Matching solutions to error types: a very practical application of patient safety theory

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To err is human, and only by understanding why things went wrong can we protect patients from harm.
Latent Failures
‘Accidents waiting to happen’
Contributing factors
(everything that affects our performance)
Errors

'someone made a mistake……..
Rasmussen’s Skill, Rule and Knowledge model

- **Skill**: Automatic, familiar & well practiced routines
- **Rule**: Learning rules and rehearsing routines
- **Knowledge**: Novel task

Conscious Thought
Types – based on the work of James Reason, adapted by NPSA

- **Unsafe acts**
  - Intended actions
    - Violations
      - Routine
        - Reasoned
        - Reckless
        - Malicious
      - Rule & Knowledge Based errors
    - Mistakes
      - Skill based errors
        - Memory or attention failures
  - Unintended actions
    - Slips & Lapses
Morphine overdose - error types?

A. A junior doctor prescribes the standard adult dose of morphine to a petite, frail patient who has chronic renal failure. She has a respiratory arrest.

B. Working in poor lighting at night in a hospice, two nurses both miss the decimal point in a diamorphine dose written as 2.5mg, and give 25mg in error. The patient has a respiratory arrest.
Reduce the likelihood of error

Routine violations
• Is it a good rule?
• Is realistic to comply?
• Downsides for staff or patients?

If it is a good & realistic rule, change culture by:
• Changing leader/leadership style
• Changing beliefs ⇒ changing behaviour?

Embedding behaviour ⇒ changing beliefs (cognitive dissonance)
Reduce the likelihood of error

Reckless violations

- Personality centred
- Personality not easily changed

Consider:

- Supervision
- Self-awareness
- Working environment
- Avoid solo clinical work

Harness their strengths for innovation
Malicious violations

- Nearly always could have been detected far sooner
- More mundane malicious violations *e.g.* theft of drugs, working under influence of alcohol, not reporting infection status

Consider:

- All aspects of good governance
- 360 degree feedback
- Anonymous reporting route
- Whistleblowing support
Reducing the likelihood of error

Knowledge based mistakes

• Education may be appropriate, but usually for all, not just an individual

• But next cohort will always be coming along behind

No one has complete knowledge – build in systems that take advantage of differing levels of expertise:

• e.g. junior/registrar/consultant review/2\textsuperscript{nd}/3\textsuperscript{rd} opinion

But do we do that as well for other professions?
Reducing the likelihood of error

Rule based mistakes

• Better rules covering more eventualities can help
• Apps can do this better than paper, but can also lead astray

But no rule covers all eventualities

• Encourage professional judgement and respect reasoned violations
• Embed that encouragement in policy & procedures
Teach ‘ignorance awareness’

THERE ARE KNOWN KNOWNS
THAT IS TO SAY, THERE ARE
THINGS THAT WE NOW KNOW WE DON’T KNOW

KNOWN UNKNOWNNS

UNKNOWN UNKNOWNNS

WE DO NOT KNOW WE DON’T KNOW

AND EACH YEAR WE DISCOVER A FEW MORE OF THOSE

UNKNOWN UNKNOWNNS
Reduce the likelihood of error

Skill based mistakes

- Reduce external interruptions, but recognise multi-tasking remains a reality
- Break up prolonged boring tasks
- Adequate rest/food/fluid

Allow for internal distraction

- Avoid culture of always clocking in
- If clocked in, potential for ‘light duties’?
- Look out for colleagues
Barriers/defences
…and no-one stopped them’
Human Action

e.g. Safer Surgery checklist

e.g. second person checking the drug dosage before administering
A common mistake that people make when trying to design something smoothly is to underestimate the ingenuity of complex folos.
Visual cues
Hooray!

Swindon’s roundabout
Intuitive and standardised design
Barriers, Controls and Defences

Human Action
  e.g. second person checking the drug dosage before administering
  e.g. Safer Surgery checklist

Administrative
  e.g. medication policy says only consultants can prescribe drug x
  e.g. training and competency checks before procedure x
Human and administrative barriers will depend on the team

- Team dynamics *(isolated, divided, elite)*
- Leadership *(weak, charismatic)*
- Role congruence *(‘nobody's job’)*
- Hierarchies:
Barriers, Controls and Defences

Human Action
- e.g. second person checking the drug dosage before administering
- e.g. Safer Surgery checklist

Administrative
- e.g. medication policy says only consultants can prescribe drug x
- e.g. training and competency checks before procedure x

Natural time or distance
- e.g. spinal chemo and IV chemo in different rooms
- e.g. all left-side cataract operations in one theatre session

Physical
- e.g. incompatible connectors for oxygen/anaesthetic gases
- e.g. blood fridge accessed only by ID of staff with current training
PRE-PRODUCTION: THIS IS NOT A SECURE OR LIVE ENVIRONMENT. TEST PATIENTS ONLY.

The use of REAL PATIENTS is a violation punishable under SECTION 7.2 of the HIPAA Privacy Rule.
If you believe you are seeing this error, please contact your EHR or software provider.

Patient: Nadia M Carson  D.O.B: 5/13/1979  Gender: Female
Encounter ID: c67f845-c05a34c7-a7f5-4867b00353bf

Pre-production. From: 64.139.216.16 From IP: 64.139.216.16 AccountID = demo SiteID =

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<More information about medications and allergies>

:: This is a NPSA High Risk Process Caution!

Methotrexate is usually prescribed weekly and requires regular monitoring and blood tests.

- Do not proceed
- Proceed
Strengths and weaknesses of barriers

- Sign?
- Police car?
- Speed camera?
- Speed bumps?
- Speed alarm?
- Speed limiter?
We can never eliminate the risk of human error......

...... but we can constantly reduce the risk of our errors harming patients

Thank you