Human Factors and Infection Prevention

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• About me
  – The content of this presentation contains my views only
• Systems thinking
• Why is healthcare so complex and IPC difficult?
• Introduction to Human Factors
• Making a start...
“Human factors is a scientific discipline that requires years of training; most human factors professionals hold relevant graduate degrees.”

Russ et al 2013
Healthcare is hazardous

Adapted from Leape & Almaberti
Systems thinking

“Leaders understand that we have bad systems not bad people”

The Improvement Guide, 2nd Ed. Langley et al. (2009)
• “...we are human, and humans err. Despite outrage, despite grief, despite experience, despite our best efforts, despite our deepest wishes, we are born fallible and will remain so.”

• “just “trying harder” makes no one superhuman. Exhortation does not help much, nor will [punitive measures]”

  — Don Berwick (2001)
High Reliability Organisations

- Preoccupation with failure
- Reluctance to simplify
- Sensitivity to operations
- Commitment to resilience
- Deference to expertise

“Collective Mindfulness”

HSE 2011
Why is healthcare so complex?
1. The number of actors involved
2. The explosion in processes, procedures, technologies
3. The throughput of patients
4. The ratio of nurses to patients
5. The dependency of patients
6. The layout of clinical care areas
1. Delayed feedback

Cause and effect relationship unclear
2. Lack of connection with positive result

Cognitive disconnect between action & outcome
3. Complexity and inefficiency

Workarounds
4. Time pressure and high cognitive workload

And competing tasks
5. Few infection control cues

Embedding habits that endure reliably
6. Inconsistent ergonomic design practice

Placement of the tools for the job
Not part of the everyday flow of work

‘I can either practice infection control or I can treat the patients, you choose’ (Ward D, 2012)
Human Factors

• Also known as ‘ergonomics’
• “A science at the intersection of psychology and engineering...”
• “... dedicated to designing all aspects of a work system to support human performance and safety ... improve system performance and prevent accidental harm”
  • Russ et al 2013
Human Factors: Whole System Approach

“Political”

Organisational

Team(s)

Cognitive

Physical
Figure 1: Reason’s ‘Swiss cheese’ model of error causation related to infection prevention and control

- Infection hazard
  - Failed or absent defences across a number of levels

- Organisation
  - Organisational culture not supportive of infection prevention
  - Design flaws in systems and processes for infection prevention
  - Inadequate training and low knowledge of correct and integrated practices
  - Lack of leadership and teams that value infection prevention
  - Lack of motivation

- Technical
  - Error in, or omission of, correct infection prevention practice

- Team

- Individual

Facts and Fiction (1)

• “Fact #1: Human factors is about designing systems that are resilient to unanticipated events.

• “Fiction: Human factors is about eliminating human error.”

• Russ et al 2013
Facts and Fiction (2)

• “Fact #2: Human factors addresses problems by modifying the design of the system to better aid people.”

• “Fiction: Human factors addresses problems by teaching people to modify their behaviour.”

• Russ et al 2013
“Tell the nursing student to attach the oxygen mask and tubing to the green spigot”
Making a Start... An Infection Prevention Example
What next?

• Interested?
• Get involved!
• Talk to your colleagues & teams
• Think about human factors solutions
• Bring in the experts (if you can)
• Catchpole K (2013) Spreading human factors expertise in healthcare: untangling the knots in people and systems. Quality and Safety in Healthcare; 0:1-5. doi:10.1136/bmjqs-2013-002036
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- www.health.org.uk – ‘human factors’

Questions?

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