Embedding human factors & ergonomics in healthcare with building design at the centre of the system

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Embedding Human Factors & Ergonomics in Healthcare with Building Design at the Centre of the System

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Background

Risk factors for patient slips, trips and falls (STF) have been identified and reported since the 1950s and are mostly unchanged in the 2010s. The prevailing clinical view has been that STF events indicate underlying frailty or illness and so many of the interventions over the last 60 years have focussed on assessing and treating physiological factors rather than designing environmental interventions to reduce risk factors.

Methods

Purpose: To use a theoretical model for HFE (DIAL-F) to discuss patient STF interventions

Methods: Three case studies are used to discuss how HFE has been applied to STF risk management:

1. **Design-based (building) approach** to embed safety into the built environment
2. **Staff (and organisation)-based** approach using Lean and Six Sigma to improve processes
3. **Patient behaviour-based** approach to explore and understand patient perspectives of STF events

Data

Category | Rationale | Design Consideration | Category | Rationale | Design Consideration
--- | --- | --- | --- | --- | ---
Navigation | One study found that bathroom locations visible from the bed, with the door open and out of the way, resulted in fewer falls: an angled door and rear layouts to provide better sightlines. | Provide room layout so that the bathroom door is clearly identifiable from the bed. | Environment clear of hazards | Noisy environments can lead to confusion in older hospitalized patients, sometimes leading to restlessness and the risk of falls. When both overhead paging and alarms were rated as occurring “frequently,” falls were statistically higher. | Select call and communication systems designed to minimise public noise.

Results

Case study 1: many elements of STF interventions require risk management decisions (i.e. likelihood and consequence) to be made during the design and construction of healthcare facilities.

Case study 2: the reduction in the total STF rate reported from the Lean and Six Sigma projects was time-limited and had dropped to only 6% improvement over baseline within 12 months of the end of the project.

Case study 3: most of the items usually found on the bedside table (e.g. drink, spectacles) were within reach (>80%). Only 21% of walking aids (frames, crutches and sticks) were within reach, and the bedside table was often an obstruction to mobility.

Almost all patients strongly disagreed that they were at risk of a STF during their hospital stay. Themes about lack of control and frustration with respect to getting about due to obstacles and trip hazards and getting help when, and in the way, they ‘want’ it.

References
