Safety, Satisfaction, and Efficiency: Partnering Nursing with Human Factors

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What is Human Factors?
What is Human Factors (HF)?

HFE is the scientific consideration of **people** in the design of products, services, and systems

- Conform to user capabilities and limitations
- Meet user needs and expectations
Primary HF Methods

- Inspection
  - Evaluating without users
  - Expert-based or mathematical

- Inquiry
  - Asking questions of users

- Observation
  - Gathering actual users
  - Work as Imagined vs. Work as Done

Note: many specific methods! 36 (Nemeth) to 87 (Stanton et al)
What Human Factors is **NOT**

- Simple application of “common sense”
- Application of nothing but guidelines and checklists
- Investigation of only user preferences
- Development of systems that work for the designers**
  
  **Unless *only* the designer is ever going to use the system!
Partnership throughout Hospitals

• Human factors pairs well with other safety disciplines

• Differences in focus:
  — **Lean** = Reduce waste
  — **Six Sigma** = Reduce variation
  — **Human Factors** = Considering the human within the system

• Applies to both patient safety and employee safety
Basic Design Principles

1. Design to support the users’ goals
Basic Design Principles

2. Design to support the users’ conceptual model
Basic Design Principles

3. Design for the users’ skills and capabilities
Interpreting lab values

<table>
<thead>
<tr>
<th>Test</th>
<th>Results</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALKP</td>
<td>85 U/L</td>
<td>23 - 212</td>
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<tr>
<td>ALT</td>
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<td>10 - 100</td>
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<tr>
<td>BUN</td>
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<tr>
<td>GLU</td>
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<tr>
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Example provided by Pascale Carayon / Sue Bosley
Design Principles in Practice: Example

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Changes level of processing required
Human Factors at CHCO
Children’s Hospital Colorado (CHCO)

- Freestanding pediatric hospital
- 575 beds
- 17 locations
- Visits in 2018:
  - Emergency/Urgent Care: 162,000
  - Outpatient: 1,816,201
- Scope
- Embedded in Patient Safety
Human Factors at CHCO

• Application of knowledge of human capabilities/limitations to the design of systems to improve safety, satisfaction, and efficiency

• High variation in project characteristics:
  • Breadth
  • Depth
  • Impact (e.g., event investigations)
  • Level of involvement
  • Location
  • Methods
  • People
  • Systems
  • Topics
  • Turnaround time
How to Incorporate Human Factors at Your Hospital
Using Human Factors

• Consider the human!
  • Cognition / Perception / Motor
  • Person / Task / Tools / Environment

• Usability testing with end users
  • What people do is not always what they say they would do or prefer

• Literature searches
  • Lots of existing research
  • Beware of “the human factor”

• Existing HF resources
  • HFES.org
  • Short course in HF
  • General design principles (Gestalt)

• Consult with (or hire) HF professionals
Quotes about HF from RNs at CHCO

“Human factors is evolution of how we proactively advance healthcare.”

“The Human Factors Engineer joins interdisciplinary teams to ensure the right information, at the right time, in the right way for patient safety.”

“Application of HF science to healthcare: Make the right thing the easy thing to do.”

“I think [HF] expertise helps us think differently about how we do our work. Helping us to do it safer and more efficiently is invaluable.”
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