Human Factors in incident investigation

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Why are we here?

• Threshold for investigation and review
• Lack of systematic processes
• Right clinical experts, right time
• Right skills for investigations and recommending effective improvements
• Missing opportunities to learn and improve
SCV - Incident Response Team

CEO
Safer Care Victoria

Director, Clinicians as Partners

Deputy CEO,
Chief Nurse and Midwifery Officer

Director, Consumers as Partners

Director, System Improvement, Innovation & Leadership

Director, Stewardship and Support

Director, Strategy and Implementation

Manager
Incident Response Team

Senior Project Officer

Senior Project Officer

Senior Project Officer

Senior Project Officer

Project Officer
Incident Response Team

Overview of work plan
(October 2017)
Why Human Factors?

Humans involved in event & Humans investigating

- We are all human
- Humans make errors and systems fail

Different lenses to look at same problem

- You will see what you expect to see
- You will find what you expect to find
- Everything is easy with hindsight
Overview

• Human Factors and system concepts

• Human error myths

• What makes us human and how does it affect work
Human Factors

Apply theory, principles, data and methods
Understand interactions among humans and other system elements
Design for human well-being and overall system performance

1. “the human factor”
2. The physical and cognitive capabilities and limitations of the human
3. Factors affecting human performance
   Internal factors (physical and cognitive capabilities and limitations) and external factors (i.e. equipment, procedures, supervision, training, culture etc)
4. Understanding humans as an element of and their interactions within a sociotechnical system
What is the health (sociotechnical) system
Health system: onion model

Institutional context factors

Organisational and management factors

Work environmental factors

Team factors

Individual staff factors

Patient factors

Task and technology factors
Part 2
Human error myths
Errors are intrinsically bad?

**Facts:**

- Errors are not bad per se
- Man made contexts and systems are unforgiving of error
- Contexts and systems shape outcomes
- Errors - an opportunity to learn and improve
Bad people make bad errors?

Facts:

- Tendency to attribute errors to personality
- The best people can sometimes make the worst mistakes
- The best people often perform the most difficult tasks and therefore are more likely to make an error
Errors are random and highly variable?

Facts

Most errors can be categorised as:

- Skill-based Error
  - Slip of Action
  - Memory Lapse
- Mistake
  - Rule-based
  - Knowledge-based
- Violation
  - Routine
  - Situational
  - Exceptional
Practice makes perfect?

Facts

- Experienced practitioners are more likely to make absent-minded slips and lapses
- Intermediate practitioners are more likely to make rule based mistakes
The errors of highly trained professionals are very rare?

**Facts**

- Errors amongst highly trained professionals are common
- Experts anticipate the likelihood of errors and employ effective error recovery strategies
- Compensatory strategies are limited and cognitive resources are brittle
The errors of highly trained professionals are usually sufficient to cause bad outcomes?

Facts

- Experts make numerous errors but rarely have bad outcomes
- Role of barriers and safeguards to protect patients from harm
- Adverse events are usually a result of multiple, coinciding system weaknesses that fail to protect the patient
It is easier to change people than situations

Facts

• Human error can never be entirely eliminated

• We cannot change the human condition but we can change the conditions under which people work
The error is clear...how could they?
The error is clear…how could they?

Facts

• Hindsight bias
• Made sense to them at the time
• Don’t assume you know why (Ask!)
• Systems and process focus not individuals
Accident causation

Organizational Influences
Unsafe Supervision
Preconditions
Unsafe Acts

Accident!
Human error in systems context

We don’t redesign humans
We redesign the system within which humans work
Part 3
What makes us human and how does it work?
Human Factors (selection of topics)

Institutional context factors

Organisational and management factors

Work environmental factors

Team factors

Individual staff

Patient factors

Task and technology factors

- Safety and Just culture
- Fatigue Risk Management
- Safety in design
- Team resource management
- Non-technical skills
- Attention
- Perception
- Memory
- Information processing
- Workload
- Decision making
- Communication
- Automation

- Safety in design
Limited attention resources

The torch of attention
Perception

Humans actively process information, they don’t just passively receive, store, and retrieve information
Perception

orientation

grouping
Perception

Relative size

Depth perception
Situation awareness

1. Timely and accurate perception of elements

2. Integration of this information into existing mental model

3. Projection of the information to determine future status
Decision making

**System 1**
- Fast
- Unconscious
- Automatic
- Everyday Decisions
- Error prone

- Know what to look for
- Accuracy mental model

**System 2**
- Slow
- Conscious
- Effortful
- Complex Decisions
- Reliable

- Time to respond
- Cognitive demands
Cognitive biases

- **Primacy and recency effect**
  
  ![Primacy and recency effect diagram](image)

- **Confirmation bias**
  
  ![Confirmation bias diagram](image)

- **Hindsight bias**
  
  ![Hindsight bias diagram](image)

- **Groupthink**
  
  ![Groupthink diagram](image)
• Improves performance (up to a point)
• Fixate
• Previous responses or habits
• Communication declines
• ‘Freeze’ or panic
Fatigue

Impact on performance:
• Judgement
• Concentration
• Memory
• Vigilance
• Reaction time and/or physical coordination
• Work efficiency
• Recognising that we are fatigued
Working in a system
Fatigue is everyone’s responsibility

- Organisational support managing the risk of fatigue impairment
- Sleep opportunity provided
- Actual sleep obtained / Time awake / Time of day
- Behavioural symptoms
- Fatigue related errors
- Fatigue-related incidents

based on Dawson & McCulloch, 2005
Automation

Landing gear

Flaps

Wing Flaps

Sound familiar?
Same buttons
Same alarm sounds
Safety culture

- Value everything they say and do
- Time and resources for safety
- Feel safe to speak up and report
- Human error is a symptom
- Learn when things go wrong
- Proactive risk management
- Not just compliance focused
Just culture

“Humans make errors and systems fail”

Would similar person in similar situation likely have done the same?
- Training, selection experience
- Resources
- Supervision
- Conditions
- Demands or pressures

Not follow procedures?
- Available, workable, intelligible, correct
- Perceived benefit to organisation
- Previously allowed

Actions intended?
- Deliberate harm?
- History of unsafe acts?
- Unauthorised substance?
- Medical condition?

Review and action systemic factors

Procedures and implementation

Individual performance

System safety review

Involve HR/ criminal/ AHPRA
Good clinician?
Making the most of the hand you are dealt with?

Continuously improve the system
Provide a better hand in the first place!

*Leaving the hand and rely on people to make the most of it is practically and ethically irresponsible*

(Dekker and Leveson, 2015)
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