Safe Surgery Saves Lives

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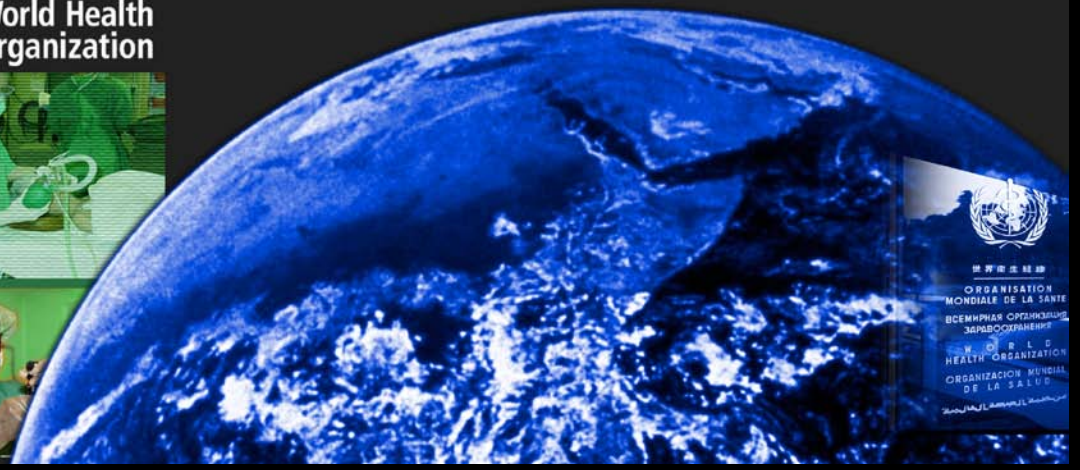
Beirut, Lebanon

April 29th, 2009

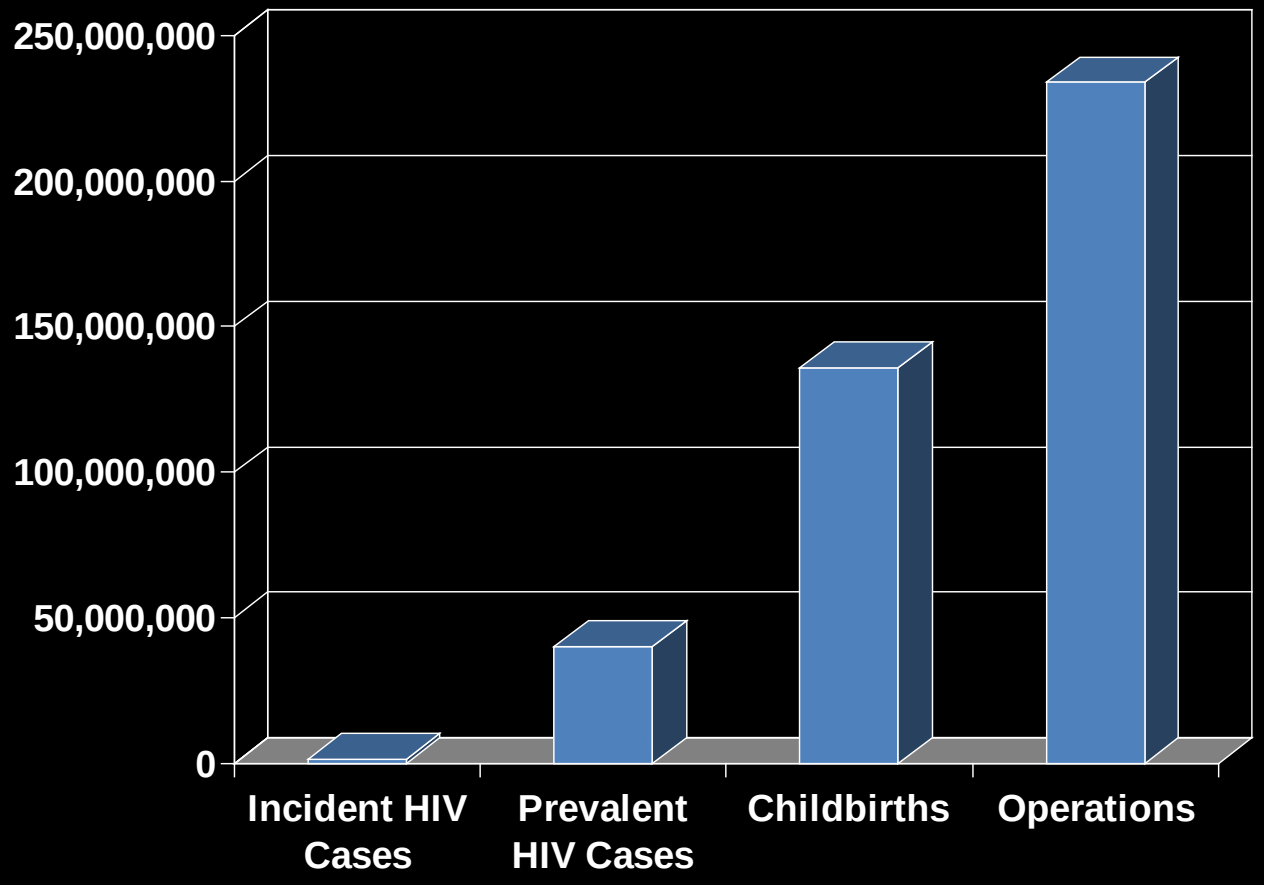
WORLD ALLIANCE *for* PATIENT SAFETY

Safe Surgery Saves Lives



3 Central Problems in Surgical Safety

Problem 1: Unrecognized as public health issue



234 million operations are done globally each year

Source: Weiser, Lancent 2008.

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 knowledge reliably

- 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. Promotion of surgical safety as a public health issue

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

3. Collection of “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 administration of anaesthetics, while protecting the patient from pain.
3. The team will recognize and effectively prepare for life-threatening loss of airway or respiratory function.
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.

WHO's 10 Objectives for Safe Surgery (cont.)

6. The team will consistently use methods known to minimize the risk for surgical site infection.
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.

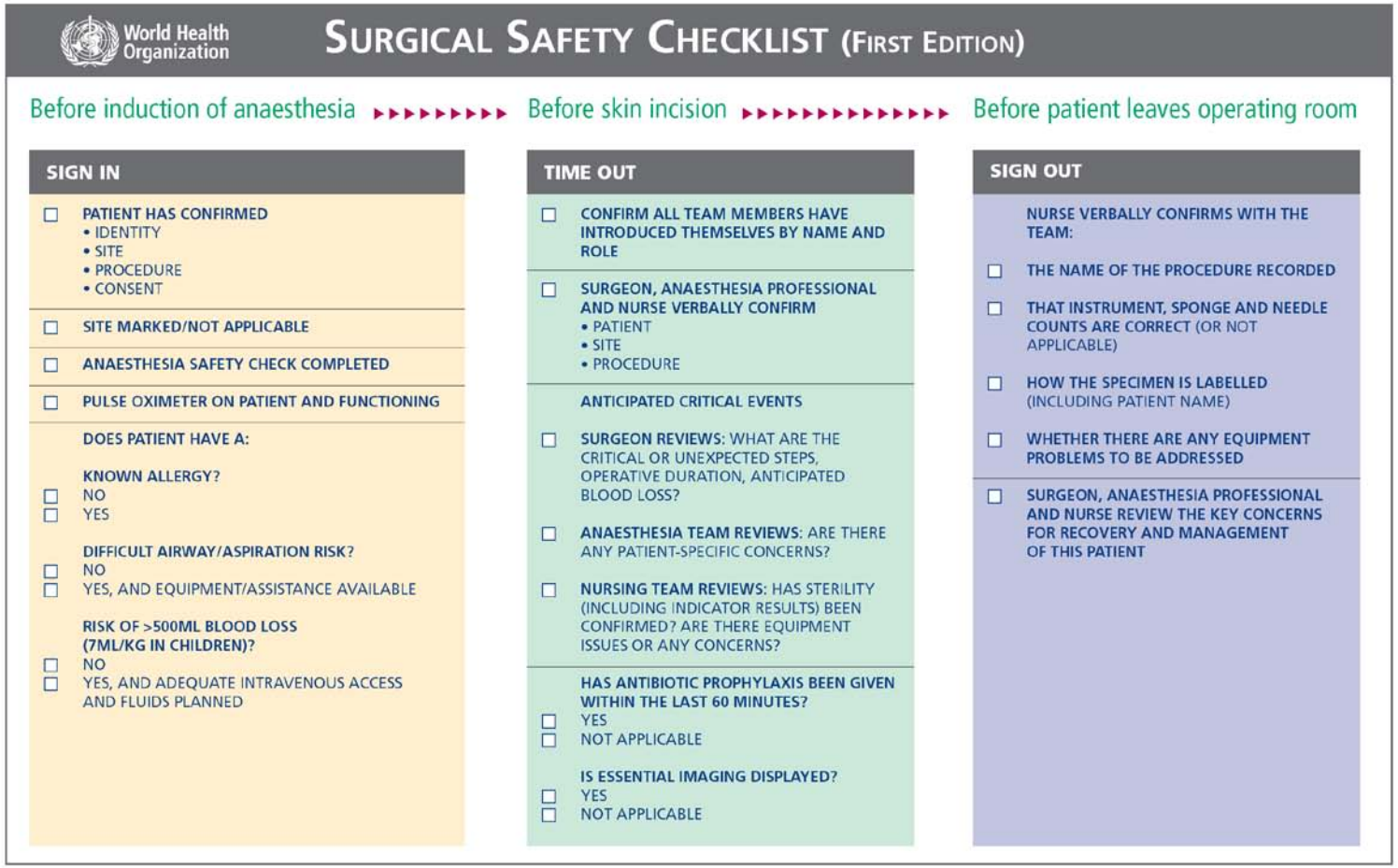
REALITY & RELIABILITY CHECK

- What we do now → *MOST* of the right things, on *MOST* patients, *MOST* of the time

- In other words, we FAIL to do ***ALL*** the right things, on ***ALL*** the patients, ***ALL*** the time

- A well implemented checklist can help us do that.

The Low-Tech Answer: a Checklist



World Health Organization

SURGICAL SAFETY CHECKLIST (FIRST EDITION)

Before induction of anaesthesia ▸▸▸▸▸▸▸▸▸ Before skin incision ▸▸▸▸▸▸▸▸▸▸▸▸▸ Before patient leaves operating room

SIGN IN

☐ PATIENT HAS CONFIRMED
- IDENTITY
- SITE
- PROCEDURE
- 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 EQUIPMENT/ASSISTANCE AVAILABLE

RISK OF >500ML BLOOD LOSS (7ML/KG IN CHILDREN)?
☐ NO
☐ YES, AND ADEQUATE INTRAVENOUS ACCESS AND FLUIDS PLANNED

TIME OUT

☐ CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE

☐ SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM
- 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

THIS CHECKLIST IS NOT INTENDED TO BE COMPREHENSIVE. ADDITIONS AND MODIFICATIONS TO FIT LOCAL PRACTICE ARE ENCOURAGED.

SIGN IN

☐ **PATIENT HAS CONFIRMED**
- IDENTITY
- SITE
- PROCEDURE
- 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 EQUIPMENT/ASSISTANCE AVAILABLE

RISK OF >500ML BLOOD LOSS (7ML/KG IN CHILDREN)?
☐ NO
☐ YES, AND ADEQUATE INTRAVENOUS ACCESS AND FLUIDS PLANNED

TIME OUT

☐ **CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE**

☐ **SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM**
- 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?

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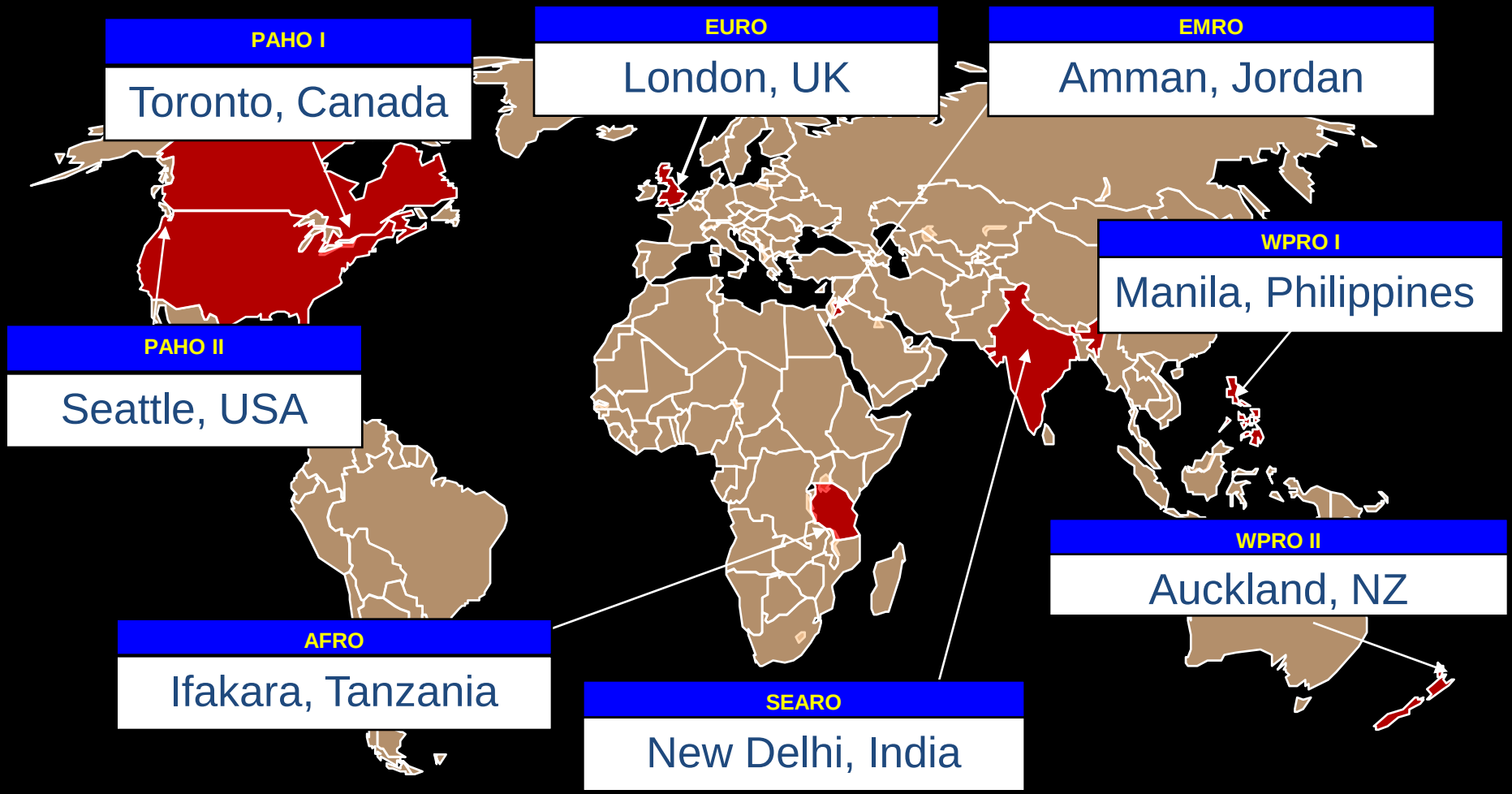
SIGN OUT

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



The NEW ENGLAND JOURNAL of MEDICINE

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., 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*

Results – All Sites

	Baseline	Checklist	P value
Cases	3733	3955	-
Death	1.5%	0.8%	0.003
Any Complication	11.0%	7.0%	<0.001
SSI	6.2%	3.4%	<0.001
Unplanned Reoperation	2.4%	1.8%	0.047

Haynes et al. NEJM 2009

Change in Death and Complications by Income Classification

	Change in Complications	Change in Death
High Income	10.3% -> 7.1%*	0.9% -> 0.6%
Low and Middle Income	11.7% -> 6.8%*	2.1% -> 1.0%*

* $p<0.05$

Haynes et al. NEJM 2009

What problems does this checklist address?

Sign In:

- ☐ **PATIENT HAS CONFIRMED**
  - IDENTITY
  - SITE
  - PROCEDURE
  - CONSENT
- ☐ **SITE MARKED/NOT APPLICABLE**

Time Out:

- ☐ **SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM**
  - PATIENT
  - SITE
  - PROCEDURE

Sign Out:

NURSE VERBALLY CONFIRMS WITH THE TEAM:

- ☐ **THE NAME OF THE PROCEDURE RECORDED**

- Correct patient, operation and operative site
  - There are between 1500 and 2500 wrong site surgery incidents every year in the US.[1]
  - In a survey of 1050 hand surgeons, 21% reported having performed wrong-site surgery at least once in their career.[2]

[1] Seiden, Archives of Surgery, 2006.

[2] Joint Commission, Sentinel Event Statistics, 2006.

What problems does this checklist address? (cont.)

Sign In:

☐	**ANAESTHESIA SAFETY CHECK COMPLETED**
☐	**PULSE OXIMETER ON PATIENT AND FUNCTIONING**
	DOES PATIENT HAVE A:
	DIFFICULT AIRWAY/ASPIRATION RISK?
☐	NO
☐	YES, AND EQUIPMENT/ASSISTANCE AVAILABLE

Time Out:

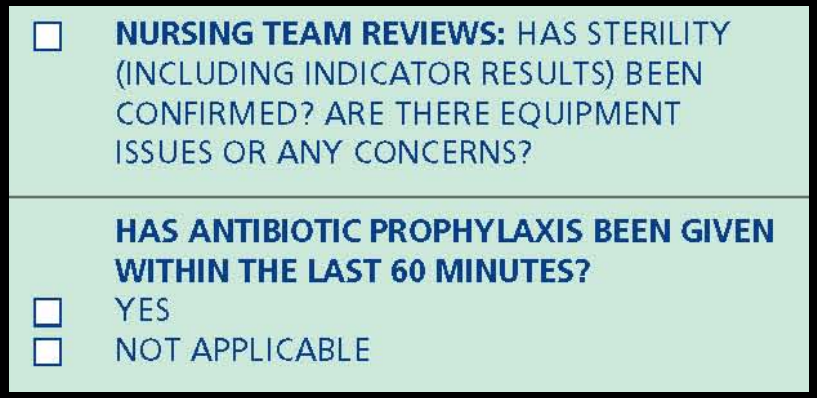
☐	**ANAESTHESIA TEAM REVIEWS**: ARE THERE ANY PATIENT-SPECIFIC CONCERNS?

- Safe Anaesthesia and Resuscitation
  - An analysis of 1256 incidents involving general anaesthesia in Australia showed that pulse oximetry on its own would have detected 82% of them.[1]

[1] Webb, Anaesthesia and Intensive Care, 1993.

What problems does this checklist address? (cont.)

Time Out:



☐ **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

- Minimizing risk of infection
  - Giving antibiotics within one hour before incision can cut the risk of surgical site infection by 50%[1, 2]
  - In the eight evaluation sites, failure to give antibiotics on time occurred in almost one half of surgical patients who would otherwise benefit from timely administration

[1] Bratzler, The American Journal of Surgery, 2005.

[2] Classen, New England Journal of Medicine, 1992.

What problems does this checklist address? (cont.)

Time Out:

☐ CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE

Sign Out:

☐ SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE REVIEW THE KEY CONCERNS FOR RECOVERY AND MANAGEMENT OF THIS PATIENT

- 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]

[1] Joint Commission, Sentinel Event Statistics, 2006.

[2] Makary, Joint Commission Journal on Quality and Patient Safety, 2006.

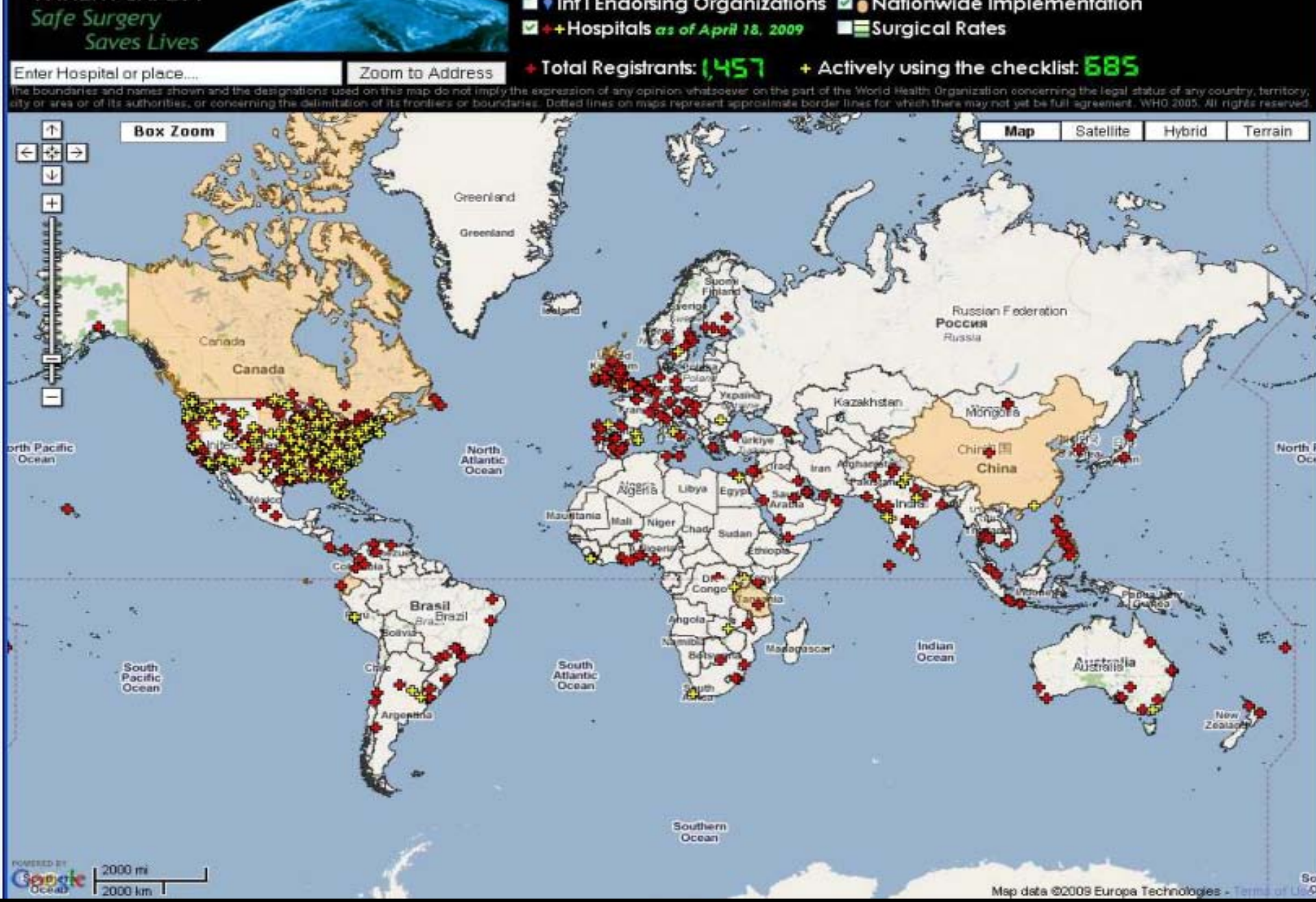
[3] Altpeter, Journal of the American College of Surgeons, 2007.

Data Collection at a National Level (Surgical Vital Statistics)

- Number of surgical procedures performed in the operating theatre per 100,000 population per year
- Number of Operating Theatres per 100,000 population
- Number of surgeons per 100,000 population
- Number of anesthesia professionals per 100,000 population
- Day-of-surgery mortality rate
- Postoperative in-hospital mortality rate

Goals of the Safe Surgery Saves Lives Program

- Enroll 250 hospitals in the program by January 1st, 2009 and 2,500 hospitals by 2010.
- Enroll hospitals in countries representing one fourth of the world's population by 2009 and representing half of the world's population by 2010.
- Collect surgical vital statistics for one country in each WHO region by 2010


Safe Surgery Saves Lives
Int'l Endorsing Organizations
Nationwide Implementation
Hospitals as of April 18, 2009
Surgical Rates
Enter Hospital or place....
Zoom to Address
Total Registrants: 1,457
Actively using the checklist: 685
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. WHO 2005. All rights reserved.
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Argentina
Bolivia
Algeria
Libya
Egypt
Mauritania
Mali
Niger
Chad
Sudan
Ethiopia
Angola
Madagascar
Australia
New Zealand
North Atlantic Ocean
South Pacific Ocean
South Atlantic Ocean
Indian Ocean
Southern Ocean
2000 mi
2000 km
Map data ©2009 Europa Technologies

Low Tech, Easy Math

234 million people are operated on each year, and >1 million of these individuals die from complications

\+ ≈ ½ of these are avoidable with a systematic checklist

500,000 lives on the line each year

Resources & Information Available at:

www.who.int/safesurgery

www.safesurg.org

- Checklist
- Brochure
- FAQ
- How-to videos
- Implementation Manual
- Guidelines

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