
Better actions: better
outcomes

Human Factors Engineering
(HFE) and Strength of
Actions

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'Human Factors'

- The study of how people interact with complex systems;
- How they interact with each other in complex systems; and
- How problems with those interactions lead to errors and breakdowns in safety

Human Factors - the facts

- We all make errors all the time
- The same error can have very different consequences
- In healthcare, errors frequently lead to patient harm
- Errors are not bad or morally wrong but we frequently ascribe blame

Human Factors Engineering

- Designing systems to fit human capabilities and limitations (glove to the hand, not hand to the glove)
- Using methods to gather unique information on:
 - Hidden needs of the end-user
 - Unexpected interactions between people and machines

Recommended reading: *The Design of Everyday Things* – Donald A Norman

Human Factors Engineering

“Human factors is to patient safety as pathology is to surgery”
Dr John Gosbee, University of Michigan

HFE is the basic science of patient safety

Common design problems in healthcare

- Examples:
 - Reliance on vigilance and memory
 - Lack of standards and standardisation
 - Lack of “forcing functions” and cognitive aids at point of care
 - Latent equipment design issues
 - Complexity



n = 16



Forcing functions

- Can you think of any examples of “forcing functions” in everyday life?



STRENGTH OF CORRECTIVE ACTIONS – HUMAN FACTORS

- 1) Architectural changes
- 2) "Forcing functions"
("makes it difficult to do the wrong thing")
- 3) Engineered interlocks
(Does not rely on memory, vigilance or training)

STRONG

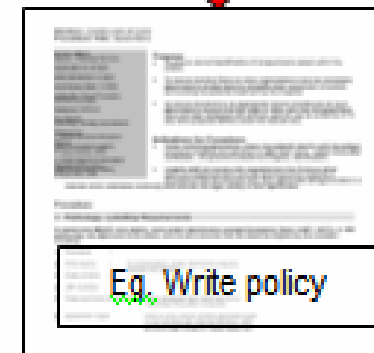
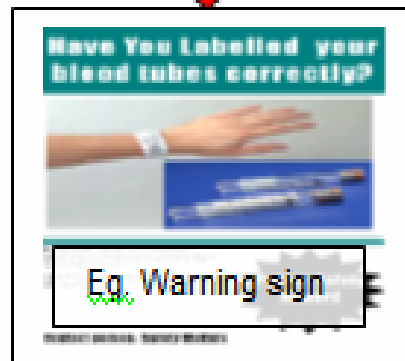
- 1) Checklists
- 2) Cognitive aids
- 3) Simplify processes
- 4) Warning notice
(Putting "knowledge in the world" by use of cognitive prompts in the workplace)

INTERMEDIATE

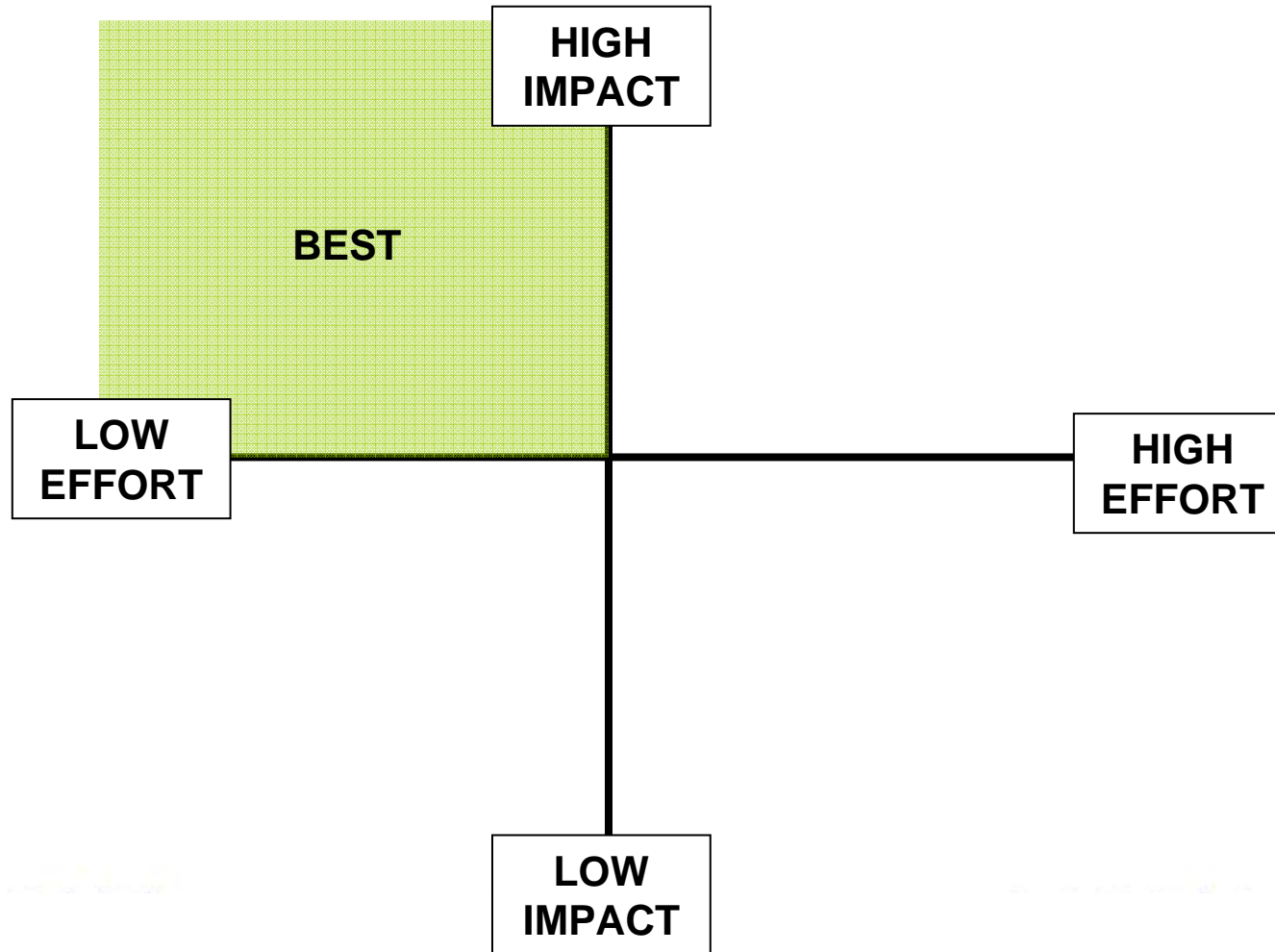
- 1) Training
- 2) Orientation
- 3) Policy & procedure
(Relies on memory, vigilance – "being more careful", access to documents)

WEAK

Example: corrective actions recommended to address the problem of incorrectly labelled blood specimens



Effort versus Impact Tool



RECOMMENDATIONS

