



World Health
Organization

Patient Safety

A World Alliance for Safer Health Care

Mrs Robison's case from the patient safety perspective

Dr Edward Kelley
WHO Patient Safety

ESCMID Technical Workshop
Geneva, 27 February 2013

Patients and Problems Worldwide: Misery without borders

- The doctors treat us as if we are plants. They care for us, water us, to help us grow. But in the end, they are like farmers. They care for us for their own purposes. How can it be that they are working for us, but they do not talk to us?
- Woman, 31, Uganda
- When my mother lay dying in the intensive care unit, from an infection she got at her hospital, why was no one telling us what was happening? On the final day of her life, on rounds, the whole clinical team came in and talked only to each other while we sat there looking at them, wanting to understand what was happening.
- Man, 43, USA

Ms Robinson's HAI story...



- Early prosthetic joint infection with MSSA bacteraemia
- Urinary Catheter associated UTI by ESBL-producer *E. Coli*
- *Clostridium difficile* diarrhea
- MRSA CLA-BSI
- Late prosthetic joint infection
- VAP
- *Candida albicans* CLA-BSI

Adverse events/errors related to unsafe medical care

1. Unsafe medications/treatment *
2. Injuries due to medical devices
3. Surgical and anaesthesia errors *
4. Health care-associated infection *
5. Unsafe injections *
6. Unsafe blood products *
7. Pregnant women & newborns *
8. Injuries from patient falls
9. Poor care for elderly *

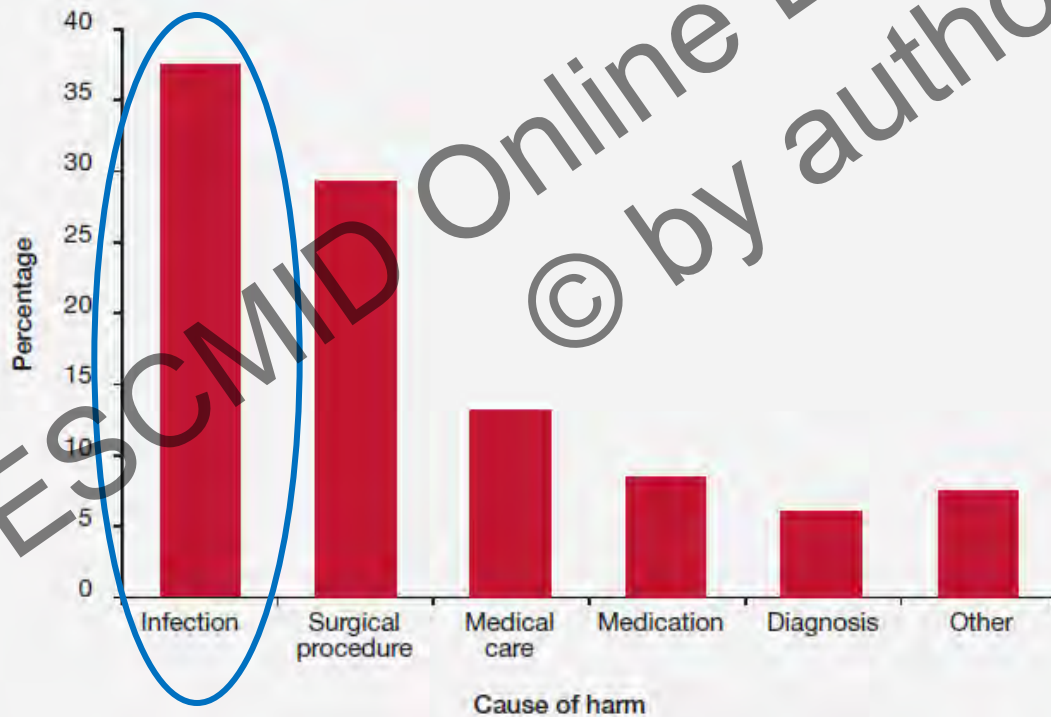
* Areas addressed with WHO interventions (solutions)

Main messages

- Unsafe care and harm to patients is a significant concern everywhere in the world
- Errors happen mainly because of complexity of health systems
- When so many varied types of hc providers are involved its difficult to ensure safe care
- Many adverse events are preventable:
 - 2/3 of the adverse events are preventable
 - 28% due to negligence of HC providers
 - 42% caused by other factors
- In developing countries the probability of adverse events is much higher than in developed countries

IBEAS* study – WHO report

1. Pneumonia
2. Surgical wound infection
3. Pressure ulcers (owing to immobility)
4. Sepsis and septic shock
5. Injury requiring treatment in the intensive care unit
6. Phlebitis
7. Health impacts due to delayed diagnosis or misdiagnosis
8. Lesion of an organ due to a medical intervention or procedure
9. Haemorrhage or haematoma due to a medical intervention or procedure
10. Bacterial infection of the blood due to a device such as a catheter.



Ibero-american study of adverse events (IBEAS)* :
AD incidence 20%

*Argentina, Colombia, Costa Rica, Mexico and Peru.
Aranaz-Andres JM, et al.
BMJ Qual Saf 2011
& *WHO Report*

"No blame model"

"Human beings make mistakes because the systems, tasks and processes they work in are poorly designed."

*Dr Lucian Leape,
testifying to the President's Commission
on Consumer Protection and Quality in Health*

"No blame model": most errors are committed by good, hardworking people trying to do the right thing. Therefore, the traditional focus on identifying who is at fault is a distraction. It is far more productive **to identify error-prone situations and settings and to implement systems that prevent caregivers from committing errors, catch errors before they cause harm, or mitigate harm from errors that do reach patients**

Leape LL. Error in medicine. JAMA 1994;272:1851-7.

Balancing “No Blame” with Accountability in Patient Safety

"Many health care organizations have recognized that a uni-dimensional focus on creating a blame-free culture carries its own safety risks... Therefore the **need to create accountability for failure to follow gold-standard practices** has been identified... **achieve safe and high-quality care for which we will, quite appropriately, be held accountable...**

The balance between...

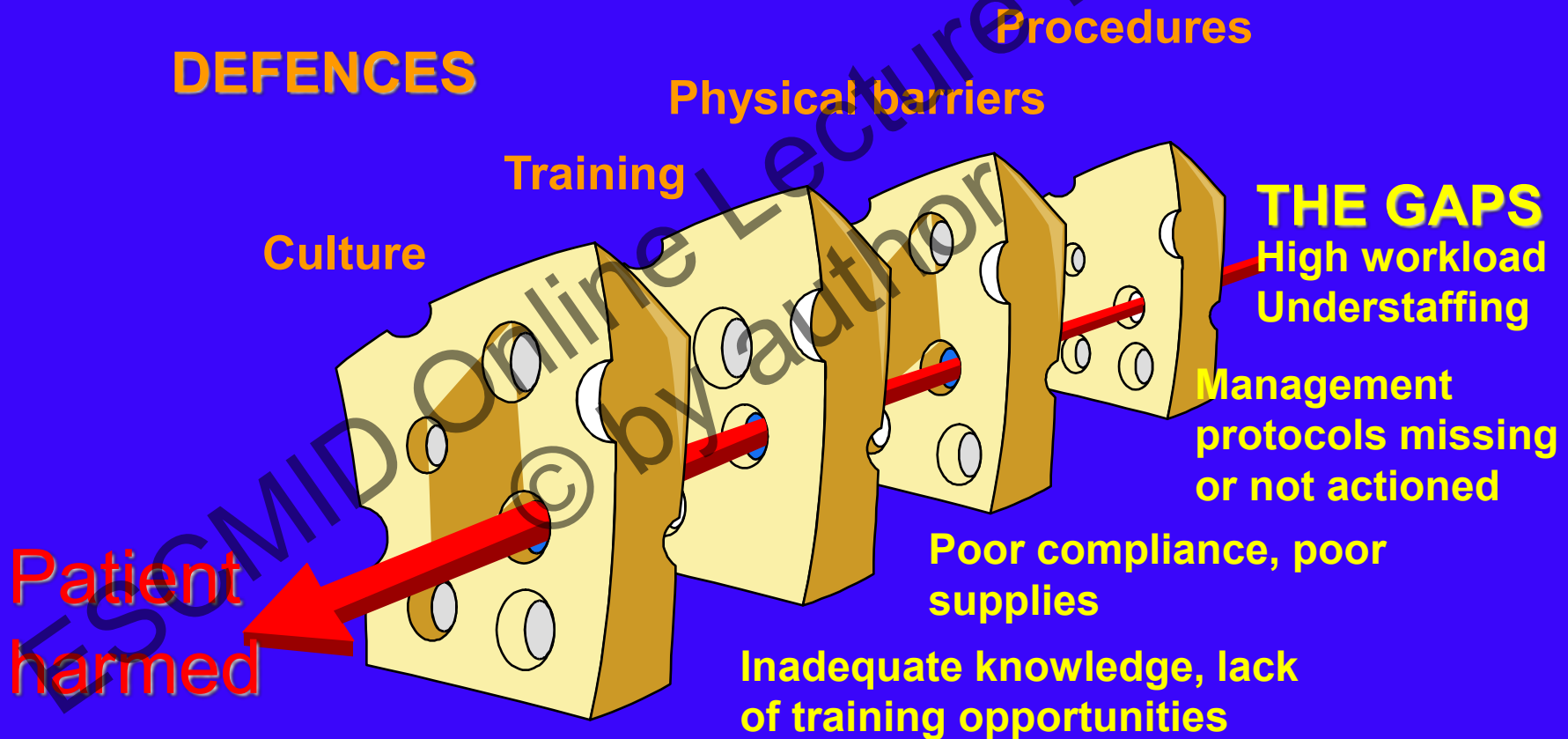
"no blame"



Accountability

Culture

A Systemic Problem that Harms Patients



No clear leadership, no cohesive team structure

Vincent Framework for Risk Analysis

Factors that Influence Clinical Practice

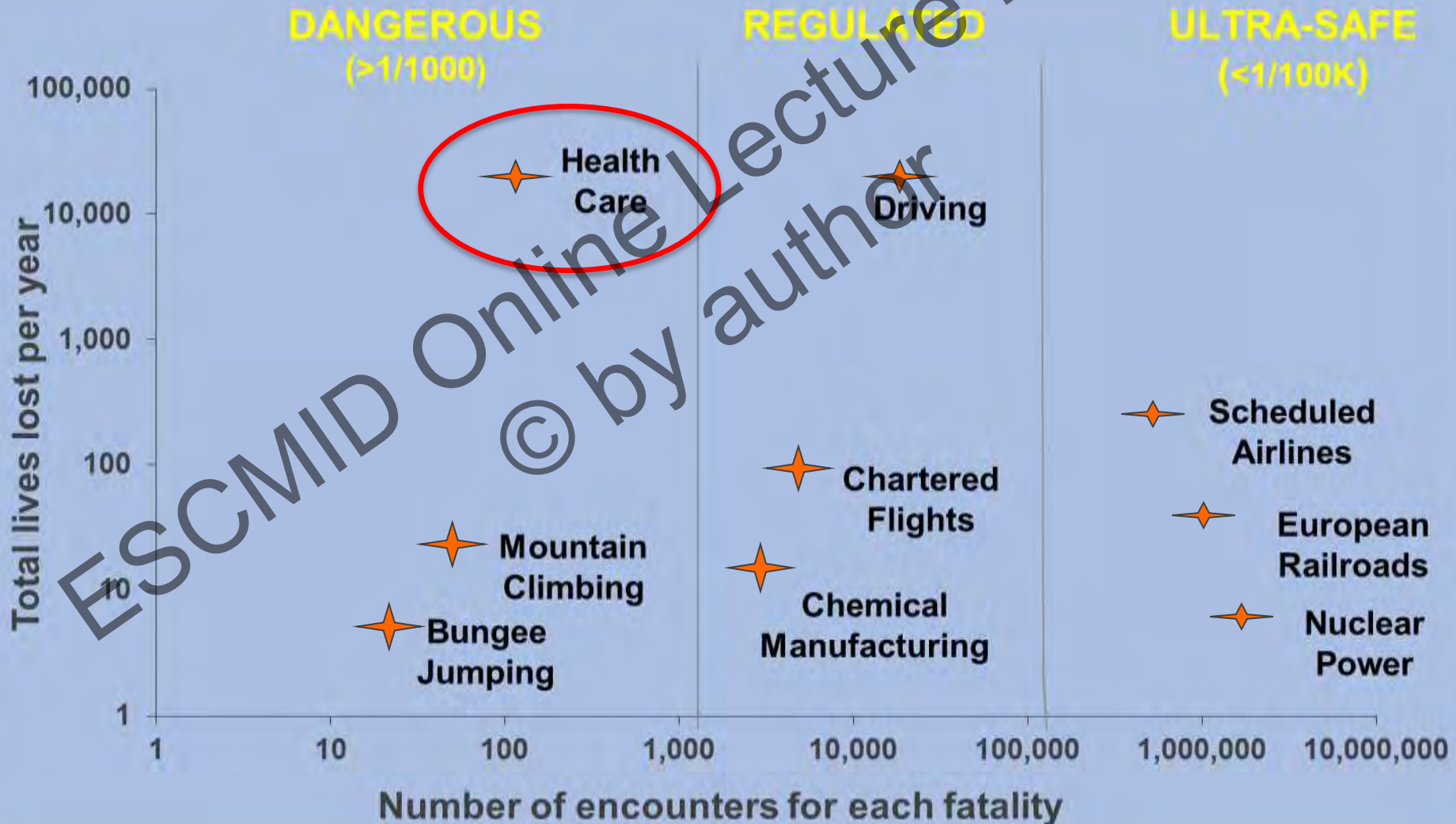
- Institutional context
- Organizational and management factors
- Work environment
- Team factors
- Individual (staff) factors
- Task factors
- Patient characteristics

Team Factors and Their Components

- Verbal communication
- Written communication
- Supervision and seeking help
- Structure of team

Vincent C, BMJ, 1998

Yet, Health Care Continues to Be Hazardous



What is *patient safety culture*?

- Safety culture

A culture that exhibits the following five high-level attributes that health care professionals strive to operationalize through the implementation of strong safety management systems.

(1) *A culture where all workers (including front-line staff, physicians, and administrators) accept responsibility for the safety of themselves, their coworkers, patients, and visitors.*

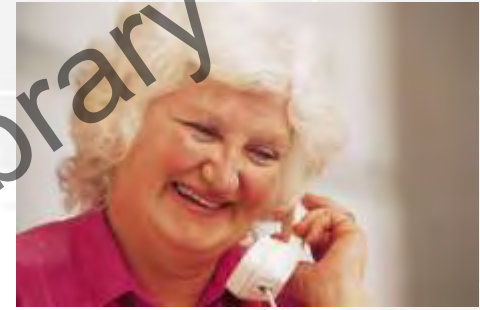
(2) *[A culture that] prioritizes safety above financial and operational goals.*

(3) *[A culture that] encourages and rewards the identification, communication, and resolution of safety issues.*

(4) *[A culture that] provides for organizational learning from accidents.*

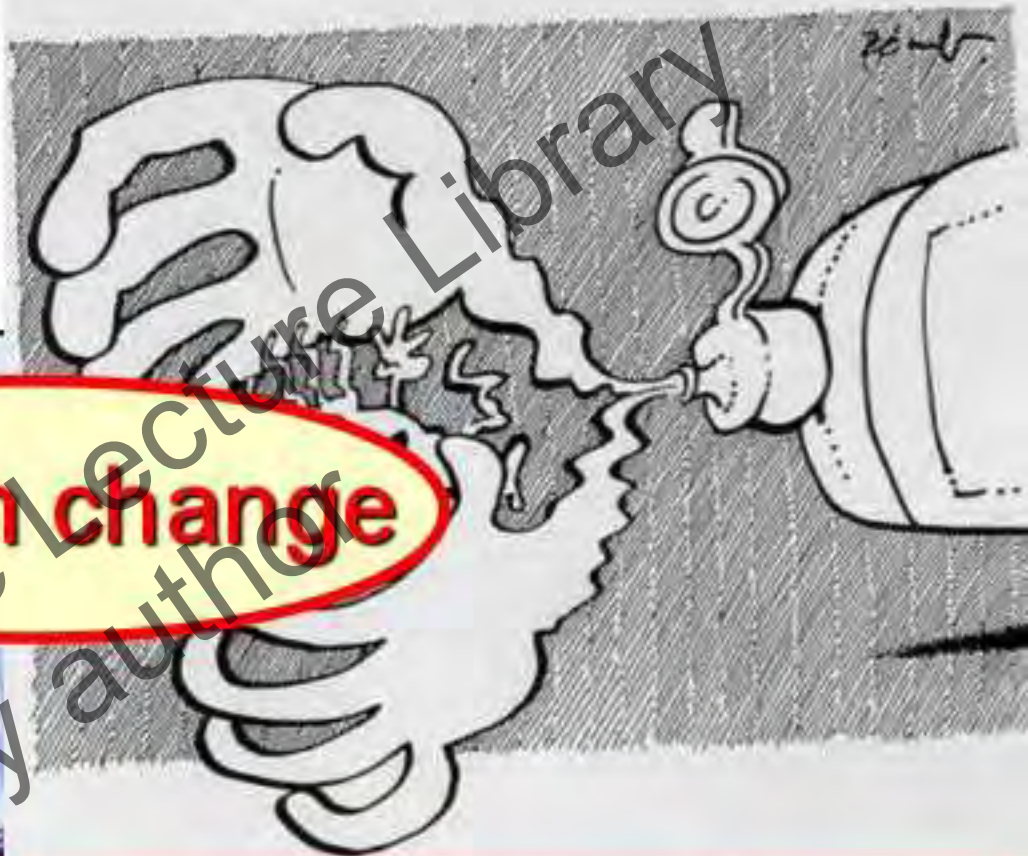
(5) *[A culture that] provides appropriate resources, structure, and accountability to maintain effective safety systems.*

Ms Robinson's story



Which complications of Robinson's story could have been prevented with interventions combining science of safety and infection control measures?

*Handwashing ...
an action of the past
(except when hands are visibly soiled)*



System change

**Alcohol-based
hand rub
is standard of care**

WHO Multimodal Hand Hygiene Improvement Strategy

Based on the evidence and recommendations from the WHO Guidelines on Hand Hygiene in Health Care (2009), made up of **5 core components**, to improve hand hygiene in health-care settings

ONE System change
Alcohol-based handrubs at point of care and access to safe continuous water supply, soap and towels



TWO Training and education
Providing regular training to all health-care workers



THREE Evaluation and feedback
Monitoring hand hygiene practices, infrastructure, perceptions, & knowledge, while providing results feedback to health-care workers



FOUR Reminders in the workplace
Prompting and reminding health-care workers



FIVE Institutional safety climate
Individual active participation, institutional support, patient participation

Strategies for improving patient safety culture in hospitals: a systematic review

BMJ Quality & Safety Online First, published on 31 July 2012

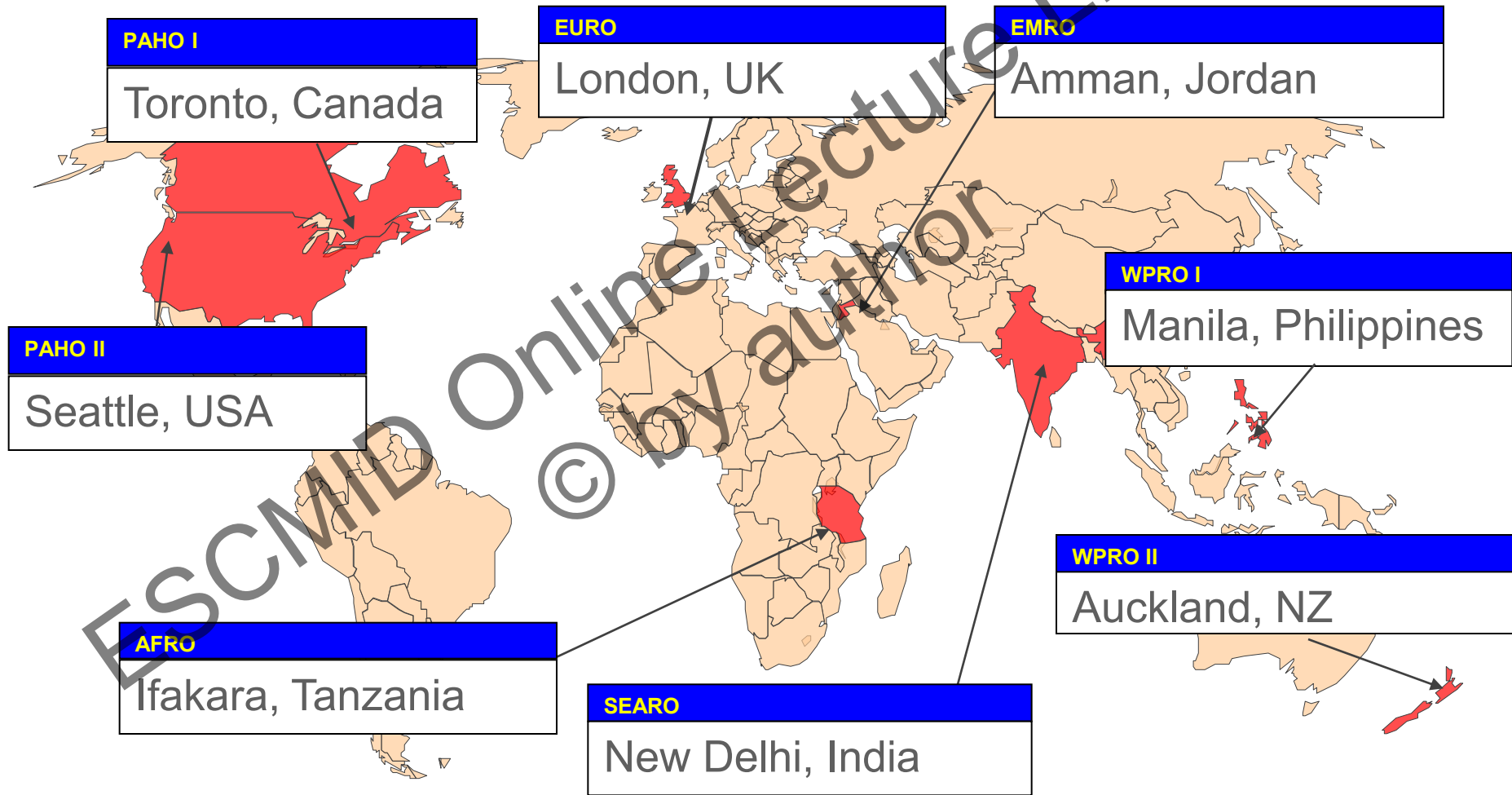
Renata Teresa Morello,¹ Judy A Lowthian,¹ Anna Lucia Barker,¹
Rosemary McGinnes,¹ David Dunt,² Caroline Brand¹

- **Objective:** to critically assess the evidence for the effectiveness of patient safety culture strategies for improving patient safety climate in hospitals
- Jan 1996-Apr 2011
- **Results:**
- 21 studies (1 RTC, 7 controlled bef/aft, 13 historically contr)
- Limited evidence to support the effectiveness of a variety of in-hospital patient safety culture strategies (assessed using patient safety climate scores)
- **Stronger evidence: leadership walk rounds and multi-faceted unit-based strategies**



<http://www.who.int/patientsafety/safesurgery/en/index.html>

The Checklist was piloted in 8 cities.



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

*Significant death rate reduction only in low/middle-income countries (p=0.006)

**Significant complication rate reduction in both high-income and low/middle-income countries

Haynes et al. New England Journal of Medicine 2009; 360:491-9.

N Engl J Med 2010;363:1928-37.

Effect of a Comprehensive Surgical Safety System on Patient Outcomes

- Implementation of the Surgical Patient Safety System (SURPASS) checklist in 6 hospitals in the Netherlands
- Randomized controlled study with 9-month follow-up
- 3760 and 3820 patients observed before and after implementation
- Complications reduction from **27.3%** (95% CI, 25.9-28.7) to **16.7** (95% CI, 15.6-17.9), for an absolute risk reduction of 10.6 (95% CI, 8.7-12.4)
- **SSI reduction** in intervention hospitals **from 3.8% to 2.7% (p=.006)** (vs no change in control hospitals)

Practical challenges of introducing WHO surgical checklist: UK pilot experience

Box 2 | Factors for successful implementation

- Provide training and learning materials
- Organisational leadership—senior clinicians and managers should be seen to be enthusiastically backing the checklist. Make the checklist a clinical governance goal
- Cultivate local champions
- Clarify the role of each professional group—Decide who should initiate the checklist but maintain shared professional responsibility for completion
- Regular audits—Provide feedback to theatre teams on compliance with the checklist
- Encourage and support local measurement of effectiveness
- Support essential local adaptations but discourage oversimplification and modification for the sake of it

Changes in safety attitudes following the checklist implementation

Before/after survey

Modified Safety Attitudes Questionnaire

7 sites

Table 3 Clinician opinion of the checklist (N=257)

Opinion	Agree		Disagree, neutral or no answer	
	n	%	n	%
The checklist was easy to use	206	80.2	51	19.8
The checklist took a long time to complete	51	19.8	206	80.2
The checklist improved operating room safety	206	80.2	51	19.8
Communication was improved through use of the checklist	218	84.8	39	15.2
The checklist helped prevent errors in the operating room	202	78.6	55	21.4
If I were having an operation, I would want the checklist to be used	240	93.4	17	6.6

Degree of improvement of mean SAQ score correlated with a reduction in postoperative complication rates ((R=0.7143, p=0.0381)

Patient safety culture approach: the Comprehensive Unit-based Safety Programme

CUSP

1. Educate staff on science of safety
2. Identify defects
3. Assign executive to adopt unit
4. Learn from one defect per quarter
5. Implement teamwork tools

Translating Evidence Into Practice (TRiP)

1. Summarize the evidence in a checklist.
 - Wash your hand, clean skin with chlorhexadine, avoid femoral site, use barrier precautions, ask daily if you need the catheter
2. Identify local barriers to implementation
3. Measure performance
4. Ensure all patients get the evidence
 - Engage
 - Educate
 - Execute
 - Evaluate

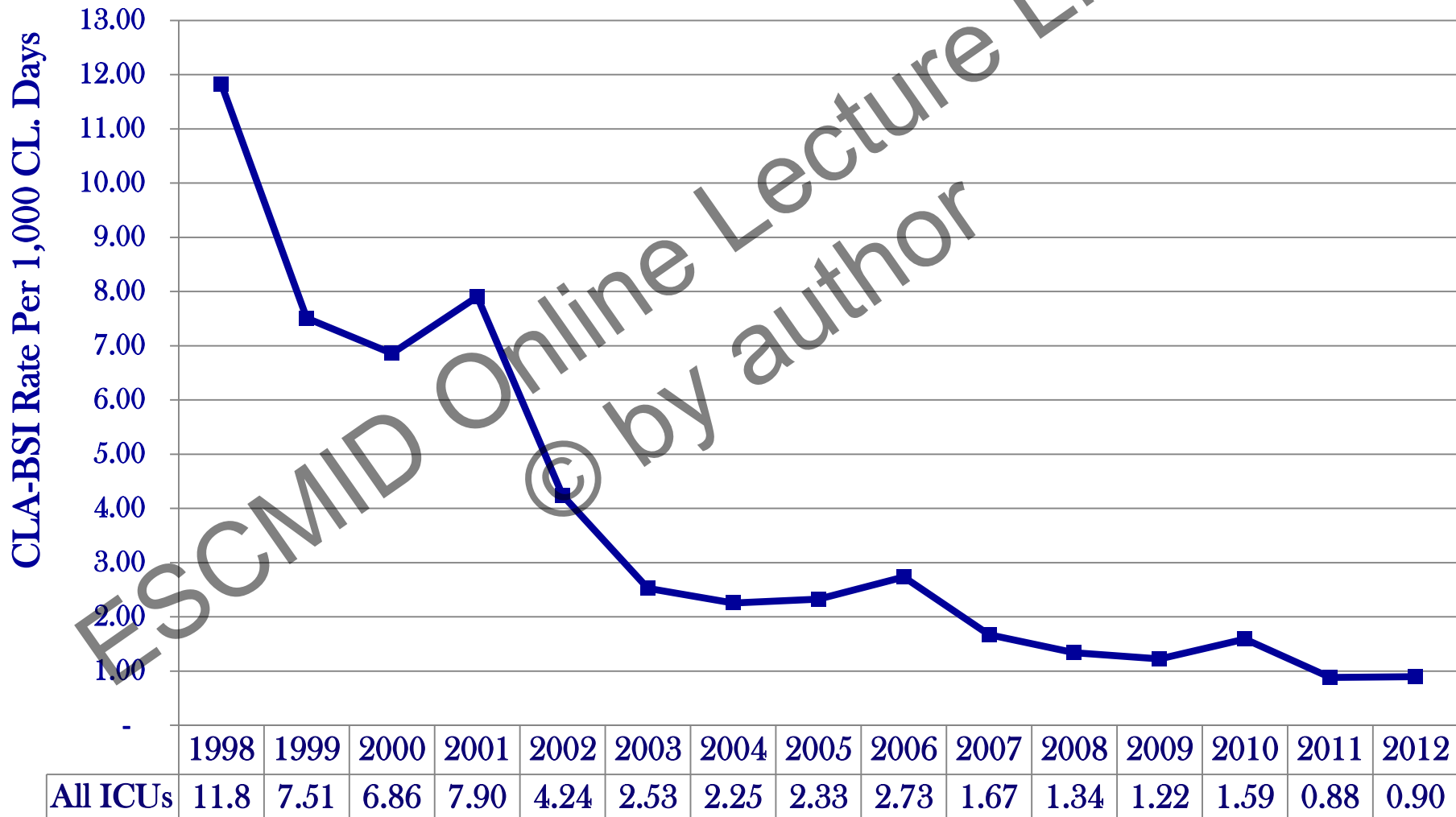
The CUSP approach applied to CLA-BSI prevention

5 evidence-based recommendations to reduce CLA-BSI (CDC):

1. hand hygiene
2. using full barrier precautions
3. cleaning the skin with chlorhexidine
4. avoiding the femoral site when possible
5. removing unnecessary catheters

- Clinicians education
- CL cart
- Checklist for adherence to measures
- Professionals stopped if not adhering
- CL removal discussed in daily rounds
- Feedback on CLA-BSI

CLA-BSI Rate for All ICUs at John Hopkins: 1998 - Q2 2012



Courtesy: P. Pronov

CLA-BSI Rate for Michigan ICUs 2004-2012



Courtesy: P. Pronovost (NEJM 2006, BMJ 2010)

Application of CUSP to SSI prevention

Table 1. Comprehensive Unit-Based Safety Program for Surgery Applied to Surgical Site Infection Prevention

Component	Method
1. Science of safety education	Introductory talk to explain the approach to addressing safety at a local level
2. Staff safety assessment	Two question survey to team members asking: How will and SSI develop in the next patient? What can we do to prevent an SSI?
3. Senior executive partnership	Senior executive attends CUSP meetings, making resources available to address safety concerns and assist with system-wide barriers
4. Learning from defects	Teams are trained to use a structured tool to learn from defects
5. Implement teamwork and communication tools	Review unit-level safety data (eg, SSI) monthly and develop local quality improvement initiatives to improve teamwork, communication and address identified hazards

CUSP, Comprehensive Unit-Based Safety Program; SSI, surgical site infection.

Wick EC, et al. J Am Coll Surg 2012

Identify Defects

2 Question Staff Safety Assessment:

1. How is the next patient likely to be harmed on our unit?
2. What do you think we could do to prevent that harm?

Review error reports, liability claims, sentinel events or M and M conference

<https://armstrongresearch.hopkinsmedicine.org/susp.aspx>

Learning from Defects

Select a specific defect and use tools to explore:

- What happened?
- Why did it happen? (Use system lenses from science of safety.)
- What could you do to reduce risk ?
- How do you know risk was reduced ?

Create early wins for the project

Berenholtz, et al. 2009

Pronovost, et al. 2006

Implement Teamwork Tools

- Briefing and Debriefings
- Specific TeamSTEPPS® Teamwork Tools
- Morning Briefing / Huddle
- Handoff Tools
- Barrier Identification and Mitigation (BIM) Tool
- Learning from Defects
- Shadowing
- Safety Culture Debriefing

<https://armstrongresearch.hopkinsmedicine.org/susp.aspx>

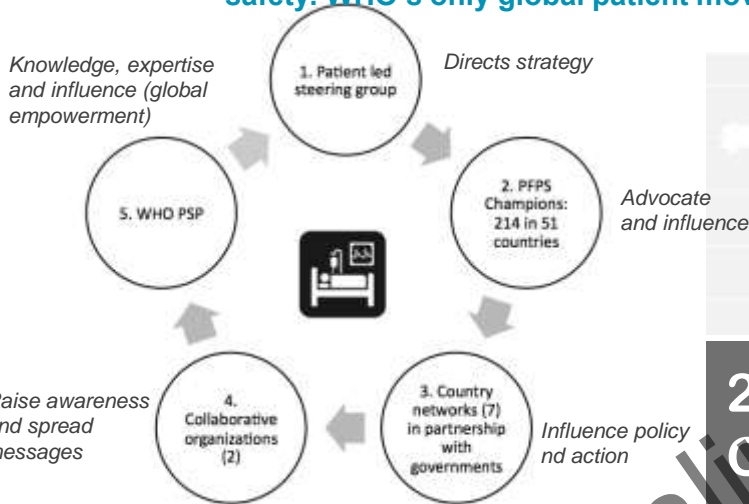
Preliminary results – pilot study

- **Intervention:** CUSP + standardization of skin preparation; administration of preoperative chlorhexidine showers; selective elimination of mechanical bowel preparation; warming of patients in the preanesthesia area; adoption of enhanced sterile techniques for skin and fascial closure; addressing previously unrecognized lapses in antibiotic prophylaxis.
- Before/after study in colorectal surgery
- **Results:** mean SSI rate decrease (from 27.3% to 18.2%), 33.3% decrease (95% CI, 9–58%; $p=0.05$)

Wick EC, et al. J Am Coll Surg 2012

Patients for Patient Safety (PFPS)

Patients, families, advocates, healthcare workers and policy makers, in partnership to improve healthcare safety. WHO's only global patient movement; a unique approach within WHO to engage 'end users'



WHO Regional Workshops
 PAHO – 2006
 EMRO, EURO, SEARO – 2007/08
 AFRO - 2011
 WPRO – 2013 in partnership

Projects in collaboration and partnership



The impact:

Tools - by patients for patients

Mother and baby 7 day MChec Tool



Patient held tool to help increase safety of mother and baby in first 7 days after childbirth

Patients influencing policy & practice – stories that make a difference

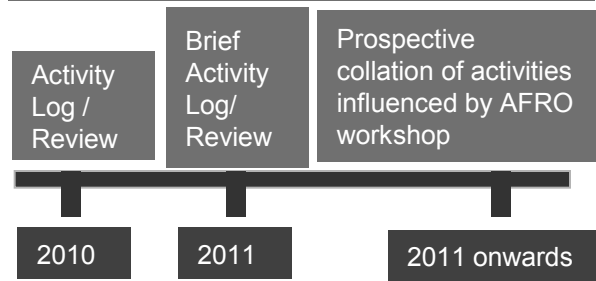


Raising awareness of patients rights; developed patient charter, endorsed by MoH and displayed in facilities nationwide



Changing culture; influencing medical students through the experience of losing her son due to a series of errors.

Evaluating - now and in the future



Impact of & need for patient tools, case studies through new ISQua portal, pt presence at conferences, research & evaluation

WHO's role: Lead scientifically

Surgical Safety Checklist

World Health Organization Patient Safety

Before induction of anesthesia

Before skin incision

Before patient leaves operating room

For the patient's (and family's) safety, the patient's lead surgeon should:

- ✓ Yes
- ✓ No
- ✓ No response

For the anesthesiologist's safety and well-being, the anesthesiologist should:

- ✓ Yes
- ✓ No
- ✓ No response

For the patient's safety for the planned full procedure:

- ✓ Yes
- ✓ No
- ✓ No response

After the patient leaves OR:

- ✓ Yes
- ✓ No
- ✓ No response

For the patient's safety, the surgeon should:

- ✓ Yes
- ✓ No
- ✓ No response

For the patient's safety, the anesthesiologist should:

- ✓ Yes
- ✓ No
- ✓ No response

For the patient's safety, the nurse should:

- ✓ Yes
- ✓ No
- ✓ No response

Effect of a Comprehensive Surgical Safety System on Patient Outcomes

World Health Organization Patient Safety

Background: Surgical safety checklists have been shown to reduce the number of errors in the operating room. However, the impact of these checklists on patient outcomes remains unclear.

Objective: To evaluate the effect of a comprehensive surgical safety system on patient outcomes.

Design: A prospective, randomized controlled trial.

Setting: A tertiary care hospital.

Participants: 1000 patients undergoing elective surgery.

Interventions: The intervention group received a comprehensive surgical safety system, including a checklist, a standardized communication protocol, and a dedicated safety officer.

Main Results: The intervention group had significantly fewer errors (15.2% vs 22.1%, p < 0.001) and fewer complications (12.3% vs 18.5%, p < 0.001) compared to the control group. There was no significant difference in mortality (1.2% vs 1.5%, p = 0.12) or length of stay (5.2 vs 5.5 days, p = 0.08).

Conclusion: A comprehensive surgical safety system significantly reduces the number of errors and complications in the operating room, but does not significantly affect mortality or length of stay.

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A Model Alliance for Safer Health Care

DRAFT DOCUMENT


Safe Childbirth Checklist Collaborative



World Health Organization Patient Safety

WHO Guidelines on Hand Hygiene in Health Care

First Global Patient Safety Challenge: Clean Care is Safer Care



Burden of antimicrobial-resistant infections in developing countries: a systematic review and meta-analysis

World Health Organization Patient Safety

Background: Antimicrobial resistance (AMR) is a major public health threat. The burden of AMR in developing countries is poorly understood.

Objective: To estimate the burden of AMR in developing countries.

Design: A systematic review and meta-analysis of peer-reviewed literature.

Setting: Developing countries.

Participants: 100 studies.

Interventions: None.

Main Results: The burden of AMR in developing countries is high, with an estimated 1.2 million deaths annually. The most common AMR pathogens are Gram-negative bacteria, followed by Gram-positive bacteria and antifolate drugs.

Conclusion: The burden of AMR in developing countries is high and increasing. Urgent action is needed to reduce the burden of AMR.

World Health Organization Patient Safety

Improving Quality of Care for Maternal and Newborn Health: Prospective Pilot Study of the WHO Safe Childbirth Checklist Program

Jonathan M. Specter^{1,2}, Priya Agrawal^{1,2}, Shalee Kulkarni^{1,2}, Stuart Lipsitz^{1,2}, Angela Lashofer^{1,2}, Gerald Dzidic^{1,2}, Rajiv Saha^{1,2}, Mario Morisani^{1,2}, Matthews Nathai^{1,2}, Claire Lerner^{1,2}, Atul Gawande^{1,2}

Global Priorities for Patient Safety Research

World Health Organization Patient Safety

Background: Patient safety is a global priority. However, there is a lack of research on patient safety in low- and middle-income countries.

Objective: To identify global priorities for patient safety research.

Design: A Delphi study.

Setting: Global.

Participants: 100 experts.

Interventions: None.

Main Results: The top priorities for patient safety research are: (1) Improving the quality of care for maternal and newborn health, (2) Reducing the burden of antimicrobial-resistant infections, and (3) Improving the safety of surgical care.

Conclusion: Patient safety is a global priority. Research on patient safety in low- and middle-income countries is needed.

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WHO's Role: Building future quality and safety leaders

The problem:

No training and education for health workers before they join the workforce

The solution:

WHO Patient Safety Multiprofessional Curriculum Guide

- Developed in partnership with international associations of nursing, midwifery, pharmacy, dentistry, medical and medical students



Conclusions – Importance of:

- Targeting practice change through PS climate - key effective strategy for improving patient outcomes
- Leadership in creating the PS culture
- Individual involvement and accountability
- Collective processes of critical reflection and discussion
- Team work and communications
- Monitoring and feedback
- Patients' voices and contribution
- Understanding how programs work – helps transferability