Curriculum Development Centers Program

Awardee of The Office of the National Coordinator for Health Information Technology

Safe Workflow Design

Unit 7a: Workflow Assessment

This material was developed by Johns Hopkins University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000013.

Objectives

At the end of this segment, the student will be able to:

- Assess decision-making requirements in health or health care

Clinical Decision-Making

- Systematic way to handle data and clinical algorithms to decide on a best course of action
- Algorithm = a step-by-step procedure for solving a problem.

Clinical Decision Making: Uncertainty

Technical	Personal	Conceptual
• What should I do?	• What are the patients' wishes?	• How do I apply abstract concepts to concrete situations?

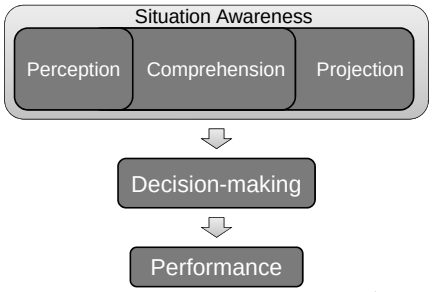
Clinical Decision Making: Uncertainty

Direct	Indirect
• Knowing what we know • Knowing what is being researched • Knowing what works	• Establishing a communication infrastructure • Establishing evaluation of processes and outcomes of care

Clinical Decision-Making: Expert Decision-Making Systems

- Improve task performance and reduce errors within the clinical workspace
- Depend on:
  - Analysis of clinical requirements and cognitive processes within the workflow
  - Provide optimal situation awareness through information visualization

Basic Elements of Decision-Making

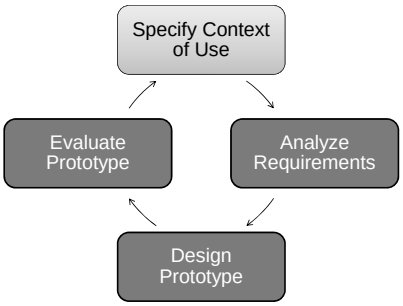


Jalote-Parmar A., et al, (2010)

Information Visualization

- Real-time information needed for clinical task performance and decision-making
- Should support 2 levels of complexity
  - Routine tasks
  - Complex (uncertain)tasks
- Comprehensive, integrated across phases of care
- Provide visual cues to avoid ambiguity

Human-Centered Design Cycle



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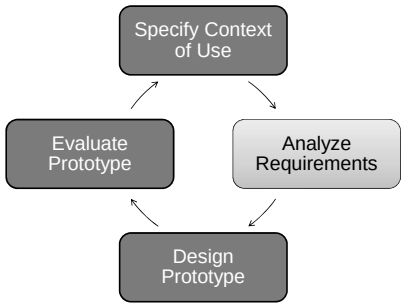

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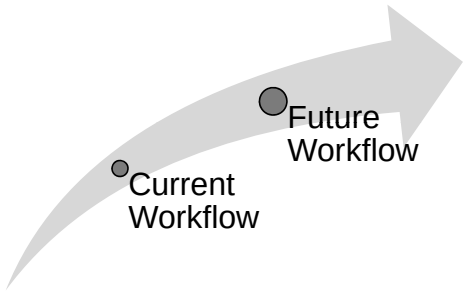
Analyze Requirements: Workflow Integration Matrix



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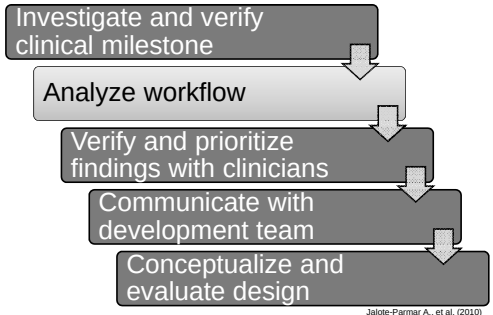

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Workflow Analysis Methods

Qualitative

- Ethnographic observation
- Shadowing of individual clinicians
- Surveys and questionnaires

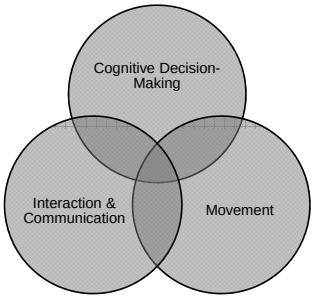
Human-intensive; produce low-volume, high-quality data

Quantitative

- Sensor technologies such as passive infrared sensors, radio identification tags and pressure sensors.
- Video recordings

Allow time stamping; produce high volume abstract data

Clinical Workflow



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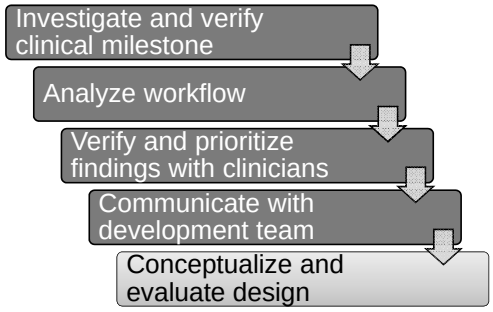

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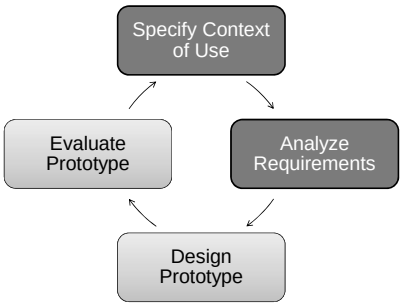

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Cognitive Task Analysis

- Family of methods for understanding the cognitive processes that underlie task performance and the cognitive skills needed to respond adeptly to complex situations.
- Used to understand decision-making and communication processes
- Has implications for workflow design

Cognitive Task Analysis Critical Care Environments

- Pattern Recognition
- Uncertainty Management
- Strategic vs. Tactical Thinking
- Team Coordination & Maintenance of Common Ground
- Creation & Transfer of Meaning Through Stories

Fackler, et al.,(2009)

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Summary

- Clinical decision making is a systematic way of handling data and algorithms to decide on the best course of action
- Uncertainty (technical, personal, and conceptual) shapes clinical decisions
- Workflow integration matrices are useful
- Cognitive task analysis uncovers decision-making and communication processes and has implications for workflow analysis