WHAT IS HUMAN FACTORS SCIENCE?

Human factors encompasses all of those factors that can influence people and their behaviour. In a work context, human factors are the environmental, organisational and job factors and individual characteristics which influence behaviour at work.

Clinical Human Factors Group. 2009
**SOLUTIONS - HIERARCHY OF EFFECTIVENESS**

**Stronger Actions**
- Architectural / physical plant or equipment changes
- New device with usability testing before purchasing
- Engineering controls (interlock / forcing function)
- Simplify the process and remove unnecessary steps
- Standardise equipment or processes or care plans
- Tangible involvement and action by leadership in support of Patient Safety

**Moderately Strong Actions**
- Increase in staffing / decrease in workload
- Software enhancements / modifications
- Eliminate / reduce distractions
- Checklist / cognitive aid
- Eliminate look and sound-a-likes
- Enhanced documentation
- Enhanced communication

**Weaker Actions**
- Double checks
- Warnings and labels
- New procedure / policy
- Training individual who made the last error
- Additional study / analysis
- Disciplinary action

**Forcing Functions**

A forcing function is an aspect of a design that prevents the user from taking an action without consciously considering information relevant to that action. It forces conscious attention upon something ("bringing to consciousness") and thus deliberately disrupts the efficient or automatised performance of a task.
USER TESTING

WHAT THE DESIGNER CREATES

WHAT THE USER EXPECTS

THE LEAST FAMILIAR USER IN THE MOST ADVERSE CONDITIONS

Inattentional blindness

- 83% radiologists did not see the gorilla
- Gorilla = 48X size of nodule on a CT scan
- Don’t see what you are not expecting to see

Drew, Vo and Wolfe (2012)

INVOLUNTARY AUTOMATICITY

(AUTOMATICITY, 2005)

- A risk factor where repeated checks are carried out (e.g., dispensing checks, repeat prescriptions)
- Going through the motions of carrying out the checks but not consciously engaged in the checking process.
Last task step and primary goals

- NEW COMMUNITY PHARMACIST
- DISPENSES WHEN YOU ARRIVE IN THE PHARMACY TO PICK UP THE MEDICATIONS
- TIME PRESSURE AND STRESS
- COMPLEX PRESCRIPTION WITH ELEVEN MEDICATIONS
- DISPENSES THEN FORGETS TO PUT THE RE-ORDER FORM IN THE BAG

Generic 'Non-Technical Skills'

- Teamwork
- Leadership
- Communication
- Decision Making
- Task Management

Team psychological safety

- TPS is "a shared belief held by members of a team that the team is safe for interpersonal risk taking" (Edmondson 1999).
- Interpersonal risk taking includes, for example, speaking up to make suggestions, expressing concern or asking for help.
Mitigated speech

“An attempt to downplay or sugarcoat the meaning of what is being said. We mitigate when we are being polite or when we are ashamed or being deferential to authority”
We could also call it “Hint and hope”

Open versus closed loop communication

1 - Call-out
2 - Check-back
3 - Closed-loop

DO PATIENTS TAKE THEIR MEDICINES?

• Around 30 - 50% of patients taking medicines for a chronic (long term) condition do not take the medicine as it has been prescribed.
• We call this non-adherence or non-compliance.
• Does it matter?
**TEACHBACK**

- Nurse/Pharmacist examines patient recall & comprehension
- Nurse/Pharmacist assesses patient recall & comprehension

**Nurse/Pharmacist**
- Clarifies and rephrases the explanation

**Patient/Carer**
- Can teach back accurately
- Cannot teach back accurately

**TAKE HOME MESSAGES**

- Applying human factors methods creates safe design in healthcare
- We need to broaden our understanding of human factors to improve the safety of pharmacy systems

**Using teach back**

- Uses statements such as:
  - "I want to make sure I explained everything clearly to you. Can you please explain it back to me in your own words?"
  - OR
  - "I want to make sure I did a good job explaining this to you because it can be very confusing. Can you tell me what changes we decided to make and how you will take your medicine now?"