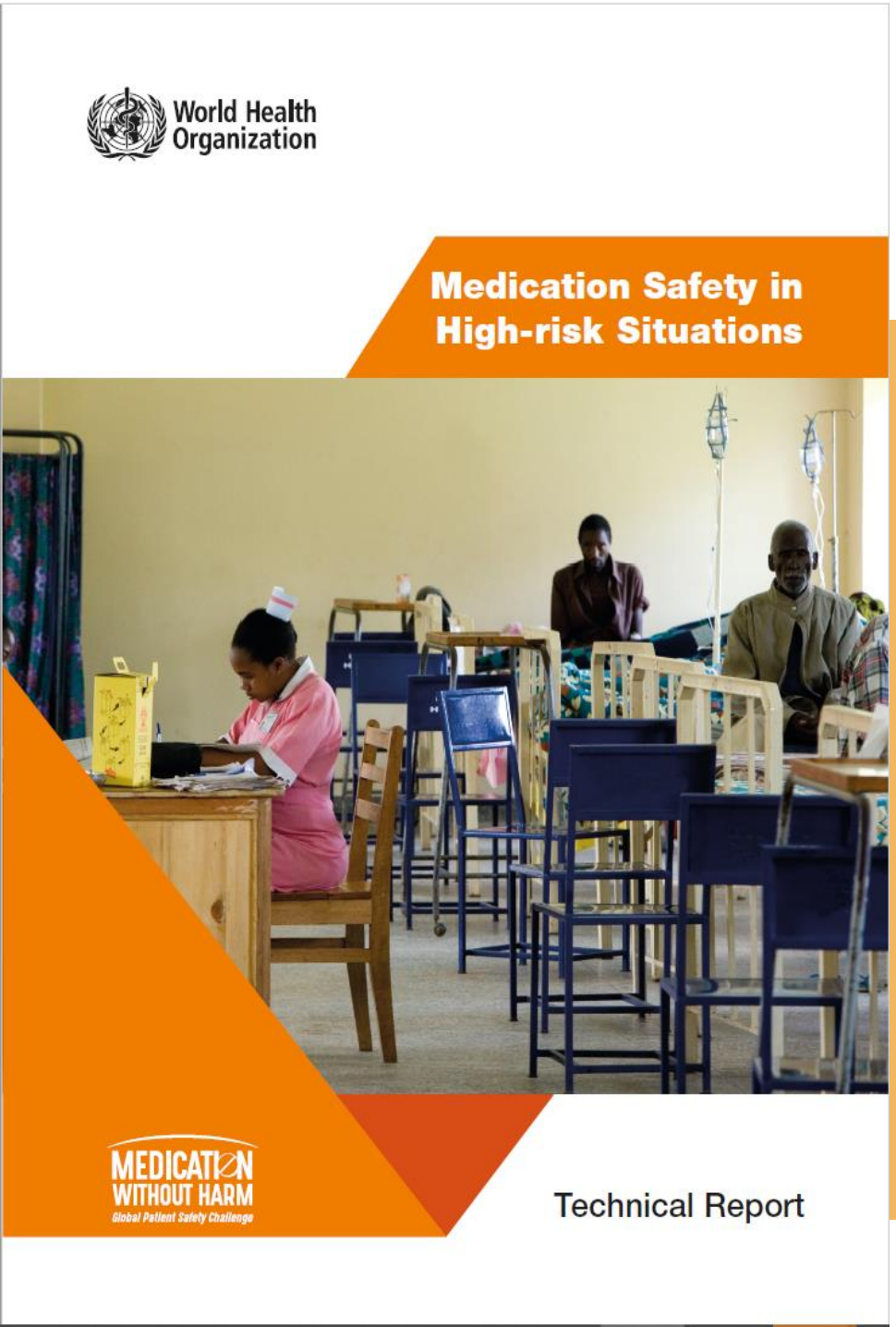


MEDICATION WITHOUT HARM
Global Patient Safety Challenge

World Health Organization

Introduction to the WHO Technical Report "Medication Safety in High-risk Situations"

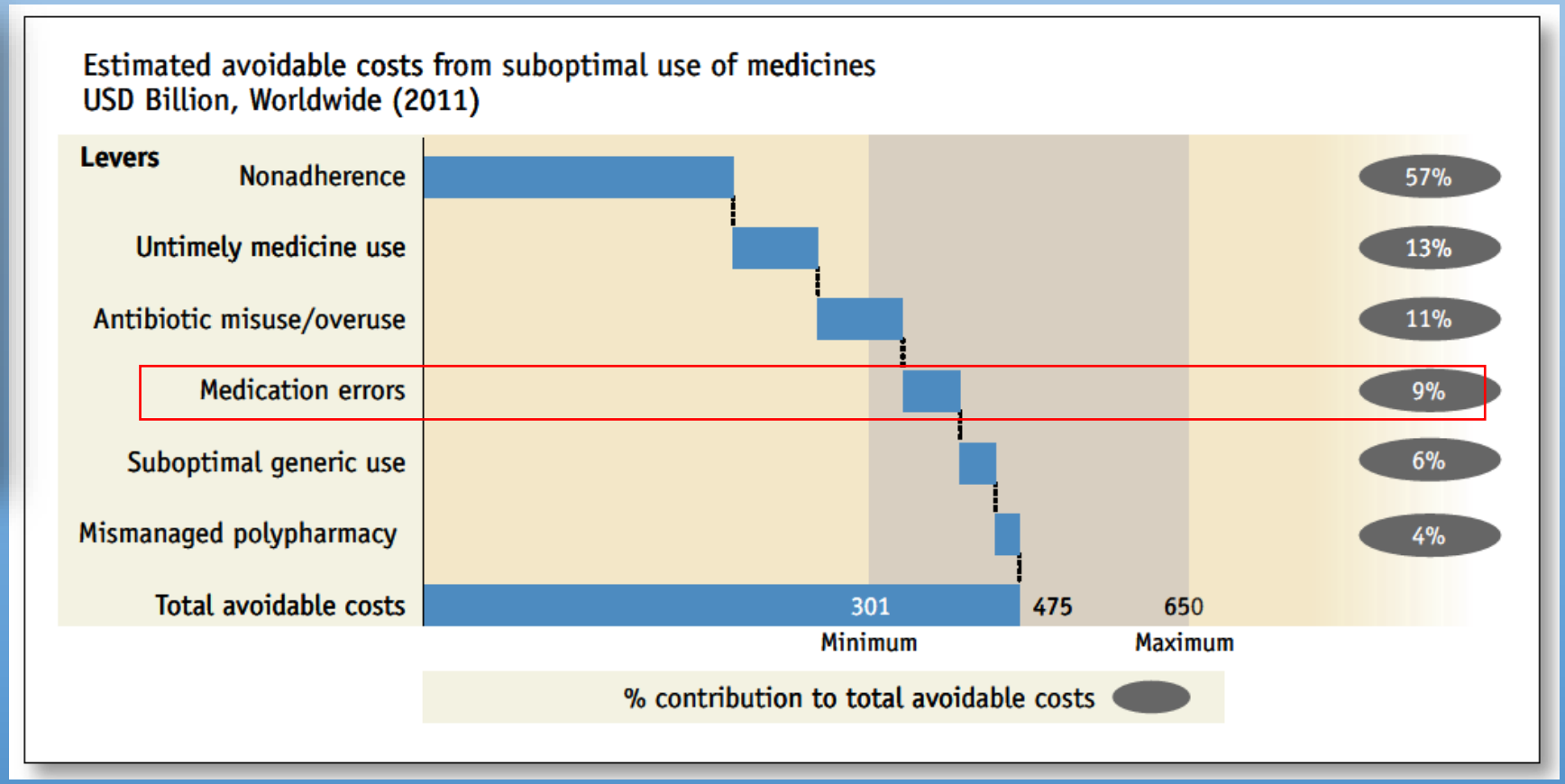
Professor Philip Routledge
Emeritus Professor School of Medicine
Cardiff University
Cardiff, Wales
UK

17 May 2022

Medication Safety in High-risk Situations

Professor Philip Routledge

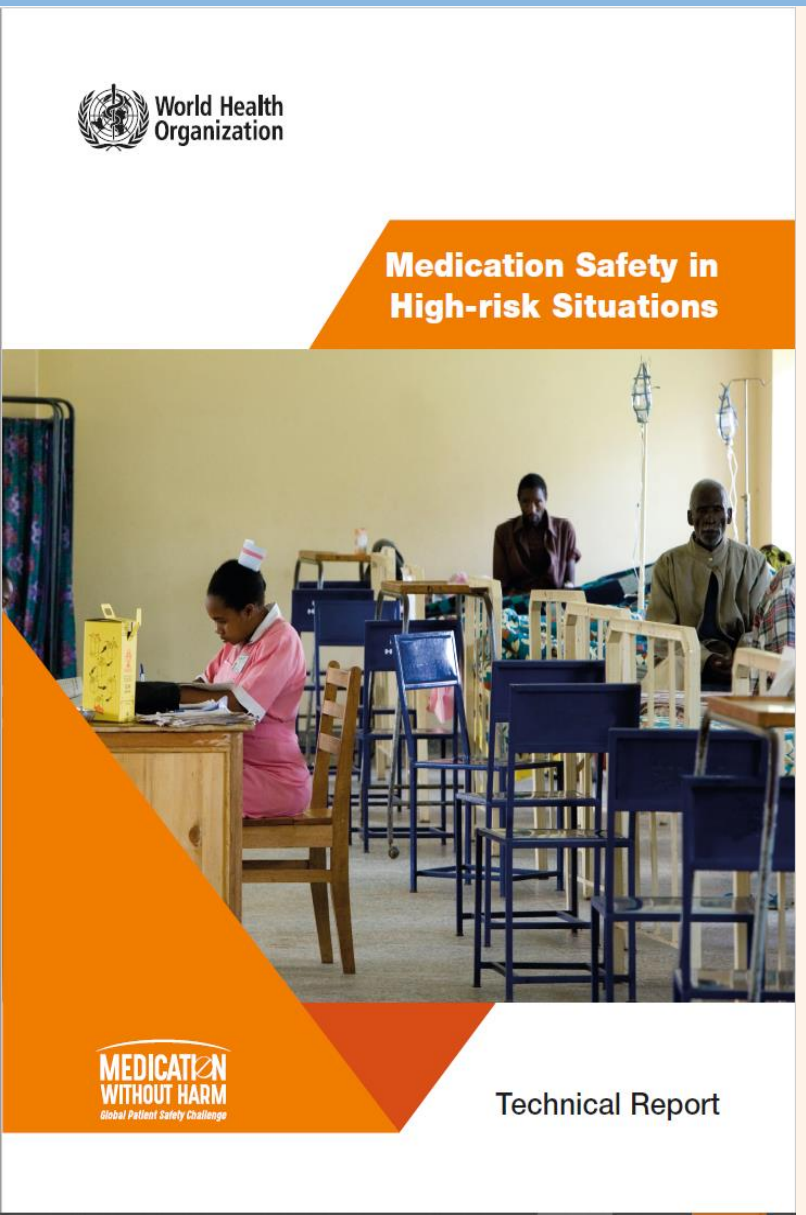
Emeritus Professor of Clinical Pharmacology, Cardiff University, Cardiff, Wales, UK

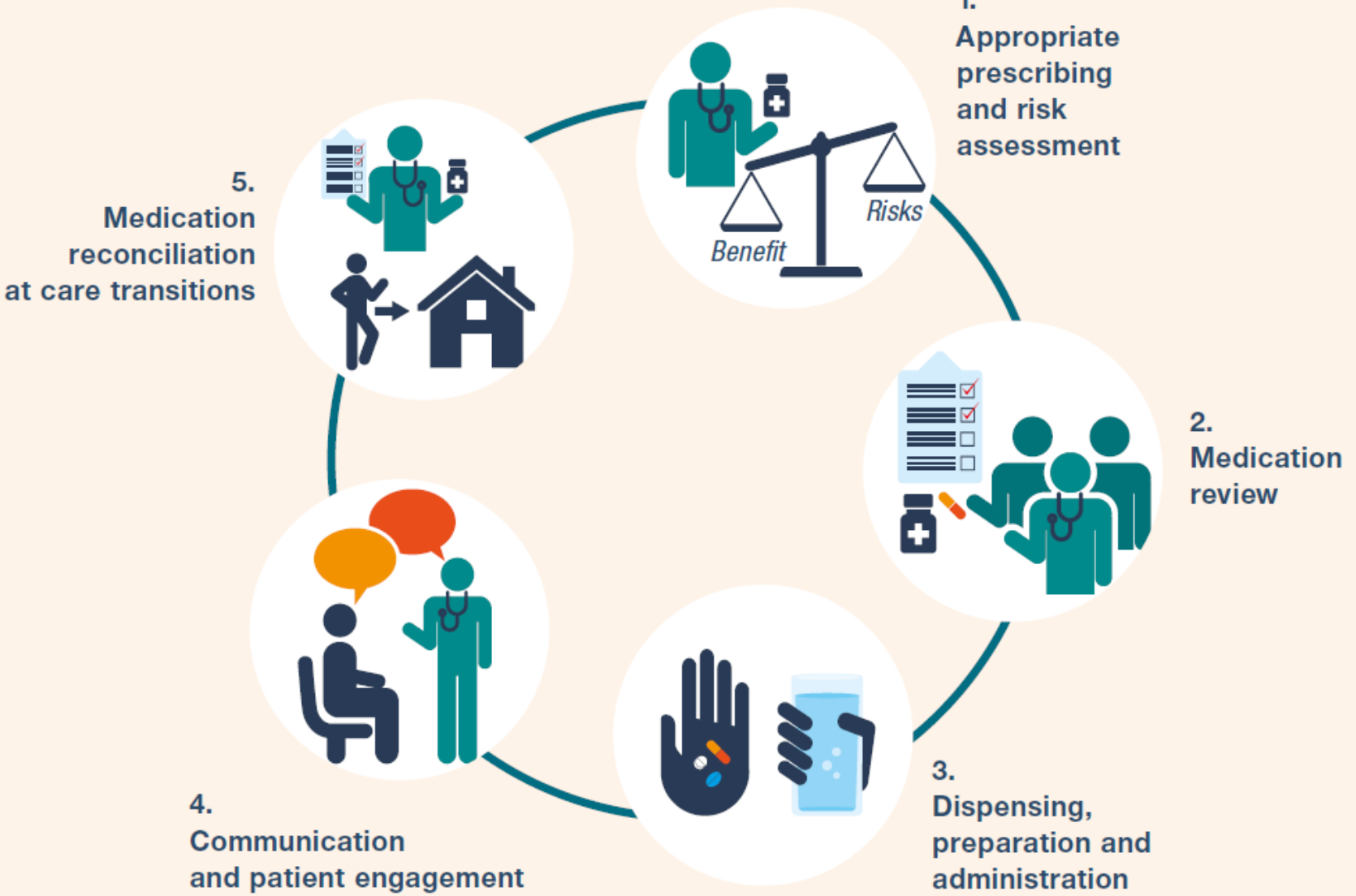


- **Medication errors contribute 9% of the world's total avoidable cost due to suboptimal medicine use**
- **A total of 0.7% of global total health expenditure (equivalent to $42 billion worldwide), can be avoided if medication errors are avoided**

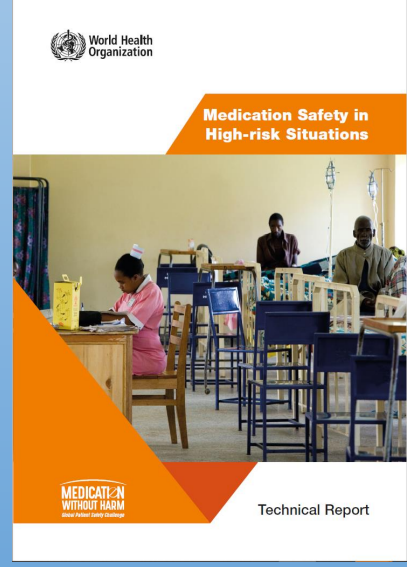
Advancing the responsible use of Medicines: Applying levers for change. IMS Institute for Health Informatics, October 2012
http://pharmanalyses.fr/wp-content/uploads/2012/10/Advancing-Responsible-Use-of-Meds-Report-01-10-12.pdf

Key steps for ensuring medication safety

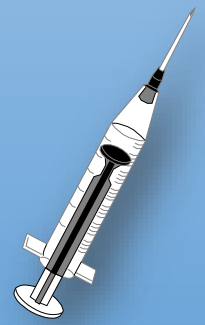




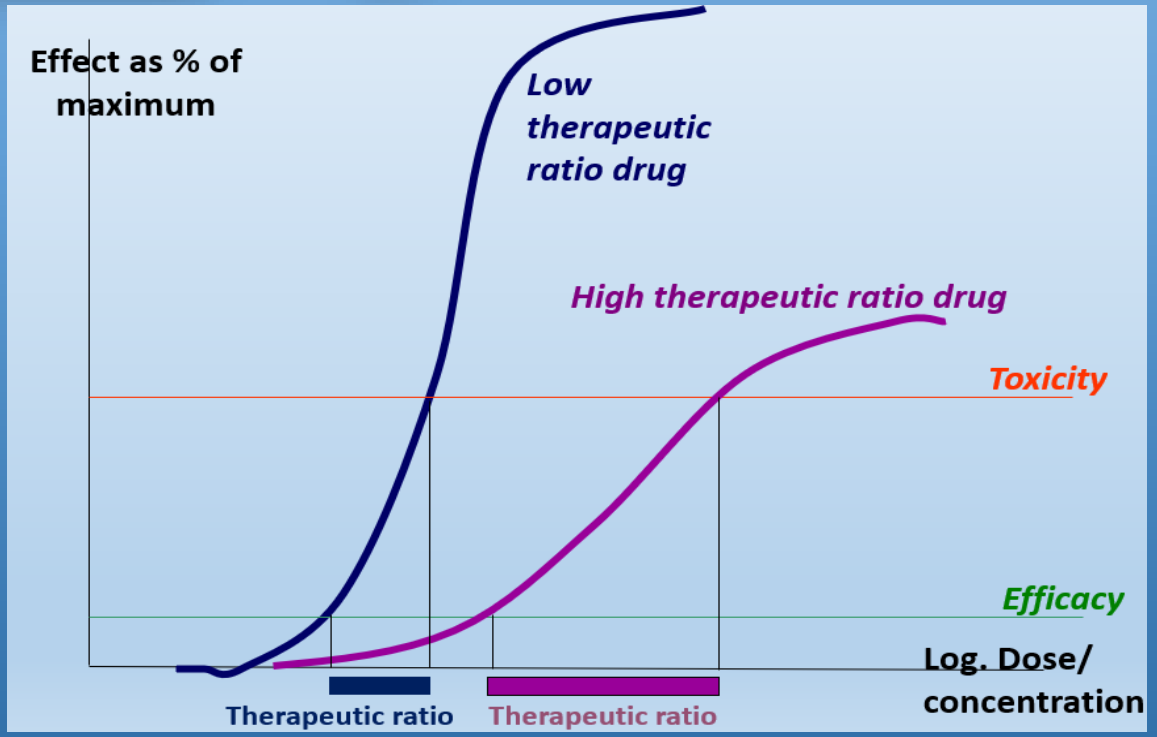
Medication Safety in High-risk situations



- The medication



- The people
- The work environment

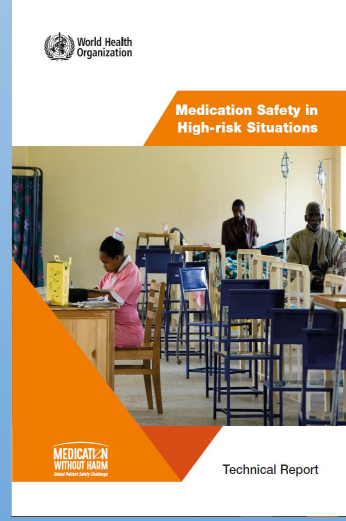


Some high-risk (high-alert) medications associated with harm when used in error

High risk medicine group	Examples of medicines
A: Anti-infective	Amphotericin Aminoglycosides
P: Potassium and other electrolytes	Injections of potassium, magnesium, calcium, hypertonic sodium chloride
I: Insulin	All insulins
N: Narcotics (opioids) and other sedatives	Hydromorphone, oxycodone, morphine Fentanyl, alfentanil, remifentanil and analgesic patches Benzodiazepines, for example, diazepam, midazolam Thiopentone, propofol and other short term anaesthetics
C: Chemotherapeutic agents	Vincristine Methotrexate Etoposide Azathioprine
H: Heparin and anticoagulants	Warfarin Enoxaparin Rivaroxaban, dabigatran, apixaban
Other	High-risk medicines identified at local health district/facility/unit level which do not fit the above categories

Source: Reproduced, with the permission of the publisher, from State of New South Wales (NSW Ministry of Health) *(11)*.

Medication Safety in High-risk Situations



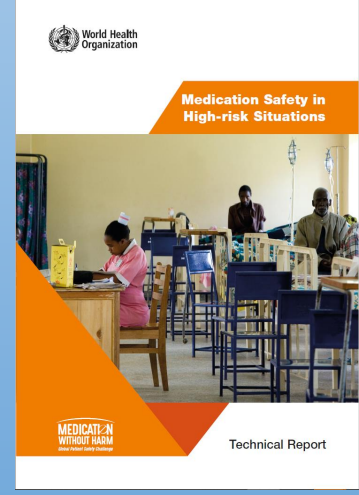
- The medication

Health Professionals

- The people
  - Education and training
  - Core prescribing competencies
  - Team-working skills
  - Communication skills
- The work environment

The Patient

- Age
- Number of medications (polypharmacy)
- Multimorbidity (e.g., Renal disease and liver disease)

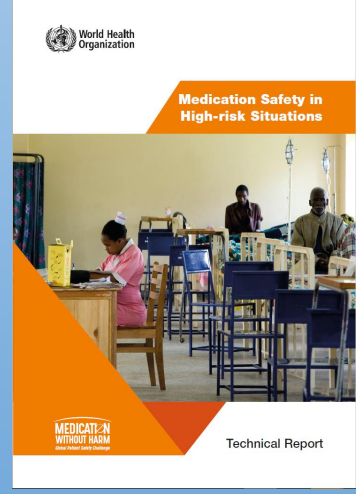


The Care-giver

- Engagement
- Communication
- Empowerment

Case Scenario – Patient experience in high-risk situation for medication safety	Maryann Murray

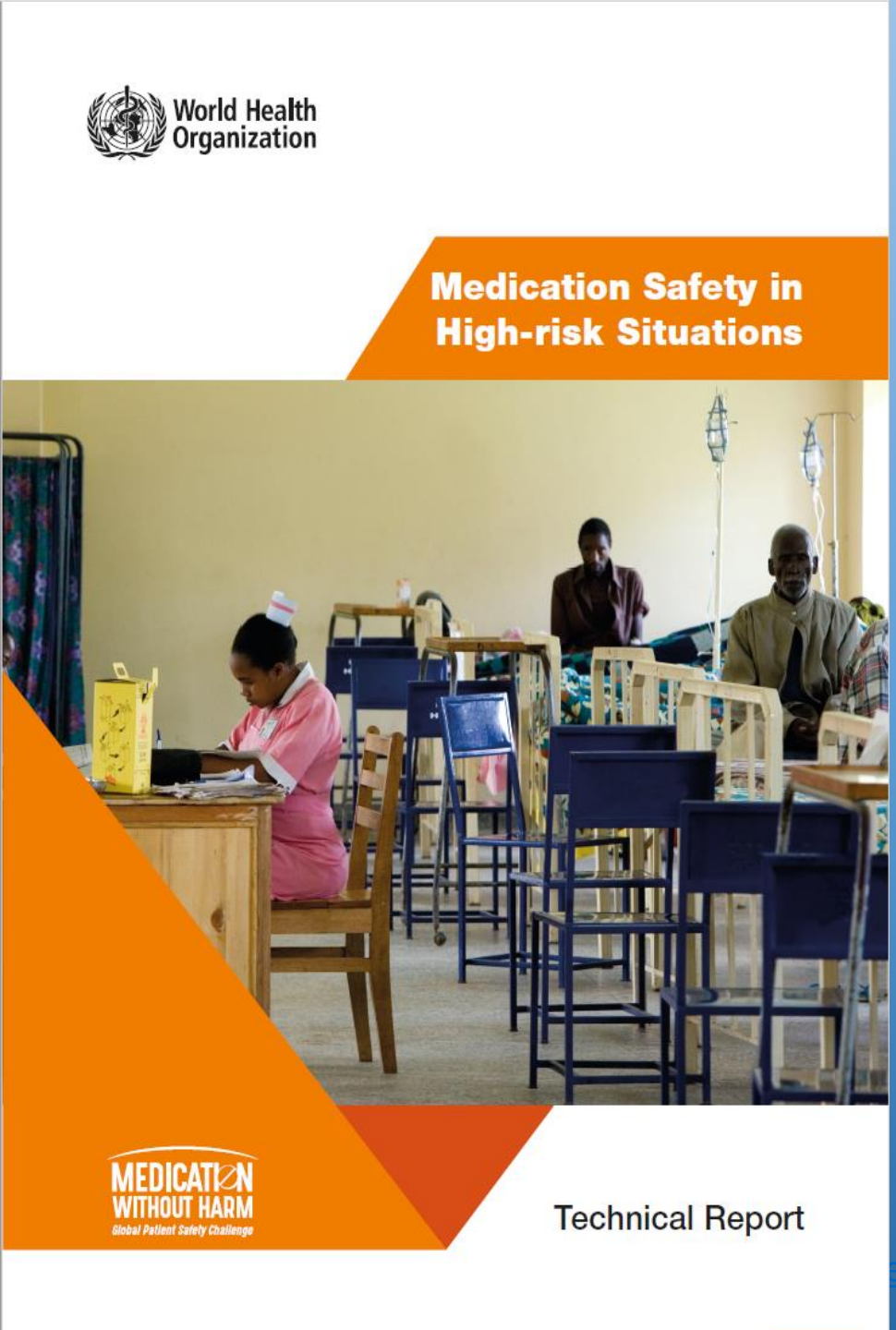
Medication Safety in High-risk Situations



- The medication
- The people
- The work environment

Hospital

Community



High risk situations: interventions

- Medication factors
  - High-risk (high-alert) medications
  - Reducing risk from high-risk (high-alert) medications
- Individual factors
  - Healthcare professionals
  - Patients
  - Reducing risk due to individual factors
- Environmental (systems) factors
  - Reducing risk from environmental (systems) factors
- Further resources & Glossary

eam/handle/10665/325131/WHO-UHC-SDS-2019.10-eng.pdf?ua=1

Key strategies for medication safety

Key strategies	Description
Failure mode effects analysis (FMEA) and self-assessments	Proactively identify risks and how they can be minimized
Error-proof designing (forcing functions and fail-safes)	Build in safeguards to prevent or respond to failure
Limit access or use	Use constraints (e.g. restriction of access or requirement for special conditions or authorization)
Maximize access to information	Use active means to provide necessary information when critical tasks are being performed
Constraints and barriers	Use special equipment or work environment conditions to prevent hazard from reaching patient
Standardize	Create clinically sound, uniform models of care or products to reduce variation and complexity
Simplify	Reduce number of steps in the process of handoffs (handovers) without eliminating crucial redundancies
Centralize error-prone processes	Transfer to external site to reduce distraction of staff with expertise, with appropriate quality control checks
Preparation to respond to errors	Have antidotes, reversal agents or remedial measures readily available and ensure staff are appropriately trained to manage an identified error

Source: Adapted, with the permission of the publisher, from Institute for Safe Medication Practices *(73)*.

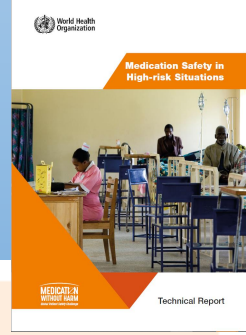
Addressing high-risk situations

- Strategies should be chosen which influence as many steps of the medication management system as possible
- "High-leverage" risk reduction strategies, such as forcing functions and standardisation should be bundled together with "low-leverage" strategies such as staff education and passive information dissemination
- Effective and sustainable strategies should be chosen

Institute for Safe Medication Practices: Medication safety Alert (Acute Care). Your high-alert medication list—Relatively useless without associated risk-reduction strategies
http://www.ismp.org/Newsletters/acutecare/showarticle.aspx?id=45

ISMP

The Prescribing Partnership



Before prescribing

- Decide if prescription is indicated or not
- Discuss choice with patient
- Check reference(s) sources

While prescribing

- Right patient
- Appropriate medicine
- Appropriate dose
- Appropriate route
- Appropriate duration

Prescribing

- Right patient
- Right medicine
- Right dose
- Right route
- Right duration
- Right labelling
- Right storage conditions

Storage, dispensing and preparation

- Right patient
- Right medicine
- Right dose
- Right route
- Right frequency

Administration

Patient

Multidisciplinary team

- e.g. Nurse
- e.g. Pharmacist
- e.g. Doctor

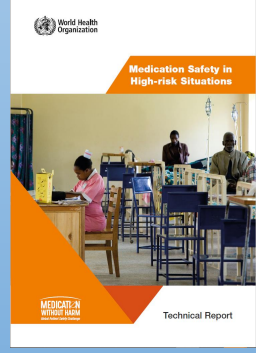
Text in color is specific to the respective medication use process

Source: Adapted, with the permission of the publisher, from Routledge *(94)*.

Chapter 5: Implications for countries

Practical examples - Addressing medication safety in high-risk situations at the national level	Prof Priyadarshani Galappatthy
Practical examples - Addressing medication safety in high-risk situations at the organizational level	Dr Michael Hamilton

Summary



- Situations may be high risk due to a combination of factors associated with the medications, the people involved and the external environment
- Potentially high risk situations must be pro-actively addressed, ideally using a range of sustainable strategies of proven efficacy
- Several such strategies are described, and applying them in clinical practice can reduce the risk of medication errors and their associated harms

THANK YOU