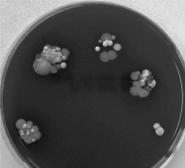


Preventing HAI: risks, healthcare systems and behaviour

John Ferguson



Recorded live at the 2009 New Zealand infection control conference

458 THE MEDICAL JOURNAL OF AUSTRALIA Vol 163 6 November 1995

Health Care

The Quality in Australian Health Care Study

Rosa McL Wilson, William B Runciman, Robert W Gibberd, Bernadette T Harrison, Liza Newby and John D Hamilton

A review of the medical records of over 14 000 admissions to 28 hospitals in New South Wales and South Australia revealed that 16.6% of these admissions were associated with an "adverse event", which resulted in disability or a longer hospital stay for the patient and was caused by health care management; 51% of the adverse events were considered preventable. In 77.1% the disability had resolved within 12 months, but in 13.2% the disability was permanent and in 4.9% the patient died. (Med J Aust 1995; 163: 458-471)

Preventable healthcare associated infection a common mode of injury

Reducing Harm to Patients from Health Care Associated Infection: The Role of Surveillance

<http://tinyurl.com/haisurv>

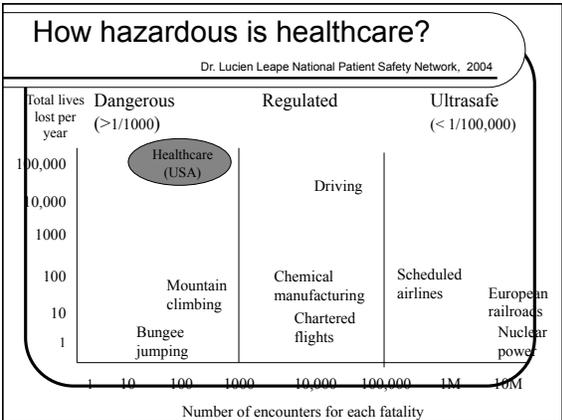


AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTHCARE

2008 Analysis

- Estimated annual number of infection cases triggered by healthcare: Australia **177,392**
- Estimated bed days lost because of health care infections: Aust: **1,970,142**
- Mortality: no reliable Aust. estimates; based on international estimates c.5,000 per annum

Australian Commission on Safety & Quality in Healthcare, 2008
Reducing harm to patients: the role of surveillance



Risks to healthcare staff

- Blood borne virus infection following needlestick injury or mucosal splash
- Respiratory illness:
 - SARS- 1 in 5 reported cases were in staff with significant mortality
 - Influenza and respiratory syncytial virus
 - Tuberculosis
- MRSA:
 - 127 investigations of hospital MRSA and involvement of healthcare staff indicated on average
 - 4.6% of healthcare staff were MRSA carriers
 - 1 in 20 experienced MRSA infection
 - Community-type MRSA USA paediatric clinic; 16 of 45 staff experienced skin infections with one death
- Norovirus, Hepatitis A

Models of error

Human error: models and management
James Reason

- Person model
 - Errors the product of wayward mental processes: distraction, carelessness etc
 - Remedial measures directed at the sharp-end error-maker: naming, shaming, retraining etc
- Legal (moral) model
 - Responsible professionals should not make errors (duty of care)
 - Such errors are rare but sufficient to cause adverse consequences
 - Bad (negligent) people make bad errors and deserve deterrent sanctions

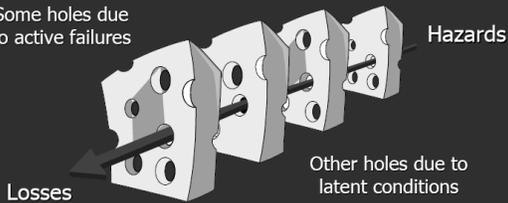
System model

- Errors are commonplace: "to err is human"
- They only occasionally cause adverse events
- Sharp-enders are more likely to be inheritors than the instigators
- Adverse events are the product of many causal factors
- Direct remedial efforts at removing error traps and strengthening defences (systems)

"Each System is perfectly designed to get the results it achieves" Don Berwick

A system model of accident causation

Some holes due to active failures



Hazards

Losses

Other holes due to latent conditions

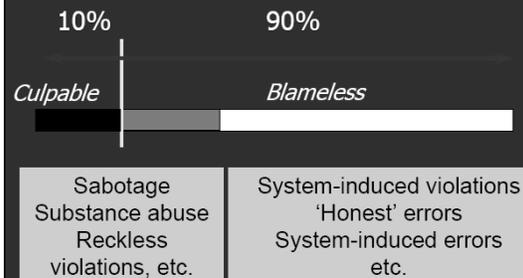
Successive layers of defences, barriers, & safeguards

- **Active failures:** unsafe acts committed by people in direct contact with patient or system: slips, lapses, mistakes, procedural violations. Hard to foresee or prevent.
- **Latent conditions:** "resident pathogens" in the system. Arise from decisions made by designers, builders, procedure writers, top level management.
 - Can provoke conditions that increase error
 - Can create long-lasting holes/weaknesses in defences

- ...active failures are like mosquitoes. They can be swatted one by one, but they still keep coming. The best remedies are to create more effective defences and to drain the swamps (latent conditions) in which they breed." James Reason 2000

We cannot change the human condition, but we can change the conditions under which humans work

A just culture (Reason)



System approach to error management

- Limit dangerous errors AND create systems that are better able to tolerate error and contain damaging effects
- Comprehensive approach aims at:
 - The person
 - The team
 - The task
 - The workplace
 - The institution as a whole

"It's not just about reporting, protocols, safe practices. It's about working together in multi-disciplinary teams with mutual respect" Lucien Leape

Scorecard of latent conditions in healthcare that affect HAI risk (Aust)

- Personnel
- Clinical care
- Environmental systems
- Quality systems
- Support services

Risk assessment - subjective synthesis of the likelihood of an unsafe condition or event coupled to the potential severity of outcome

Personnel management

System elements	Existing status of this element*	Latent unsafe conditions that increase the risk of HAI	Risk rating
Infection control training	√ variable	Inconsistent undergraduate training Staff not mandated to attend training Staff unaware of Infection Control (IC) Precautions IC requirements not integrated into other training	Extreme
Invasive procedure credentialing	√	Deficient asepsis during procedures and care of devices	High
Occupational Health and Safety training	√√	Unsafe use/disposal of sharps.	Medium
Immunisation	√√	Variable reporting and management of BBV exposures. Non-simultaneous or staff carrying bloodborne virus allowed to practice in situations that create patient risk	Medium

Clinical care

System elements	Existing status of this element*	Latent unsafe conditions that increase the risk of HAI	Risk rating
Standard and Additional Precautions	√√ Variable; often lower in medical staff	Variable compliance with hand hygiene and other requirements.	High
Antibiotic stewardship	√	Indiscriminate antibiotic exposure increases selection of multi-resistant HAI and increases the incidence of HAI and antibiotic resistance in the community	High
Immunisation of patients	√	At-risk patients not vaccinated in accord with guidelines	Medium
Infectious disease management	√	Lack of availability or active recourse to consultation leads to risk of death/relapse from HAI	Medium

Environmental systems

System elements	Existing status of this element*	Latent unsafe conditions that increase the risk of HAI	Risk rating
Environmental cleaning and disinfection	√ Variable	Variable resources and priority given to cleaning Variable standards of practice Variable training of cleaning staff	High
Built environment (eg. Facility design)	√ Variable	Lack of required isolation facilities for infectious patients Poor maintenance/design elements that impede cleaning	Medium
Water	√√√	Rare	Low
Ventilation	√√ Variable	Lack of specified respiratory isolation	Low
Waste	√√√	Rare	Low
Food	√√√	Adequacy of hazard analysis and critical control point plans.	Low

Quality systems

System elements	Existing status of this element*	Latent unsafe conditions that increase the risk of HAI	Risk rating
Document control	√ Variable	Informal or out-of-date guidelines remain accessible	High
Communication	√ Variable	Poorly developed communication channels amongst clinicians and between management and clinicians	Medium
HAI Surveillance	√√ Variable	Increases in infection rates or outbreaks variably detected. HAI events not validated/checked by most jurisdictions.	Medium
Clinical pathways for common infective syndromes	√	Tolerance of variable, clinical practice including delays in time to first antibiotic dose in septic patients	Medium
IC audit programs	√√ variable	Audits too infrequent, not rigorous in method; data not always fed back to clinicians	Medium

Support services

System elements	Existing status of this element*	Latent unsafe conditions that increase the risk of HAI	Risk rating
Sterilisation of surgical equipment	√√√	Rare	Low
Sterilisation and disinfection of endoscopes	√√	Variable practices and training of staff	Medium
Supplier controls	√√√	Rare	Low
Medication supply, compounding, prescription and administration	√√	Rare	Low

Five transforming concepts

- Reform of Medical Education
- Joy and Meaning of Work
- Engaging Consumers
- Transparency
- Integration of Care

National Patient Safety Network, Lucien Leape Institute
<http://tinyurl.com/transcare>

Reforming medical education

- As key lever to all of health professions education
- New emphasis on skills, behaviors and attitudes
- New content relevant to safety
- New focus on teachers

Finding joy and meaning in work

- Focus on workforce
- Culture that is a true learning environment
- Requires that everyone:
 - be treated with respect and dignity every day
 - given education, training, tools and encouragement needed so they can make a contribution that gives meaning to their lives
 - Be recognized and appreciated for what they do

Engaging consumers

- Patient and family centered care
- Patients and families as members of team
- Respected partners in health care and solutions design
- Engaged at every level, all of the time

See also Atul Gawande, "Better" chapter on Cystic Fibrosis care

Transparency

- Among staff
- Between caregivers and patients/families
- Among institutions
- To the public at large

Integration of care

- Integrated care platforms built around families of conditions or illnesses that share common work
- Maximize efficiency, safety, quality and reliability
- Produce consistently superior outcomes at lower cost

- National Safety and Quality Framework June 09 released for stakeholder review
- New set of S & Q accreditation standards that will replace relevant EQUIP standards
 - Governance for S & Q
 - Healthcare-associated infection
 - Medication safety
 - Patient identification and procedure matching

Healthcare Standard on HAI specify:

- Systems and governance for IPC and surveillance
- Infection prevention policies and protocols
- Managing patients with infection
- Antimicrobial stewardship
- Cleaning, disinfection and sterilisation
- Consumer information (patient, public, other service providers)

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