Patient Safety and eHealth:

The Missing Magic Bullet?

Edward Kelley,
WHO Patient Safety Programme

14 February 2013

Patient Safety and eHealth: the Missing Magic Bullet

- Patients and Problems Worldwide: The Changing World of Healthcare

- The Impact of eHealth on Safety and Quality of Health Care

- WHO and The Global Future of Patient Safety: 3 Priorities for eHealth

# Patients and Problems Worldwide: The Changing World of Healthcare

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

Change in the Health Care – Workforce, Medicines and Patients

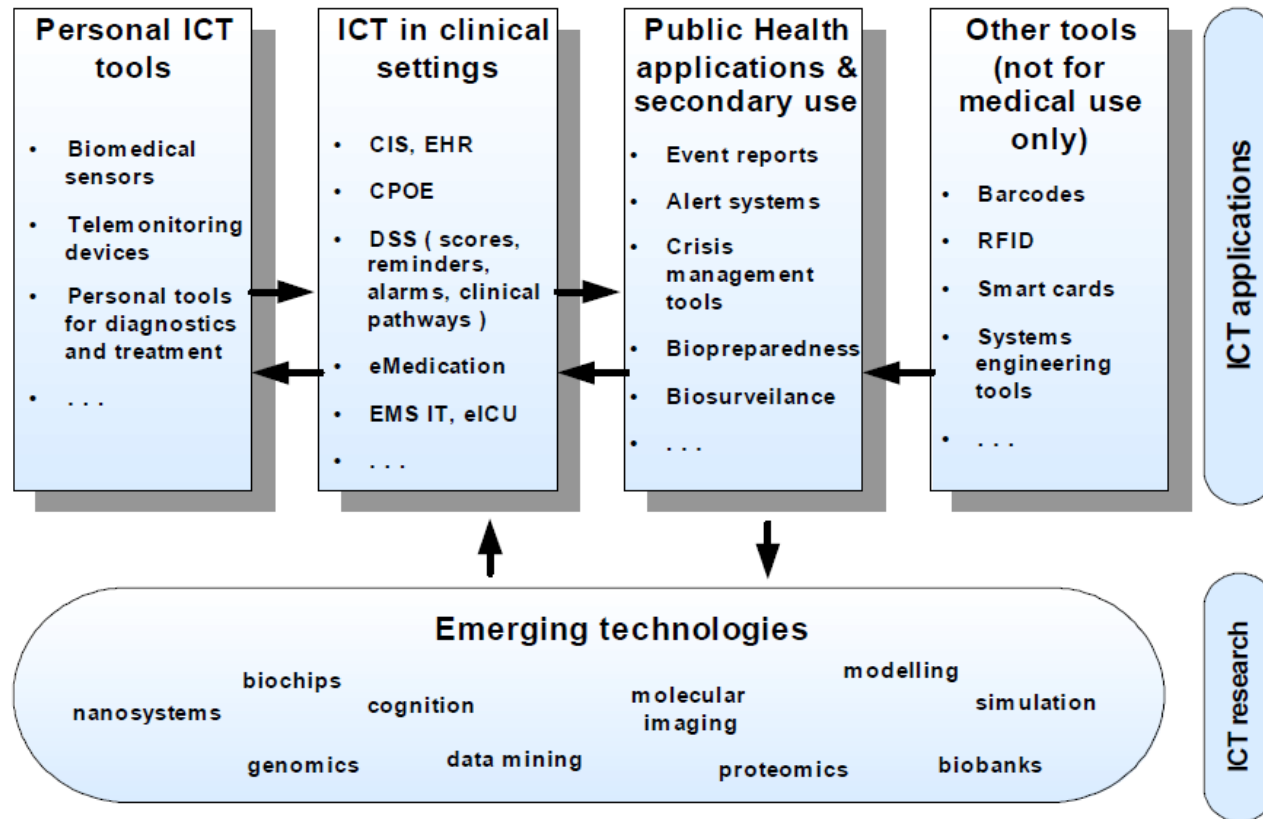# Yet, Health Care Continues to Be Hazardous
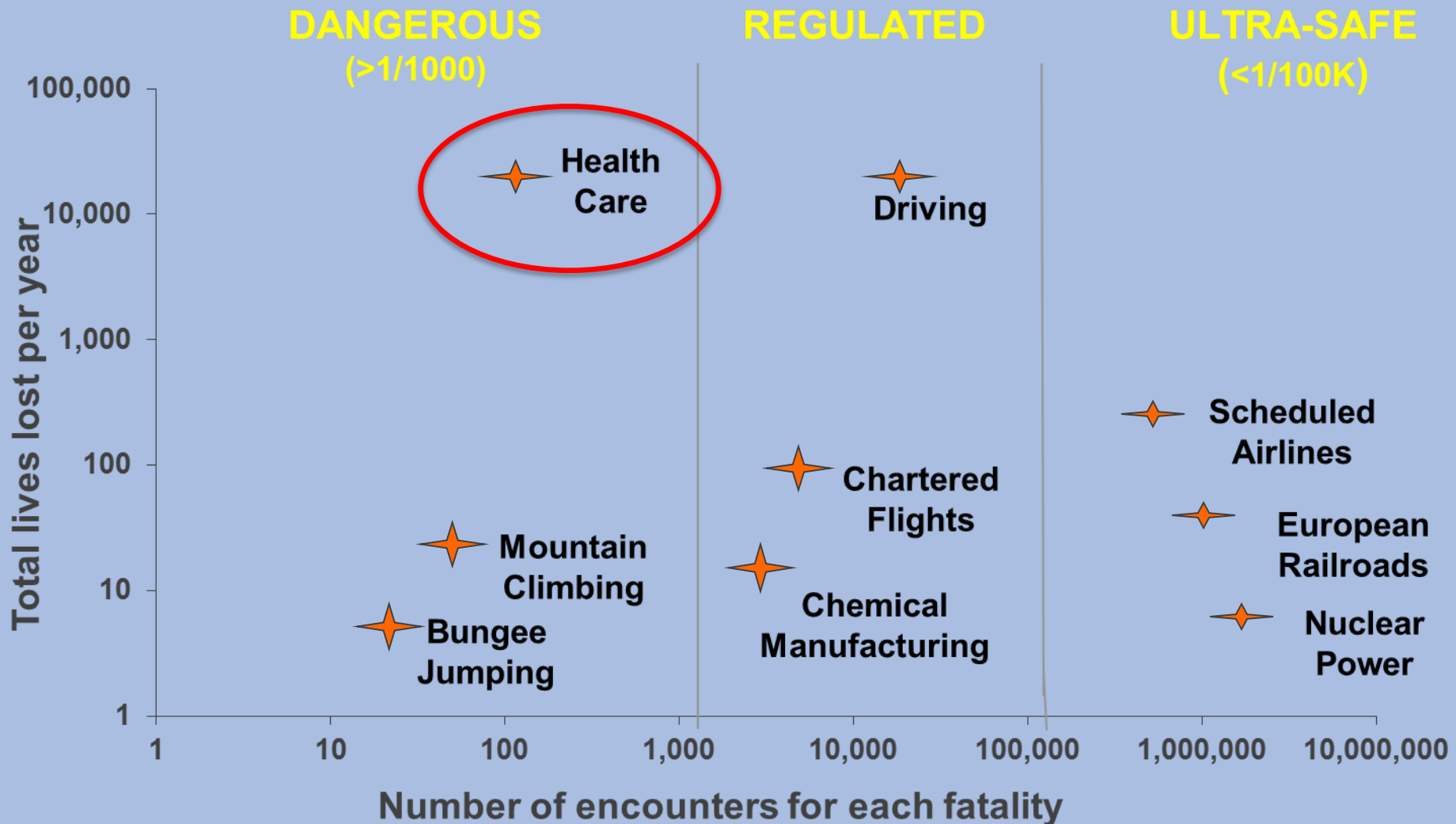
The Impact of eHealth on Safety and Quality of Health Care

The Promise of ICT and eHealth Tools

- <u>Promising applications</u>

- Delivery to remote locations

- Cost reduction through automation

- Error reduction in diagnostic and therapeutic processes

- Picture archiving

- ePrescribing and CPOE

- <u>Promising research areas</u>

- Data mining

- Ontologies

- Modelling and simulation

- Virtual clinical trials

- Risk modelling

ICT and eHealth Global Map

Personal ICT tools
- Biomedical sensors
- Telemonitoring devices
- Personal tools for diagnostics and treatment
- . . .

ICT in clinical settings
- CIS, EHR
- CPOE
- DSS (scores, reminders, alarms, clinical pathways)
- eMedication
- EMS IT, eICU
- . . .

Public Health applications & secondary use
- Event reports
- Alert systems
- Crisis management tools
- Biopreparedness
- Biosurveilance
- . . .

Other tools (not for medical use only)
- Barcodes
- RFID
- Smart cards
- Systems engineering tools
- . . .

ICT applications

Emerging technologies

nanosystems biochips cognition molecular imaging modelling simulation

genomics data mining proteomics biobanks

ICT research

Source: © empirica, *eHealth for Safety* study, 2005

Global Engagement on eHealth and Safety

- EHTEL – European Health Telematics Association

- ITU – mPowering Development, Standardization

- Africa – mHealth solutions

eHealth and Safety: The Evidence Gap

- Little systematic evidence of impact overall

- Some areas of progress – ePrescribing, CPOE

- Almost no evidence of cost effectiveness claims

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The Impact of eHealth on the Quality and Safety of Health Care: A Systematic Overview

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### Abstract

Background: There is considerable international interest in exploiting the potential of digital solutions to enhance the quality and safety of health care. Implementations of transformative eHealth technologies are underway globally, often at very considerable cost. In order to assess the impact of eHealth solutions on the quality and safety of health care, and to inform policy decisions on eHealth deployments, we undertook a systematic review of systematic reviews assessing the effectiveness and consequences of various eHealth technologies on the quality and safety of care.

Methods and Findings: We developed novel search strategies, conceptual maps of health care quality, safety, and eHealth interventions, and then systematically identified, scrutinised, and synthesised the systematic review literature. Major biomedical databases were searched to identify systematic reviews published between 1997 and 2010. Related theoretical, methodological, and technical material was also reviewed. We identified 53 systematic reviews that focused on assessing the impact of eHealth interventions on the quality and/or safety of health care and 55 supplementary systematic reviews providing relevant supportive information. This systematic review literature was found to be generally of substandard quality with regards to methodology, reporting, and utility. We thematically categorised eHealth technologies into three

World Health Organization

Patient Safety
A World Alliance for Safer Health Care

Worldwide: Progress in quality priority areas

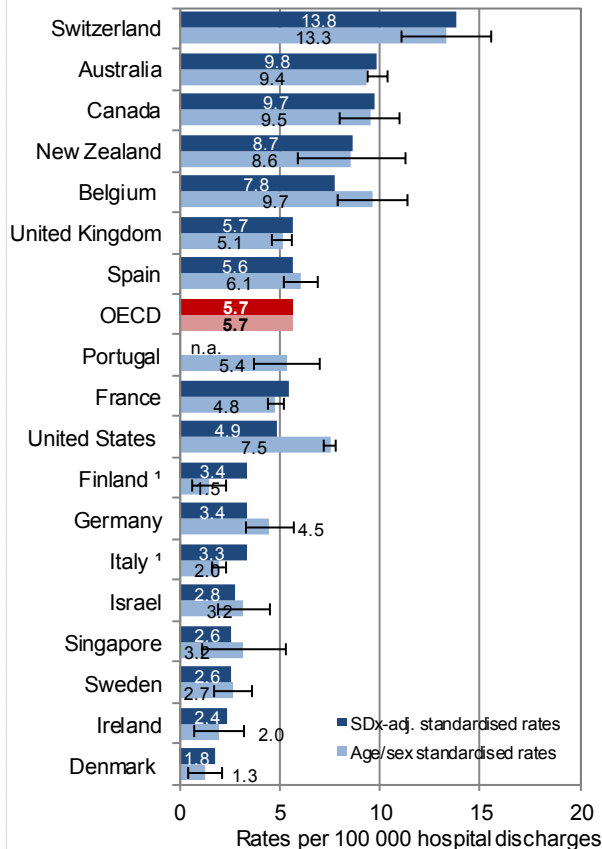Reduction in in-hospital case-fatality rates within 30 days after admission for AMI
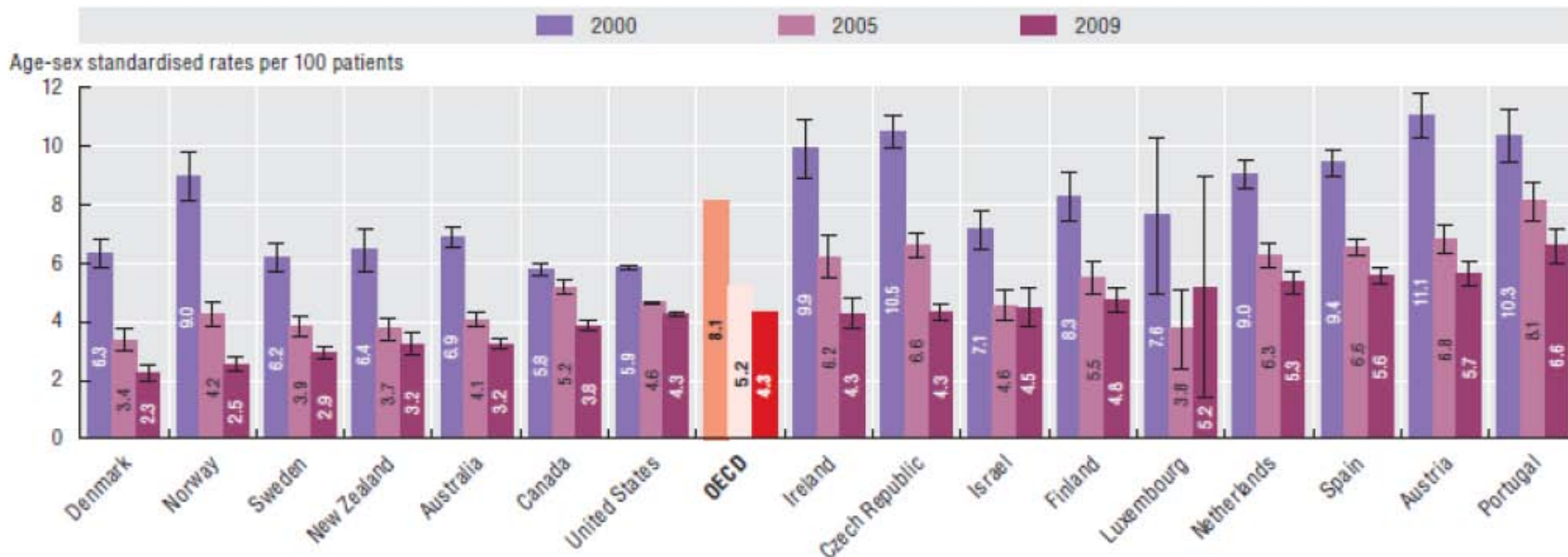
Note: Rates age-sex standardised to 2005 OECD population (45+). 95% confidence intervals represented by H.
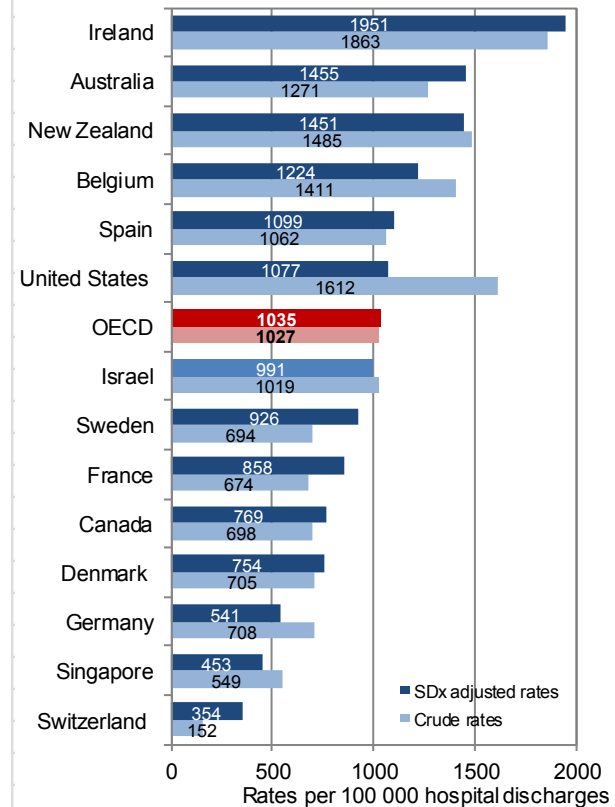
Source: OECD Health Data 2011, OECD (http://www.oecd.org/health/healthdata)

Global Performance in Safety

5.6.1. **Foreign body left in during procedure, 2009 (or nearest year)**

Country	SDx-adj. standardised rates	Age/sex standardised rates
Switzerland	13.8	13.3
Australia	9.8	9.4
Canada	9.7	9.5
New Zealand	8.7	8.6
Belgium	7.8	9.7
United Kingdom	5.7	5.1
Spain	5.6	6.1
OECD	5.7	5.7
Portugal	n.a.	5.4
France		4.8
United States	4.9	7.5
Finland [1]	3.4	1.5
Germany	3.4	4.5
Italy [1]	3.3	2.0
Israel	2.8	3.2
Singapore	2.6	3.2
Sweden	2.6	2.7
Ireland	2.4	2.0
Denmark	1.8	1.3

Rates per 100 000 hospital discharges

1. The average number of secondary diagnoses is < 1.5.
Source: OECD Health Data 2011.

5.6.4. **Postoperative sepsis, 2009 (or nearest year)**

Country	SDx adjusted rates	Crude rates
Ireland	1951	1863
Australia	1455	1271
New Zealand	1451	1485
Belgium	1224	1411
Spain	1099	1062
United States	1077	1612
OECD	1035	1027
Israel	991	1019
Sweden	926	694
France	858	674
Canada	769	698
Denmark	754	705
Germany	541	708
Singapore	453	549
Switzerland	354	152

Rates per 100 000 hospital discharges

Source: OECD Health Data 2011.

# WHO and the Future of Patient Safety: 3 eHealth Priorities

Priority #1: Improve Medication Safety

- 3rd Global Patient Safety Challenge
- eTools will be key:
    - Electronic meds systems
    - eFormularies
    - Barcoding systems

Priority #2:
# Prepare the future health workforce

- Move patient safety upstream

- Training standards and tools for tomorrow's health workforce

- Deliver them remotely through eTraining programmes
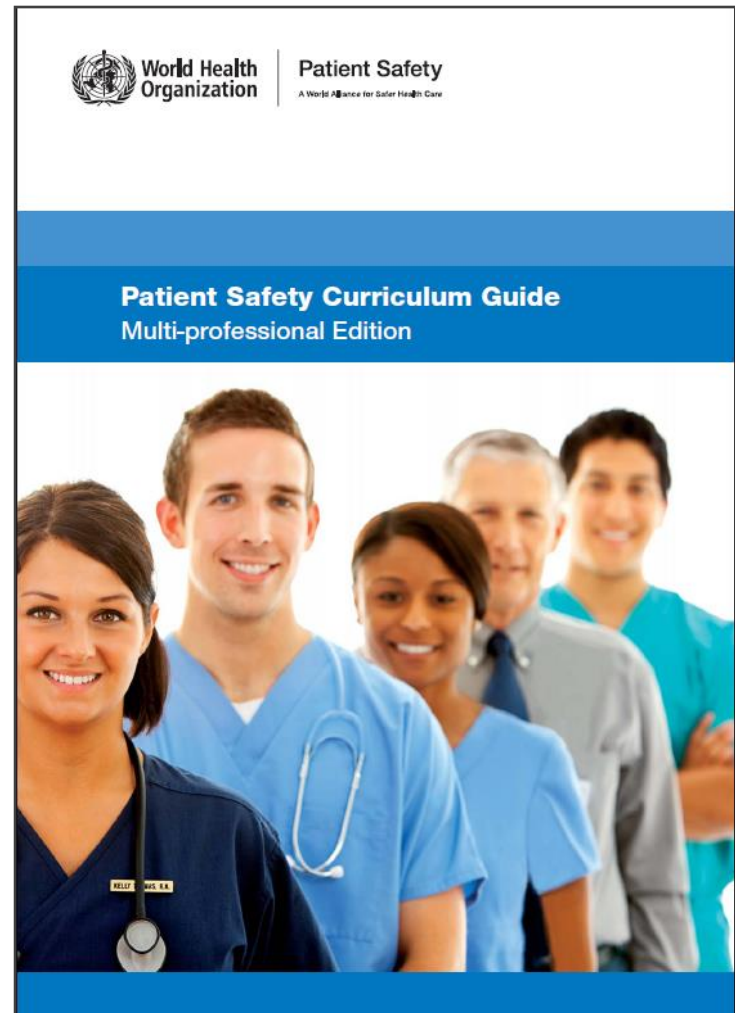
Priority #3: Engage Patients, with Patients

- Desperate need for tools to empower patients in their own care

- Handover management

- Information for decision making

- WHO Mother Baby 7day mCheck tool

- Adapt platform for other areas:

  ■ Medication management

  ■ Vaccinations
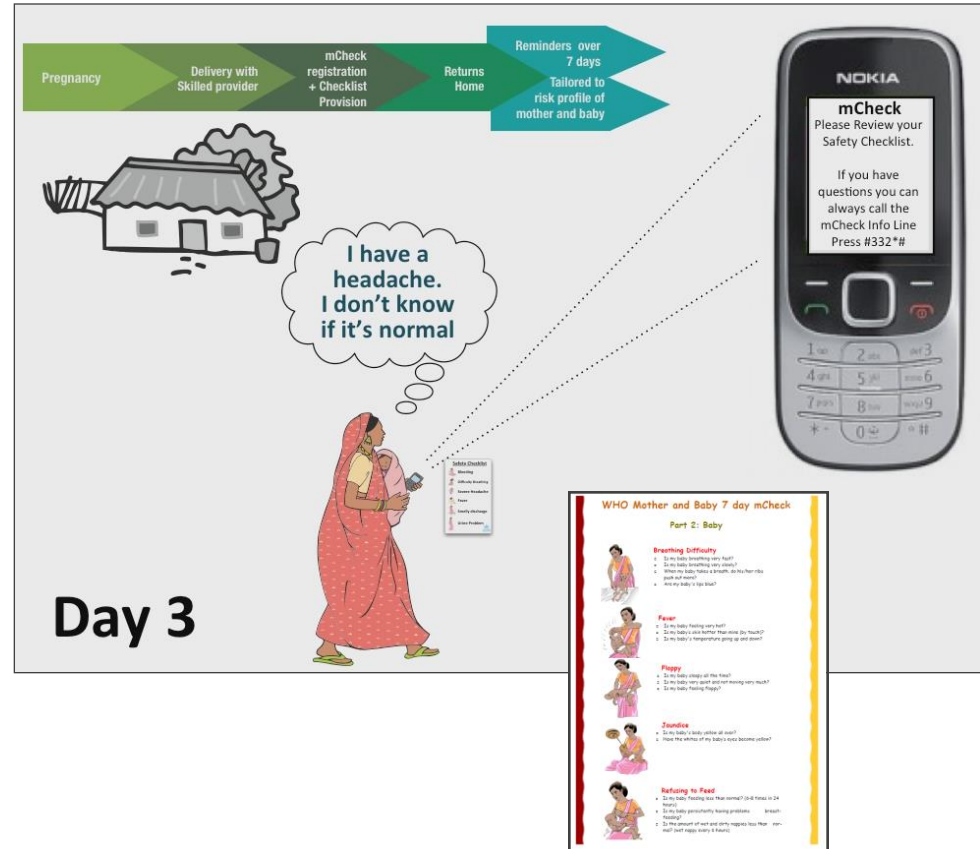
Priority #4: Electronic Systems for Reporting and Learning

- Tracking error rates challenge in most countries

- Feedback loops nonexistant

- Richness of text data rarely included

- Non intraoperable systems means little learning

International Information Model for Patient Safety

Deliverable 2:

Preliminary Analysis of Incident Reports based on Natural Language Processing and Network Analysis

September 30, 2012

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