Patient safety solutions

Quality of medical services, patient safety and accreditation

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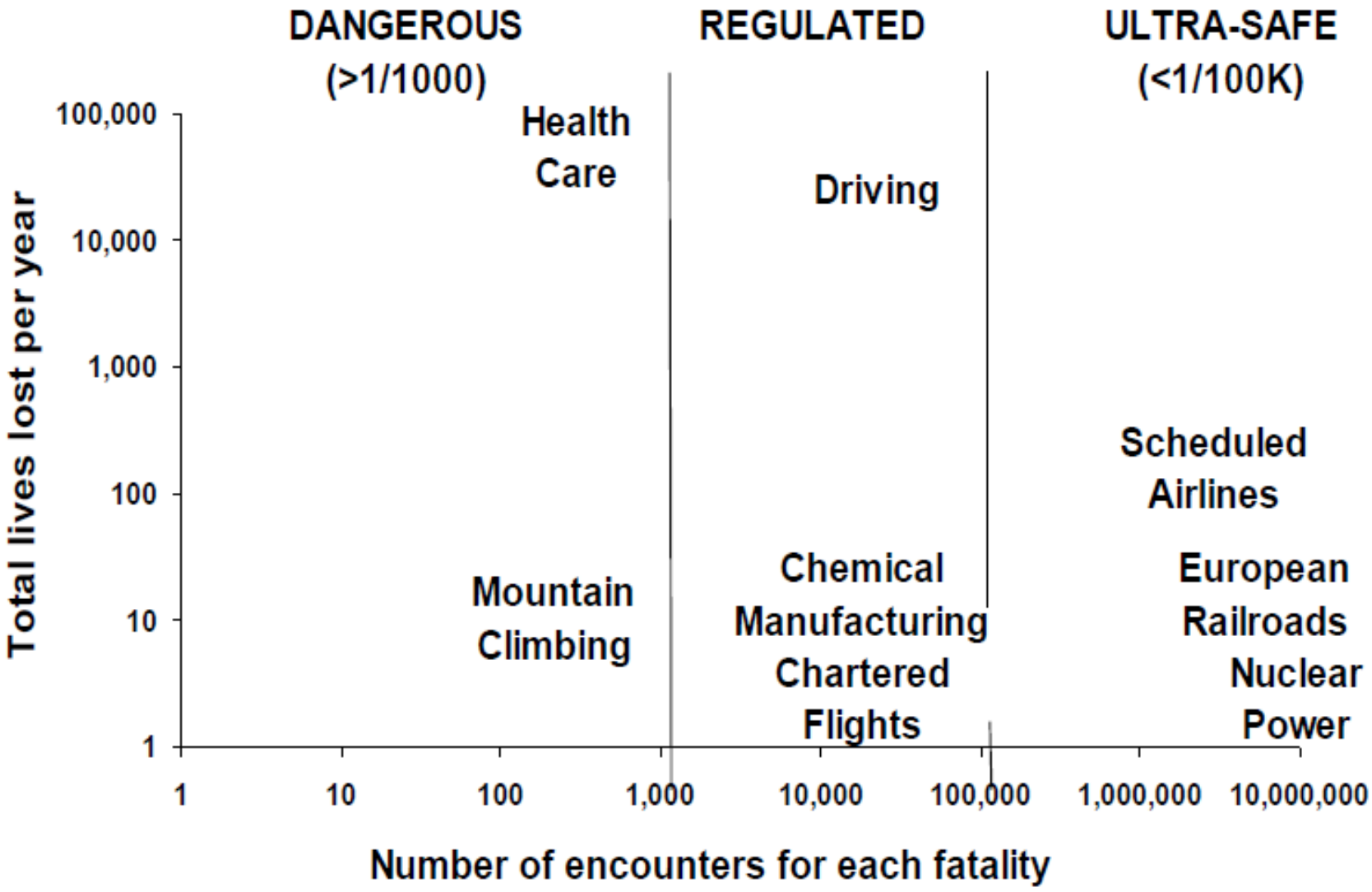
- Areas of risk to patients
- Patient safety areas for critical intervention
- Solutions related to unsafe medical care
- Improvements to structural factors that contribute to unsafe care
- Improvements to poor processes that contribute to unsafe care

THE BURDEN OF UNSAFE CARE

How Hazardous Is Health Care?



20 YEARS OF PROGRESS..

The world has:

- defined the science of patient safety and QI in healthcare
- guidelines, protocols, standards, checklists, QI mthodologies....
- Best practices and solutilns in patient safety

The world invested in:

- patient safety research
- reporting and learning systems
- awareness raising and safety campaigns
- empowering patients
- national political commitment/ policies/ regulation/accreditation

Hospitals in countries:

investments + resources in safety and quality

… BUT HERE IS THE CHALLENGE…

- **Patent harm and unsafe care continue to persist everywhere in the world and incidence appears to be increasing**
- **Take a closer look: Patient Safety and QI of health services:**
  - NOT a priority in countries
  - Improvements: NOT expensive but few resources and NO widespread use
  - NOT a primary CORE VALUE in health care (hc is focused on productivity and not on reducing errors)
  - Poor to very limited cultures of safety in healthcare (infallibility-stigmatization-blaming)
  - Majority of HC policy-makers, leaders and providers either don't know or are in denial of the challenge of unsafe care
  - **Poor student and provider education/training in Q + S**
  - QI and PS lobby: not enough emphasis has gone to human factors issues

EXEMPLAR HOSPTALS

… AND THE EVIDENCE

- Patient harm estimated as14th leading cause of the global disease burden (OECD 2017) - comparable to diseases such as tuberculosis and malaria
- In some countries, the burden of patient harm is similar to that of chronic diseases (OECD 2017)
- Burden of HCAI (USA) is huge: >1m/year (CDC), costs: billions $
- 15% of hospital expenditure in OECD countries can be attributed addressing safety failures (OECD 2017)
- It is estimated that the aggregate costs (patients and health system): trillions of dollars /year.
- 2013 meta-analysis study (James) showed preventable AE(due to med error) in hospitals have incidence of 400,000 deaths /year
- AE in hospitals severely harms 4-8 million people/year
- Data from PHC, long term care, psychiatric care, etc: Not there
- **Harm resulting from hospital care:just the tip of a massive iceberg**

Medical error—the third leading cause of death in the US

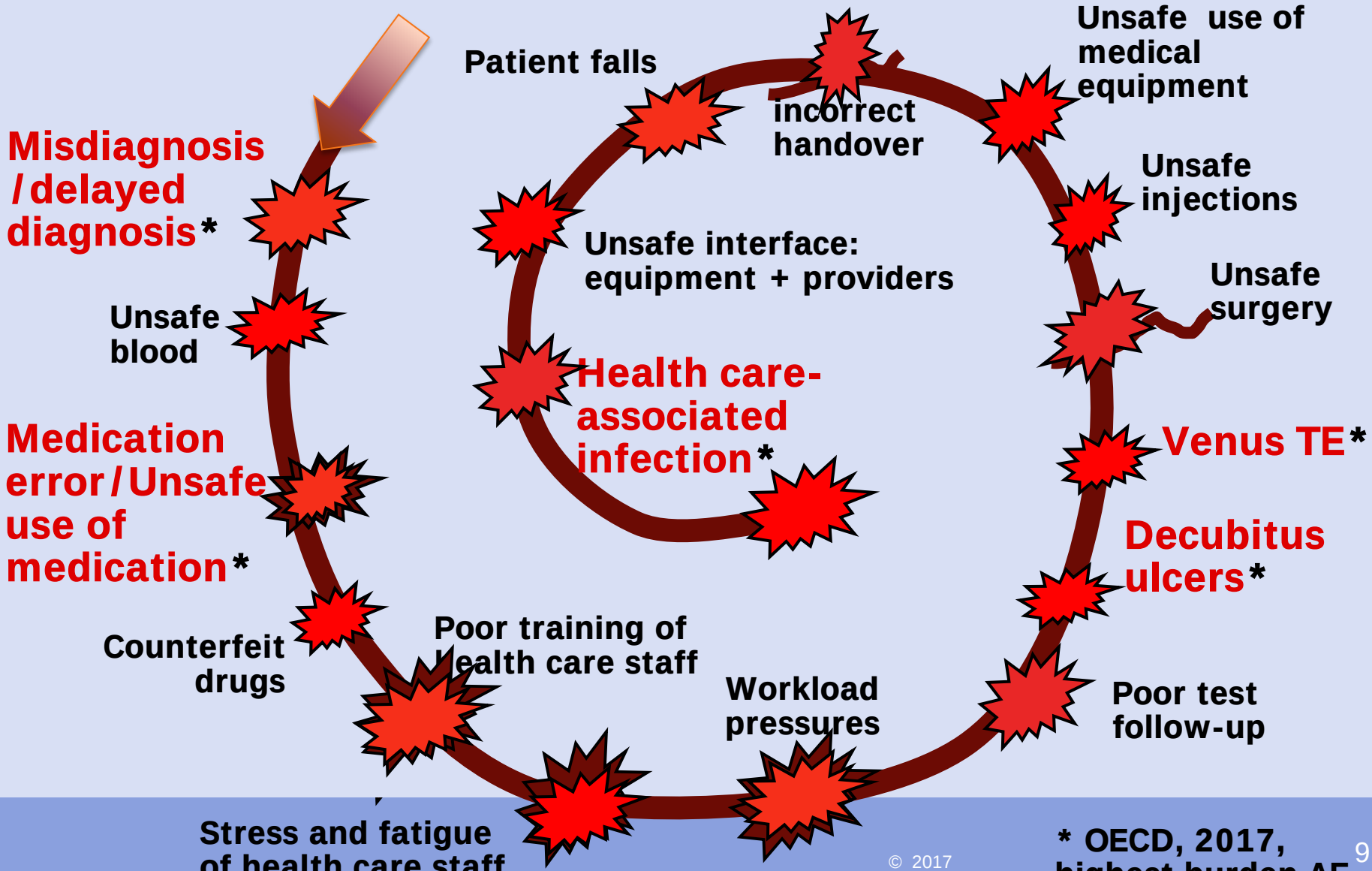
2016 BMJ

BMJ 2016;353:i2139 doi: 10.1136/bmj.i2139 (Published 3 May 2016)

No. deaths from med error not all captured...

. However, a major limitation of the death certificate is that it relies on assigning an International Classification of Disease (ICD) code to the cause of death.[1] As a result, causes of death not associated with an ICD code, such as human and system factors, are not captured. The science of

MANY RISKS TO PATIENTS



* OECD, 2017, highest burden AE

Patient Safety Challenges

Various studies (WHO and others) have shown types and causes of Adverse Events

A) **AE/ Errors**

- **related to unsafe medical care**

Taking Avedis Donabedian approach and quality of care framework - comprises of 3 dimensions of quality: structure process, outcomes

- **Outcomes**: results of clinical activities by providers to patients **(A)**
- **Structure:** resources and organization to deliver care **(B)** (buildings, policies, staff, finances)
- **Process:** activities between providers and patients during care delivery **(C)**

B) **Structural factors contributing to unsafe care**

C) **Poor processes contributing to unsafe care**

Main findings of studies: Unsafe care is everywhere

PATIENT SAFETY: AREAS FOR CRITICAL INTERVENTION/SOLUTIONS

Much can be improved using patient safety solutions

- **Solutions to address unsafe medical care:** e.g.HCAI, med error, unsafe surgery, unsafe blood, unsafe injections, unsafe birth processes

  Have an immediate impact

- **Improvements/solutions on underlying structural factors:** e.g use of accreditation, regulation, culture of safety, training/education of HC workforce, addressing fatigue and stress, workload pressures, applying human factors engineering, improving communications and efficiency HC teams

  Have lasting impact

- **Improvements on underlying processes of care:** misdiagnosis/delayed diagnosis, test follow up, counterfeit drugs, engagement of patients etc

  Have long-term impact

It is likely that a combination of efforts in the 3 areas is needed to improve patient safety

AE/ Errors

- **related to unsafe medical care**

A) AE/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 solutions * OECD highest burden areas

1. Unsafe medications/treatment

- 1.5 million patients are harmed and thousands are killed every year in USA
- 70 % of patients' medication histories have errors (some countries)
- 28–56% of ADE are preventable
- Globally, the cost associated with medication errors estimated at $42 billion / year
- Solutions:
  - Use standradized protocols for prescribing, preparing and administrating medicines
  - Computerized prescribing andcan prevent ADE.

WHO solution

Medication Without Harm: WHO's Third Global Patient Safety Challenge

- The WHO 3rd Global Challenge started in 2017 : www.who.int/patientsafety/medication-safety/en/
- To develop solutions to tackle the obstacles of unsafe medication
- Focus on 5 areas:

1. **Strengthen monitoring systems to detect /track harm from unsafe medication:** assess scope and nature of harm
2. **Develop Framework for action** (for health professionals, and authorities):improvements in ordering, preparation, dispensing, administration, monitoring practices
3. **Develop guidance and solutions** for safe medication systems
4. **Engage partners and industry** to raise awareness on Medication Safety
5. **Empower patients and caregivers** to get educated and involved in treatment decissions

MEDICATION RECONCIALIATION STANDARD OPERATING PROTOCOL: HIGH 5s

1) **Medication Reconciliation:** Miscommunications about patient medications among caregivers

Solution: "Best possible medication history" on admission;

- Compare with admission orders
- Reconcile discrepancies

2) **Medication Reconciliation** (Conc KCl, Na Heparin, Injectable morphine preps)

Solution:

- Minimize storage/preparation of concentrates in clinical units
- Encourage ready-to-use products
- Standardize procedure if concentrated medicines must be used on clinical units
- http://www.who.int/patientsafety/topics/high-5s/en/

WHO solution

2. AE/INJURIES DUE TO MEDICAL DEVICES

- Devices: simple or complex
- Used in conjunction with others and with drugs
- Categorized into:
  - ✓ *manufacturer-related errors*
  - ✓ *user-related errors (staff fatigue, busy, under-trained)*
  - ✓ *use or design errors (design deficiencies provoke errors)*
- More than 1 million events/year in USA
- AE are a problem in developing countries, where medical equipment is often unusable owing to lack of resources

- Surveillance programmes to track the types, frequency and clinical settings of events would be a first step to understand impact on patient safety and design of safety interventions

- In-depth staff training on device operation/usage

3. SURGICAL AND ANESTHESIA ERRORS

WHO solution

- **Surgical errors**: wrong site, wrong patient, wrong organ, SSI, venus thromboE, anesthesia errors
- 7 m surgical complications, 1 m deaths/year worldwide
- In US: 40 cases of unsafe surgery/week (informal data)
- In resource-poor countries: surgical errors account for 50% of all adverse events; preventable 74% of the time

WHO strategy :

Use of Safe Surgery Checklist

THE SAFE SURGERY SAVES LIVES STRTATEGY

Creation of a checklist to improve the standards of surgical safety www.who.int/patientsafety/safesurgery/ss_checklist/en/

Surgical Safety Checklist

World Health Organization | Patient Safety

Before induction of anaesthesia	Before skin incision	Before patient leaves operating room
(with at least nurse and anaesthetist)	(with nurse, anaesthetist and surgeon)	(with nurse, anaesthetist and surgeon)
Has the patient confirmed his/her identity, site, procedure, and consent? ☐ Yes	☐ **Confirm all team members have introduced themselves by name and role.**	**Nurse Verbally Confirms:** ☐ The name of the procedure
Is the site marked? ☐ Yes ☐ Not applicable	☐ **Confirm the patient's name, procedure, and where the incision will be made.**	☐ Completion of instrument, sponge and needle counts
Is the anaesthesia machine and medication check complete? ☐ Yes	**Has antibiotic prophylaxis been given within the last 60 minutes?** ☐ Yes ☐ Not applicable	☐ Specimen labelling (read specimen labels aloud, including patient name)
Is the pulse oximeter on the patient and functioning? ☐ Yes	**Anticipated Critical Events**	☐ Whether there are any equipment problems to be addressed
Does the patient have a:	**To Surgeon:** ☐ What are the critical or non-routine steps? ☐ How long will the case take? ☐ What is the anticipated blood loss?	**To Surgeon, Anaesthetist and Nurse:** ☐ What are the key concerns for recovery and management of this patient?
Known allergy? ☐ No ☐ Yes	**To Anaesthetist:** ☐ Are there any patient-specific concerns?	
Difficult airway or aspiration risk? ☐ No ☐ Yes, and equipment/assistance available	**To Nursing Team:** ☐ Has sterility (including indicator results) been confirmed? ☐ Are there equipment issues or any concerns?	
Risk of >500ml blood loss (7ml/kg in children)? ☐ No ☐ Yes, and two IVs/central access and fluids planned	**Is essential imaging displayed?** ☐ Yes ☐ Not applicable	

WHO solution

SAFE SURGERY SAVES LIVES

Results

...implementation of the safe surgery checklist in pilot sites was found to reduce the rate of postoperative complications and death by more than one-third!

	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

4. HEALTH CARE-ASSOCIATED INFECTION

- 1 in 4 patients in intensive care will acquire an infection during a stay in hospital (worldwide)
- Doubled in developing countries(25% - more than 40%)
- 5–15% of patients admitted to hospitals get HCAI (developed countries)

WHO strategy :

- regulation and implementation of control measures (5 moments for hand hygiene)

- education of health-care workers

- well-organized surveillance system

Clean Care is Safer Care resources:
http://www.who.int/gpsc/5may/tools/en/

WHO solution

CLEAN CARE IS SAFER CARE

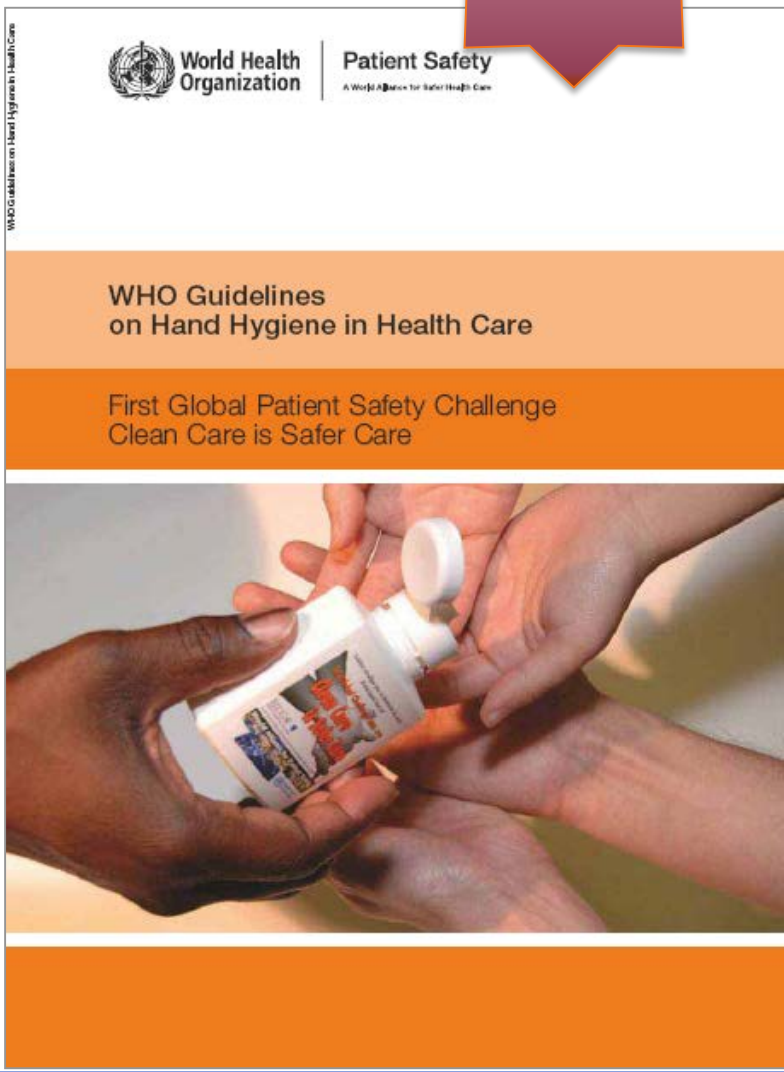
WHO solution

- Vision: **Making infection prevention & control, with hand hygiene as the essential basis, a priority in health care everywhere**
- **WHO Guidelines on Hand Hygiene Tools:**

http://www.who.int/gpsc/5may/tools/en/index.html

- **Hand Hygiene: May 5 Sign Up!**

http://www.who.int/gpsc/5may/register/en/index.html



IMPORTANCE OF HAND HYGIENE

- Improved hand hygiene through multimodal implementation strategies can reduce HCAI rates.
- It can prevent the spread of antimicrobial resistance

Health care workers, and clinicians do not usually comply with hand hygiene

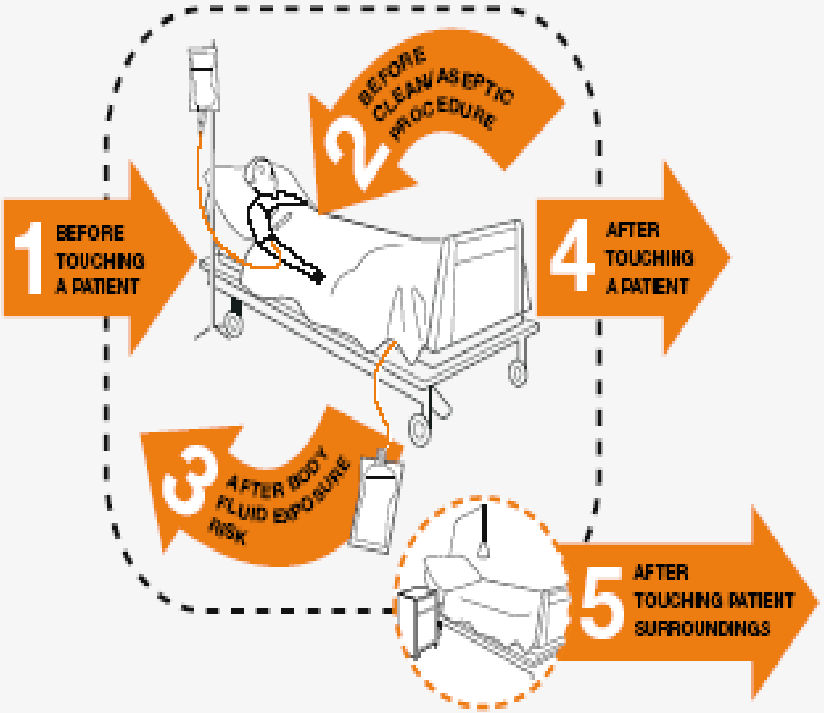
STANDATDIZING STEPS: 5 MOMENTS FOR HAND HYGIENE

The five components of the WHO Multimodal Hand Hygiene Improvement Strategy

- 1a. System change – alcohol-based handrub at point of care
- \+
- 1b. System change – access to safe, continuous water supply, soap and towels
- \+
- 2. Training and education
- \+
- 3. Evaluation and feedback
- \+
- 4. Reminders in the workplace
- \+
- 5. Institutional safety climate

\+

The five moments for hand hygiene in health care



5. UNSAFE INJECTIONS

WHO solution

- 16 b injections/year worldwide
- Unsafe injections: 33% of new HBV infections, 42% of HCV and 2% of all new HIV infections
- Unsafe injections cause1.3 million deaths/ year
- 40 % of injections given with syringes and needles reused without sterilization (worldwide); in some countries it is 70%

WHO strategy :

- Increase use of safety engineered injection devices
- National approaches to reduce overuse of injections
- Use of needle stick injury prevention technology
- Managing waste safely of injection materials

6. UNSAFE BLOOD

WHO solution

Crucial safety issues in blood transfusion are:

- ✓ *poor access to blood and blood products when required*
- ✓ *unsafe blood and blood products, with risk for transfusion-transmissible infections, HIV and HBV and HCV*
- ✓ *serious or fatal transfusion reactions*
- ✓ *poor laboratory procedures for testing donated blood for infection, blood group and compatibility testing between the donor and the recipient*
- ✓ *gross misuse of blood and blood products*
- ✓ *unsafe transfusion practices at the patient's bedside*

- Well-organized programme of voluntary blood donation and assessing suitability of donors

- Screening for HBV, HCV, HIV,

- Rational + safe transfusion of blood to right patient

7. PREGNANT WOMEN AND NEWBORNS

WHO solution

- 7.6 million perinatal infant deaths/ year and 500 000 deaths in women due to pregnancy or childbirth (99% in developing countries)
- Maternal and infant mortality rates attributed to lack of access to medical facilities and inadequate medical care

- WHO strategy: Safe childbirth checklist; www.who.int/patientsafety/implementation/checklists/childbirth/en/

3. Safe Childbirth Checklist

A simple tool that aims to assist childbirth teams in assuring that all essential clinical practices are performed

- **Preliminary findings suggest a significant improvement in a selection of key indicators:**

  - Hand Hygiene and using gloves when doing exam

  - Administering oxytocin 1 minute after birth

  - Using partograph for each labouring woman

Safe Childbirth Checklist

WHO solution

Before Birth | SAFE CHILDBIRTH CHECKLIST - PILOT EDITION

World Health Organization

1. On admission

Does Mother need referral?
- ☐ No
- ☐ Yes, organized

Partograph started?
- ☐ No: Will start when ≥ 4 cm
- ☐ Yes

Does Mother need to start:

Antibiotics?
- ☐ No
- ☐ Yes, given

Magnesium sulfate?
- ☐ No
- ☐ Yes, given

Antiretrovirals?
- ☐ No, confirmed HIV negative
- ☐ Yes, given
- ☐ If status unknown, HIV test ordered

☐ **Confirm supplies are avai for each vaginal exam**

☐ **Encourage Bi**

2. Just before pushing (or before Caesarean)

After Birth | SAFE CHILDBIRTH CHECKLIST - PILOT EDITION

World Health Organization

3. Soon after birth (within 1 hour)

Is Mother bleeding abnormally?
- ☐ No
- ☐ Yes: Shout for help

If bleeding abnormally:
- Massage uterus
- Consider more uterotonic
- Start IV
- Treat cause: uterine atony, retained placenta/fragments, vaginal tear, uterine rupture

Does Mother need to start:

Antibiotics?
- ☐ No
- ☐ Yes, given

Give antibiotics to Mother if placenta manually removed or if Mother's temperature ≥38°C and any of:
- Chills
- Foul-smelling vaginal discharge

Magnesium sulfate?
- ☐ No
- ☐ Yes, given

Give magnesium sulfate to Mother if any of:
- Diastolic BP ≥110 mmHg and 3+ proteinuria
- Diastolic BP ≥90 mmHg, 2+ proteinuria, and any: severe headache, visual disturbance, epigastric pain

Does Baby need:

Referral?
- ☐ No
- ☐ Yes, given

Check your facility's criteria.

Antibiotics?
- ☐ No
- ☐ Yes, given

Give Baby antibiotics if antibiotics given to Mother, or if Baby has any of:
- Respiratory rate >60/min or <30/min
- Chest in-drawing, grunting, or convulsions
- Poor movement on stimulation
- Baby's temp <35°C (and not rising after warming) or Baby's temp ≥38°C

Special care/monitoring?
- ☐ No
- ☐ Yes, organized

Arrange special care/m
- More than 1
- Risk

Antiretrovirals?
- ☐ No

4. Before discharge

Is Mother's bleeding controlled?
- ☐ No: Treat and delay discharge
- ☐ Yes

Mother to start antibiotics?
- ☐ No
- ☐ Yes: Give and delay discharge

Give antibiotics to Mother if her temperature ≥38°C and any:
- Chills
- Foul-smelling vaginal discharge

Baby to start antibiotics?
- ☐ No
- ☐ Yes: Give antibiotics, delay discharge, give special care

Give antibiotics to Baby if any of:
- Respiratory rate >60/min or <30/min
- Chest in-drawing, grunting, convulsions
- Poor movement on stimulation
- Baby's temp <35°C (and not rising after warming), or temp ≥38°C
- Stopped breastfeeding well
- Umbilicus redness extend
skin or draining

Is Baby feeding well?
- ☐ No: Establish good breastfe practices and de
- ☐ Yes

WHO SAFE CHILDBIRTH CHECKLIST COLLABORATIVE

For more information, please visit www.who.int/patientsafety

8. Poor Care for the elderly

- The elderly and patients with dementia have increased risk for adverse events in every clinical setting
- Adverse drug events disproportionately affect the elderly (changed metabolism; complex medication regimens etc)
- Rate of 10 ADE/100 resident–months in US nursing homes
- Falls, decubitus ulcers *, delirium, etc

- Good communication + planning among multidisciplinary teams on medication regimens improves the quality and safety of medical care

- Computerized physician order systems improves medication safety for older patient

* OECD highest burden areas

Structural factors contributing to unsafe care

B) STRUCTURAL FACTORS CONTRIBUTING TO UNSAFE CARE

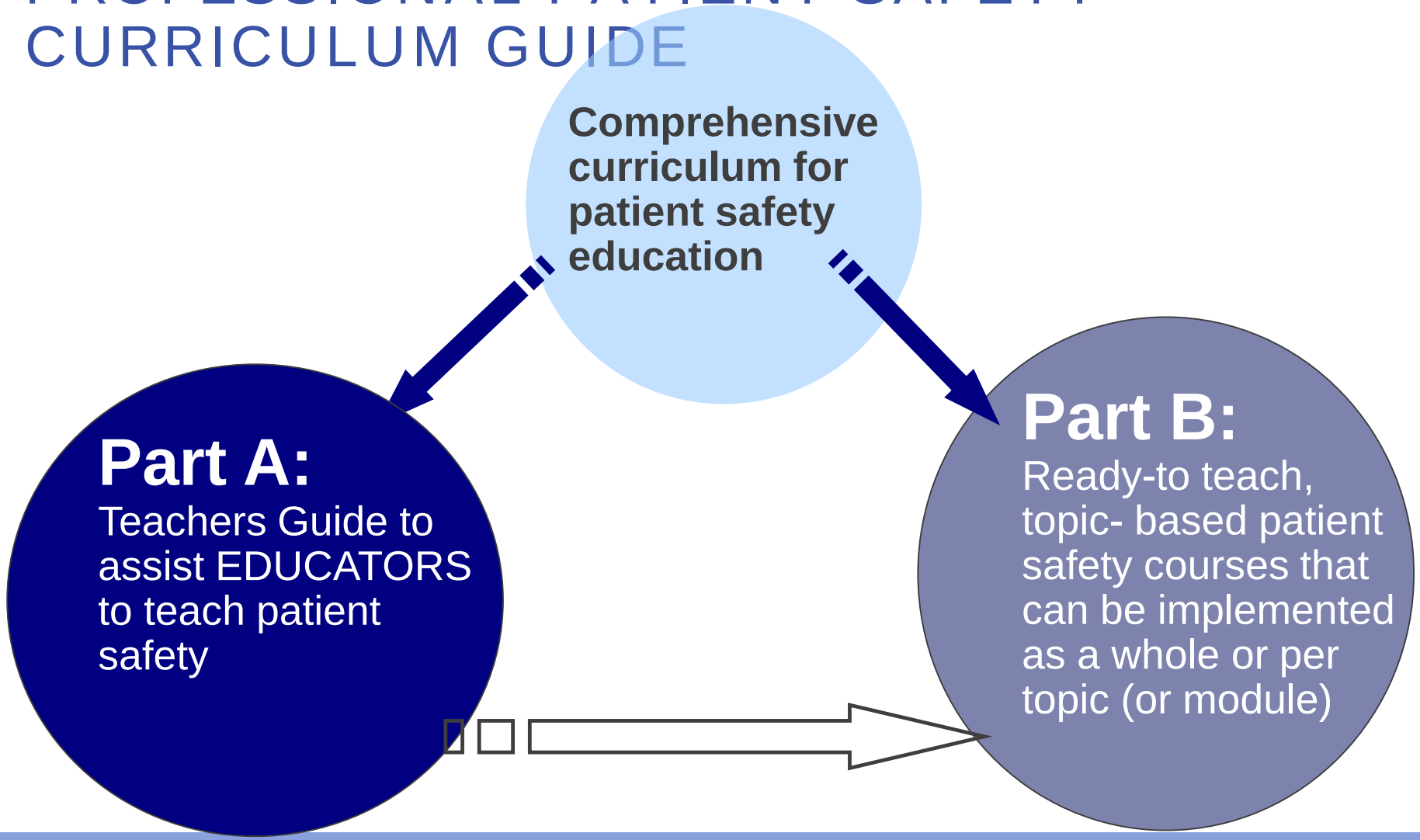
1. No regulation, accreditation, quality improvement strategies
2. No culture of safety
3. Poor training, education of HCW
4. Stress and fatigue of HCW
5. Production pressures/ Fast moving environments
6. Lack of appropriate knowledge and its transfer
7. Devices and procedures with no human factors

* Areas addressed with WHO interventions (solutions)

3. Patient Safety Education: WHO Patient Safety Curriculum Guide

- Multi-professional perspective
- Encourages inter-disciplinary learning
- Prepares students and hc providers on being team members and effective clinical communication
- Recommends on how to operate in a culture of no-blame but being accountable
- Use case studies from multi-professional teams as a tool for interdisciplinary learning

STRUCTURE OF THE WHO MULTI-PROFESSIONAL PATIENT SAFETY CURRICULUM GUIDE



PART B: TOPICS OF THE CURRICULUM

1. What is patient safety?
2. What is human factors engineering?
3. Understanding systems and the impact of complexity on patient care
4. Being an effective team player
5. Understanding and learning from errors
6. How to manage clinical risk
7. Methods for quality improvement
8. Engaging with patients and carers
9. Minimising infection through improved infection control
10. Reducing risks associated with Invasive procedures
11. Improving medication safety

7. Human Factors /HF engineering/ Ergonomics

- **What is HF:** The term 'Human factors' is used to describe **interactions** between individuals at work, the **tasks/ job** they have to do, the **equipment** they use, the **systems** and the workplace **environment**.
- The field has seen contributions from: **psychology, engineering biomechanics, space design, physiology, neurology , etc**
- It aims to design environments, equipment/devices and systems that fit the human body and its **cognitive** abilities
- **Aim of HF engineering** in HC: to improve performance and quality, safeguard safety, and the wellbeing of HC professionals + patients by:
  - designing workplace environments better
  - creating better systems integrating humans + skills

Human Factors Engineering improvements are about..

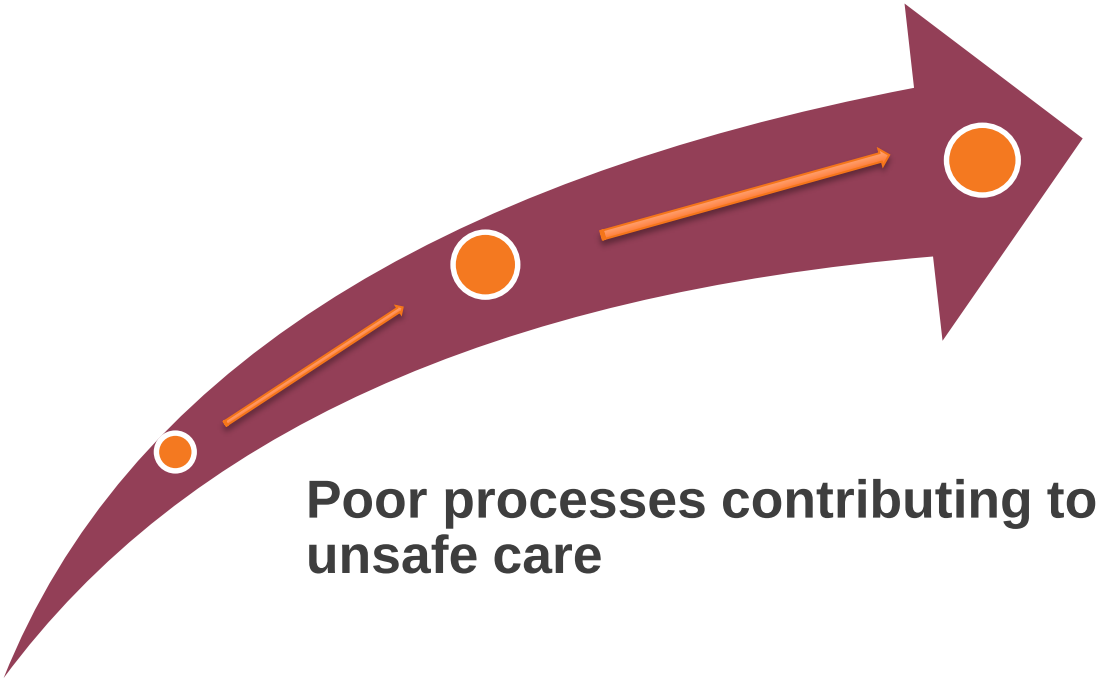
- **Application** of information about behaviour, abilities, cognition aspects, limitations etc
  - in the design of tools, equipment and machines
  - systems, tasks, activities
  - physical environments

POINT: for effective, productive, safe and comfortable human use

- HC professionals, behaviours and application of their skills is highly dependent on environments, systems, equipment….

  … expertise in clinical knowledge, skills or management - not enough

  … if HF are not practised, this can contribute to errors/ adverse events



Poor processes contributing to unsafe care

C) POOR PROCESSES CONTRIBUTING TO UNSAFE CARE

1. Misdiagnosis
2. Poor test follow up
3. Counterfeit drugs
4. Poor/No involvement of patients in their care

PATIENTS FOR PATIENT SAFETY

An organized Global Network of individuals and organizations dedicated to improving health-care safety through advocacy and ***collaboration***

253 Champions in 52 countries

- Representing the patient voice at conferences, consultation meetings, on hospital boards, government committees…

- ***Raising awareness…of patient safety & patient involvement***
- ***Informing & educating communities***

WHO solution

CONCLUSION: PATIENT SAFETY ÎMPROVEMENTS

A) **AE/ Errors**

- **related to unsafe medical care**

Interventions for unsafe medical care: HCAI, med. safety, unsafe surgery, etc **have an immediate impact**

B) **Structural factors contributing to unsafe care**

Improvements on structural factors: regulation, culture of safety, training/education of HC workforce, improving communications **have lasting impact**

C)

Poor processes contributing to unsafe care

Improvements on processes of care: misdiagnosis, test follow up, involvement of patients etc **have long-term impact**

It is likely that a combination of efforts in these 3 areas is needed to improve patient safety

Policy development and implications

- National and facility-based leaders need to take a strategic view of desired healthcare improvements, rather than focusing on short-term fixes designed to preserve existing health services.
- Implementation of new models and solutions for better and good quality care will involve: decommissioning outdated models of care; supporting national organisations to innovate and adopt established best strategies and practices used in the world; developing a culture that values peer support for learning, education and innovation; encouraging players at the facility-level to test new models of care.

Thank you