evidence…
How do we translate it into practice?
Safe Surgery Saves Lives (SSSL) & CPSI

Canadian SSSL Working Group

MANDATE:
– lead further development, adaptation, and support for the implementation of the SSSL Campaign in Canada

TIMELINE:
– WHO request for endorsements coincided with official launch - June 2008
– CPSI began communication and solicited endorsements
– Canadian Working Group established August 2008
Canadian SSSL Working Group

Membership

• Chair: Chris Hayes
• Special Advisor: Bryce Taylor
• Representatives from the RCPSC, CNA, CMA, CAS, CAGS, ORNAC, Accreditation Canada, SHN
• Early adopters
• Representatives from aviation, human factors and cognitive psychology
• CPSI – Project Support
The working group’s immediate goals were as follows:

• Phase I – August 2008-July 2009
  – Adapt the WHO Safe Surgery Checklist for use in Canada
  – Adapt the WHO Safe Surgery implementation documents
  – Launch an awareness/marketing campaign
  – Develop an online community of practice
  – Develop a mentor list for organizations wanting more support

www.safesurgerysaveslives.ca
Safe Surgery Saves Lives (SSSL)

Welcome to the Canadian Safe Surgery Saves Lives website!

You will find valuable resources to assist not only health care professionals but also managers, students, patients and families striving to improve surgical safety.

Follow the menu on the left or use the search box at the top of the page to access cutting edge information in surgical safety and connect with others.

Safe Surgery Saves Lives Workshop – March 8-9, 2010 - Vancouver, BC

Thanks to our generous sponsors we were able to provide an excellent learning experience to the 150 participants.

- BC Patient Safety and Quality Council
- Western Node of the Safer Healthcare Now Campaign
- Healthcare Insurance Reciprocal of Canada
- Health Canada
- The Canadian Patient Safety Institute

The proceedings of the workshop will be shortly available on the Safe Surgery Saves Lives Community of Practice (Community Documents) and on this website. We would love to hear your feedback or questions regarding the workshop – please e-mail

Patient Safety Resources

Updates

Surgical Safety Champions Network

If you or someone you know is a champion advocating for and/or implementing the Surgical Checklist let us know! As the most valuable power that will move surgical safety forward in Canada, champions should not be hidden. Read More...

WHO Patient Safety Newsletter, March 2010

In this edition: Sir Liam Donaldson and Dr. Atul Gawande talk about the Safe Surgery Saves Lives initiative, plus news about the Trauma Care Checklist – a new project CPSI supports – and Safe Childbirth Checklist. Read More...
• Align with the WHO Checklist
• Include all WHO checklist items
• Reconfigure checklist using human factors principles
• Add elements that are reflective of a Canadian context
• Align efforts between SSI, VTE initiatives
Implementing the surgical checklist in your organization is both exciting and challenging. This quick how-to guide will provide you with an overview of the steps you should consider in preparation for using the checklist in your OR. Other tools that you might find useful are the *Canadian Implementation Guide* and the *Detailed How-to Guide*. Also visit the *Community of Practice* to discuss with and learn from organizations that are already using the checklist. For further information visit [www.safesurgery saveslives.ca](http://www.safesurgery saveslives.ca) or e-mail Ioana at [ipopescu@cpsi-icsp.ca](mailto:ipopescu@cpsi-icsp.ca).

- **Clarify what, why and how**

The first thing you should do as advocate for the checklists to get familiar with what the checklist is, how it works and why it matters to your organization. On our website you will find the four Canadian checklists, a fact sheet, a video and a news release that will help you with this. Engage your colleagues in a dialogue to create awareness of the checklist and the significant impact it can have on patient safety and improved outcomes.

It is important to highlight the flexibility of the checklist and the need to adapt it to your own organization. The best way to make the checklist work is to make it your own by requesting and accepting input as appropriate from surgeons, anaesthetists and staff members who will be using the document.
Detailed Explanation
of the Surgical Safety Checklist Items

May 2009 - Version 1.0

The aim of this document is to provide guidance for implementing the Surgical Safety Checklist. Teams should record their compliance with each step of the checklist in a way that best suits their specific needs, recognizing therefore that this will vary from hospital to hospital.

The Checklist Coordinator can be any member of the surgical team (surgeons, anesthesiologists, nurses, technicians and other OR personnel), although the surgeon whose...
What did we do?

• Coordinated launch of media campaign with release of paper
• Large-scale communication with all stakeholder groups
• Presentation and booth at national conferences
• Visiting speaking events at hospitals/regions
• Monthly virtual grand rounds
• 2 national workshops (Mar 09, Mar 10)
What happened? Media campaign

Dr. Bryce Taylor is Surgeon in Chief at the University Health Network consults a simple checklist before an operation taking place at Toronto General Hospital.
An Initiative with a Voice!
What happened? Media campaign

Safe OR - iPhone/iPod Touch Software by QxMD

Safe OR is adapted from cutting edge research published in the New England Journal of Medicine which suggests that a simple tool can reduce surgical complications, including death.

Available on the iPhone App Store

A must have companion in the OR for:
- Surgeons
- Anaesthetists
- Surgical nurses
- Hospital administrators
- Residents or students spending even 1 day in the OR

Available for the iPhone & iPod Touch through iTunes or via the App Store (search for 'Safe OR').

Press release

What happened?

<table>
<thead>
<tr>
<th>Event</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation kits requested</td>
<td>5000</td>
</tr>
<tr>
<td>English checklists downloaded</td>
<td>3780</td>
</tr>
<tr>
<td>Website hits per month</td>
<td>2500</td>
</tr>
<tr>
<td>Number of website registrants</td>
<td>1596</td>
</tr>
<tr>
<td>French checklists downloaded</td>
<td>320</td>
</tr>
<tr>
<td>National workshop attendees</td>
<td>300</td>
</tr>
<tr>
<td>Checklist action series participants</td>
<td>200</td>
</tr>
<tr>
<td>Presentations at local organizations</td>
<td>27</td>
</tr>
<tr>
<td>National virtual grand rounds</td>
<td>5</td>
</tr>
<tr>
<td>Presentations at national conferences</td>
<td>4</td>
</tr>
</tbody>
</table>
MEMORANDUM TO: See attached invitee list
FROM: Dr. Michael Baker
Executive Lead - Patient Safety
SUBJECT: Mandatory Public Reporting – Surgical Safety Checklist
Surgical Checklist

Half of all adverse events in Canadian hospitals occur during or after surgery, as reported in the Canadian Adverse Events Study released in 2004.

The Safe Surgery Saves Lives (SSSL) initiative was established by the World Alliance for Patient Safety as part of the World Health Organization’s efforts to reduce the number of surgical deaths around the world. One of the initiatives is to use a set of safety checks that could be carried out in any operating room in any country. These safety checks have been combined in the form of a Surgical Safety Checklist to be used at three critical points during surgery: before the patient receives any form of anaesthetic, before the incision is made, and at the end of the operation.

The WHO’s international pilot study, which involved the Toronto General Hospital and seven other hospitals from around the world, found that using the 19-point Surgical Patient Safety Checklist reduced surgical complications and mortality.
What was the impact?

• Conducted nation-wide telephone survey of OR managers
• 76 questions to assess checklist implementation and impact
• Survey conducted between May and August 2010
• 92.1% (383/416) response rate

G. Ross Baker, Ph.D\textsuperscript{1}, and Virginia Flintoft\textsuperscript{1}, BN, MSc.
\textsuperscript{1}Department of Health Policy, Management and Evaluation, University of Toronto
Unpublished results
What was the impact?

<table>
<thead>
<tr>
<th>Province / Territory</th>
<th>Surgical Sites</th>
<th>Survey Responses</th>
<th>Familiar with 3-part</th>
<th>Total with SSC in use</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>59</td>
<td>44</td>
<td>42</td>
<td>23</td>
</tr>
<tr>
<td>Alberta</td>
<td>53</td>
<td>46</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>20</td>
<td>20</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Manitoba</td>
<td>25</td>
<td>23</td>
<td>23</td>
<td>20</td>
</tr>
<tr>
<td>Ontario</td>
<td>119</td>
<td>115</td>
<td>115</td>
<td>113</td>
</tr>
<tr>
<td>Québec</td>
<td>89</td>
<td>85</td>
<td>38</td>
<td>9</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>18</td>
<td>18</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Newfoundland and Labrador</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Northwest Territories</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Nunavut</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Yukon</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>416</td>
<td>383</td>
<td>332</td>
<td>258</td>
</tr>
</tbody>
</table>

†There was a significant difference in the adoption of the SSC across provinces (p<0.0001). For this analysis, the territories and PEI are excluded due to the small number of surgical sites. New Brunswick was the province with the median percent implementation (79%) and was selected as the reference. Alberta and Ontario had significantly higher implementation rates than the median province, and British Columbia, Nova Scotia and...
What was the impact?
What was the impact?

### Most common barriers contributing to the use of the SSC cited by hospital type

<table>
<thead>
<tr>
<th>Barrier/Success Factor</th>
<th>Issue</th>
<th>Example</th>
<th>Teaching</th>
<th>Large</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrier</td>
<td>Resistance</td>
<td>“older physicians are harder to change”</td>
<td>27%</td>
<td>38%</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>Process</td>
<td>“having everyone together before induction”</td>
<td>18%</td>
<td>29%</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>“it takes too long” or “Checklist only takes a few minutes but people assume it takes longer”</td>
<td>16%</td>
<td>20%</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>Buy-in</td>
<td>“challenges working on surgeons getting on board”</td>
<td>21%</td>
<td>4%</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td>Communication, Education, Leadership and Sustainability</td>
<td>&quot;It was not implemented well and no one wanted to do it. No one gave any direction on it or seems to know their role. Surgeons were making fun of it.&quot;</td>
<td>18%</td>
<td>13%</td>
<td>10%</td>
</tr>
</tbody>
</table>

### Indicator Reporting Period Ontario Totals Trend

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Reporting Period</th>
<th>Ontario Totals</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Case Count: -</td>
<td></td>
</tr>
</tbody>
</table>
What was the impact?

- Awareness and use of SSC high in 1st year
  - Is this optimal use?
- Perception of improved communication, teamwork and patient safety
- Still significant barriers to full adoption
Ongoing plan for SSSL

• Continued support for roll-out across Canada
• Continue to stay connected internationally
• Working with Health Quality Councils/provinces to support their agenda
• Work with local QI teams to support implementation/ Adoption
• Sharing successes/tools/stories
• Online Community of Practice
Summary

• Simple tools to improve communication can improve safety
• Large-scale KT efforts can be successful
• Use of media, internet, local leaders and support tools can be effective
• Under the right circumstances change can be driven...quickly....
• ....but sustainable...have to wait and see
Thank you!!

www.safesurgerysaveslives.ca

National SSSL Working Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Name</th>
<th>Name</th>
<th>Name</th>
<th>Name</th>
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</thead>
<tbody>
<tr>
<td>Rob Barrett</td>
<td>Craig Bosenberg</td>
<td>Paul Hendry</td>
<td>Bonnie McLeod</td>
<td>Bryce Taylor</td>
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<td>Paula Beard</td>
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<td>Douglas Bell</td>
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<td>Cecilia Bloxom</td>
<td>Norma Freeman</td>
<td>Anne MacLaurin</td>
<td>Tanis Rolefstad</td>
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