Improving the Patient Safety Culture as a Successful Component of Infection Control Strategies

Dr. Benedetta Allegranzi, WHO Patient Safety
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Outline

- Key definitions and concepts of patient safety?
- What does patient safety culture mean?
- Balancing “No Blame” with Accountability in Patient Safety
- WHO’s role in patient safety culture
- Patient Safety Culture in Hand Hygiene Improvement
- Changes in outcomes and safety attitudes due to the Safe Surgery Checklist
- The CUSP approach applied to CLA-BSI and SSI reduction measures

Definitions (1)

- Error
  The failure of a planned action to be completed as intended or use of a wrong inappropriate, or incorrect plan to achieve an aim.
- Adverse event
  An injury that was caused by medical management or complication instead of the underlying disease and that resulted in prolonged hospitalization or disability at the time of discharge from medical care, or both

Definitions (2)

- Near miss
  An event that almost happened or an event that did happen but no one knows about. If the person involved in the near miss does not come forward, no one may ever know it occurred.
- Patient safety
  The avoidance, prevention, and amelioration of adverse outcomes or injuries stemming from the processes of health care.
  These events include “errors,” “deviations,” and “accidents.” Safety emerges from the interaction of the components of the system; it does not reside in a person, device, or department. Improving safety depends on learning how safety emerges from the interactions of the components.

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 it's 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

"No blame model"

- Everyone makes errors everyday
- No one makes an error on purpose
- An error is not misconduct
- We work in high risk situations that increase the chance that we will make an error
- Most near-misses and significant events are due to system or process problems

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..."

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The balance between...

"no blame"  Accountability  Culture

Situations associated with an increased risk of error
- unfamiliarity with the task*
- inexperience*
- shortage of time
- inadequate checking
- poor procedures
- poor human equipment interface

* Especially if combined with lack of supervision

A Systemic Problem that Harms Patients

DEFENCES

Physical barriers  Training  Procedures

CULTURE

Management  Protocols missing or not actioned

Patient harmed

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

Vincent C, BMJ, 1998

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 or 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.

What is patient safety culture?

• Includes shared beliefs, attitudes, values, norms and behavioural characteristics of employees and influences staff member attitudes and behaviours in relation to their organisation’s ongoing patient safety performance*

• Difficult to define measurable components of cultures...

* Morello et al. BMJ Qual & Safety 2012

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Which role has been played by WHO to achieve a patient safety culture?

WHO's role: Engage and encourage politically
1st WHO Global Patient Safety Challenge: 129 countries committed to reduce HAI

WHO's role: Lead scientifically

WHO's role: Catalyse change through patients
A Global Network

WHO's Role: Building future quality and safety leaders

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WHO's role: catalyze research in patient safety
Core competencies for patient safety research: a cornerstone for global capacity strengthening
Anne Andermann, Liave Gubser, Peter Norten, Herman Aarnio, Davit Saku, Albert You, Ivan Langlands
On behalf of the Patient Safety Research Training and Education Expert Working Group of WHO Patient Safety
http://www.who.int/patientsafety/research/en/

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

The solution:
WHO Patient Safety
Multidisciplinary Curriculum Guide
• Developed in partnership with international associations of nursing, midwifery, pharmacy, dentistry, medical and medical students

http://www.who.int/patientsafety/patients_for_patient/en/
http://www.who.int/patientsafety/education/en/
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

Evidence-based guidance on the organization of hospital infection control programmes: a systematic review

Objective: to identify the most effective elements of infection prevention programmes in hospitals

1996-2010

Results:

Search output: 31,310 Included: 403

73 studies included in final analysis

10 components with high quality evidence: 1) organisation of infection control on a hospital level; 2) bed occupancy, staffing, workload, and pool/agency nurses; 3) aspects of ergonomics; 4) appropriate use of guidelines; 5) education and training; 6) auditing; 7) surveillance and feedback; 8) multimodal and multidisciplinary prevention programmes taking into account principles of behavioural change; 9) engaging champions in prevention programmes; and 10) the role of a positive organisational culture

Zingg W et al. based on SIGHT project & submitted to The Lancet

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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 handrub 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

How can you achieve a patient safety culture?

Considering local barriers and cultural issues

Global survey 2011

Assessment of hand hygiene implementation in 2119 facilities worldwide

Overall HHSAF score and level in participating facilities

<table>
<thead>
<tr>
<th></th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall score, mean±SD (range)</td>
<td>292.5±100.6 (0-500)</td>
</tr>
<tr>
<td>Hand hygiene level, n (%)</td>
<td></td>
</tr>
<tr>
<td>Inadequate</td>
<td>111 (5)</td>
</tr>
<tr>
<td>Basic</td>
<td>631 (30)</td>
</tr>
<tr>
<td>Intermediate (or consolidation)</td>
<td>864 (41)</td>
</tr>
<tr>
<td>Advanced (or embedding)</td>
<td>488 (24)</td>
</tr>
<tr>
<td>Proportion of centres among leadership hospitals with a score &gt;12 (%)</td>
<td>393/471 (83)</td>
</tr>
</tbody>
</table>

SD= standard deviation

Assessment of hand hygiene implementation in 2119 facilities worldwide

<table>
<thead>
<tr>
<th></th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores by section, mean±SD, median (IQR)</td>
<td></td>
</tr>
<tr>
<td>System change</td>
<td>78.1 (±24.2), 85 (60-100)</td>
</tr>
<tr>
<td>Training and education</td>
<td>61.4 (±26.4), 65 (40-85)</td>
</tr>
<tr>
<td>Evaluation and feedback</td>
<td>45.3 (±27.9), 45 (20-70)</td>
</tr>
<tr>
<td>Reminders in the workplace</td>
<td>63.9 (±23.8), 65 (50-82.5)</td>
</tr>
<tr>
<td>Institutional safety climate for HH</td>
<td>43.9 (±24.8), 45 (25-60)</td>
</tr>
</tbody>
</table>

SD= standard deviation
IQR= inter-quartile score

Overall HHSAF score and level in participating facilities

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

Alcohol-based hand rub is standard of care

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WHO Guidelines on Hand Hygiene in Health Care. Part I.17

King Abdulaziz Medical City, Saudi Arabia
Compliance at follow-up

King Abdulaziz Medical City
Compliance by profession

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How to overcome barriers and to further improve

- Changing Challenges into unit-based projects
- Ultimate goal: To get to above and maintain 90% compliance rate with Hand Hygiene practices

How to overcome barriers and to further improve

- Changing Challenges into unit-based projects
- Ultimate goal: To get to above and maintain 90% compliance rate with Hand Hygiene practices

Hand hygiene champions

Poster competition and “bug busters”

King Abdulaziz Medical City, Saudi Arabia
Compliance at follow-up

King Abdulaziz Medical City, Saudi Arabia
Compliance at follow-up

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5 May 2013 call to action:

1. **Continue to focus on hand hygiene monitoring and feedback!**

2. **Patients have a voice too!**
   - Identify the best way to gather **patient participation** in hand hygiene promotion and improvement, according to the local culture and your facility’s approach
   - Based on the HHSAF Global Survey, the two components of the WHO Hand Hygiene Improvement Strategy the least effectively implemented

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Surgical Safety Checklist: a tool that addresses 10 key objectives

The Checklist was piloted in 8 cities:

- Athens, Greece
- Bangkok, Thailand
- Madrid, Spain
- Manama, Bahrain
- New Delhi, India
- Addis Ababa, Ethiopia
- Auckland, New Zealand
- Seattle, USA

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Results – All Sites

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Checklist</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>3733</td>
<td>3955</td>
<td></td>
</tr>
<tr>
<td>Death*</td>
<td>1.5%</td>
<td>0.8%</td>
<td>0.003</td>
</tr>
<tr>
<td>Any Complication**</td>
<td>11.0%</td>
<td>7.0%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>SSI</td>
<td>6.2%</td>
<td>3.4%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Unplanned Reoperation</td>
<td>2.4%</td>
<td>1.8%</td>
<td>0.047</td>
</tr>
</tbody>
</table>

*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


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

Vats A et al. BMJ 2010

Changes in safety attitudes following the checklist implementation

Before/after survey
Modified Safety Attitudes Questionnaire
7 sites

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Agree (%)</th>
<th>Disagree, checklist score mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The checklist was easy to use</td>
<td>296 (96.2)</td>
<td>55 (95.0)</td>
</tr>
<tr>
<td>The checklist took a long time to complete</td>
<td>74 (10.0)</td>
<td>206 (80.0)</td>
</tr>
<tr>
<td>The checklist improved operating room safety</td>
<td>296 (96.2)</td>
<td>55 (95.0)</td>
</tr>
<tr>
<td>Communication was improved through use of the checklist</td>
<td>210 (88.6)</td>
<td>39 (109.0)</td>
</tr>
<tr>
<td>The checklist helped prevent errors in the operating room</td>
<td>292 (84.6)</td>
<td>55 (90.0)</td>
</tr>
<tr>
<td>If I was having an operation, I would want the checklist to be used</td>
<td>245 (97.4)</td>
<td>17 (100.0)</td>
</tr>
</tbody>
</table>

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

Haynes et al. BMJ Qual Saf 2011;20:102e107

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CHECKLIST DISSEMINATION AND ADVOCACY
- 313 endorsing organizations
- >3000 registered hospitals
- Focus teams for distribution in several developing countries

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Infection control measures

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

Patient safety culture approach

<table>
<thead>
<tr>
<th>CUSP</th>
<th>Translating Evidence Into Practice (TRiP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Educate staff on science of safety</td>
<td>1. Summarize the evidence in a checklist.</td>
</tr>
<tr>
<td>2. Identify defects</td>
<td>• Wash your hand, clean skin with chlorhexidine, avoid femoral site, use barrier precautions, ask daily if you need the catheter</td>
</tr>
<tr>
<td>3. Assign executive to adopt unit</td>
<td>2. Identify local barriers to implementation</td>
</tr>
<tr>
<td>4. Learn from one defect per quarter</td>
<td>3. Measure performance</td>
</tr>
<tr>
<td>5. Implement teamwork tools</td>
<td>4. Ensure all patients get the evidence</td>
</tr>
</tbody>
</table>

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

Berenholtz SM et al, CCM 2004
Pronovost P et al, NEJM 2006
Pronovost P et al, BMJ 2010

Michigan ICU Safety Climate Improvement

- "Needs Improvement" - Safety Climate Score <60%

Michigan Keystome ICU

- Median and Mean CRBSI Rate

- Getting to 0 in a Hospital

- CEO commits to 0
- ICU leaders accountable, know rates, commit to 0
- ICU makes it easy to comply with checklist
- ICU empowers nurses to ensure compliance
- ICU reviews every infection as a defect
- ICU standardizes, audits, and improves catheter maintenance
- ICU posts and discuss infection rates weeks without an infection

http://www.modernhealthcare.com/article/20110725/SUPPLEMENT/307259972/-1

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Explaining Michigan: how the program achieved its effects

Identified determinants:
1. Generating isomorphic pressures for ICUs to join the program and conform to its requirements
2. Creating a densely networked clinical community
3. Reframing CVC-BSIs as a social problem that could be resolved
4. Several interventions generating a culture of commitment to doing better in practice
5. Harnessing data on infection rates as a disciplinary force
6. Using “hard edges” (checklist, ICU withdrawn, nurse empowerment, CLA-BSI data)

Best understood as a culture change intervention

Dixon-Woods et al. Milbank Quarterly 2011

Application of CUSP to SSI prevention

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

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

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


Strategies for Educating on the Science of Safety

- Unit level staff meetings
- Medical staff grand rounds
- Hospital/unit orientation
- Continuous access via in-house TV / training
- Posting on intranets or other training sites

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

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

How will the next patient be harmed?

148 answers from 51 staff members

- Procedural compliance
- Environmental safety/security
- Orientative training
- Communication
- Care planning
- Organisational culture
- Availability of information
- Patient assessment
- Leadership
- Continuity of care
- Competency/education/ training

Schneegil, et al. 2011

How will the next patient be harmed? (SSI Specific)

95 Responses from 36 Staff Members

- Infection Control
- Coordination of Care
- Communication and Teamwork
- Equipment/ Supplies
- Policies/Protocols
- Education/Training


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Recruit Executive as Active Team Member

- Executive meets at least monthly with team
  - Review defects identified on staff safety assessment
  - Work with team and develop plan to reduce risks
  - Ensure team has resources to implement plan

- Shared accountability during monthly review of:
  - Action plans; infection data; resource allocations
  - HSOPS (culture) data
  - Staff Safety Assessment data

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

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)


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

Thank you for your attention and to Webber Training for hosting us!

For more information

- Contact information
  WHO PATIENT SAFETY PROGRAMME
  patient.safety@who.int
  saveallives@who.int

- Web site
  http://www.who.int/patientsafety/en/
  http://www.who.int/gpsc/5may/
  EN_PSP_GPSC1_5May_2013/en/

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<table>
<thead>
<tr>
<th>2013 WHO Teleclass Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>February 6</strong></td>
</tr>
<tr>
<td><strong>March 6</strong></td>
</tr>
<tr>
<td><strong>April 9</strong></td>
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<tr>
<td><strong>May 6</strong></td>
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<tr>
<td><strong>July 3</strong></td>
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<tr>
<td><strong>August 7</strong></td>
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<td><strong>September 3</strong></td>
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<tr>
<td><strong>October 9</strong></td>
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<tr>
<td><strong>November 11</strong></td>
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<tr>
<td><strong>December 4</strong></td>
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