Optimizing Outpatient CT and MRI Scheduling Using Human-Centered Design Thinking

A Creative Way to Problem Solving

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**Purpose**

- Design thinking is a creative problem-solving technique borrowed from the business world. Our objective was:
  1. To understand and map our outpatient CT and MRI central scheduling pathway using human-centered design thinking
  2. To create a feasible functional prototype of a potential solution for central scheduling using the design thinking methodology

**Collaboration**

- The University of Cincinnati (UC) Department of Radiology partnered with UC Health, Live Well Collaborative (LWC), and UC College of Design, Architecture, Art, and Planning (DAAP)
- Our team included all relevant stakeholders: design students, design faculty advisor, patient experience officer, members of the patient and family advisory council (PFAC), scheduling manager, radiology managers, schedulers, technologists, and radiologists
What is Human Centered Design?

We ask what can we do to change things? That question leads us to design which is the act of changing existing situations into preferred ones.

- Herb Simon

1. Produces balanced qualitative data
2. Generates visualized concepts
3. Lowers stakeholder uncertainty
4. Provides coherent relevance
5. Promotes collaboration
Methodology: Live Well Design Thinking Process

Design Thinking is an innovative problem-solving process with five distinct phases. These steps are nonlinear, rather are iterative.

- **Lead In**: Identify the Challenge
- **Research**: Understand
- **Ideate**: Conceptualize
- **Refine**: Test and Detail
- **Next Steps**: Implement

**Research Phase**

- **Interviews**
  - Face to face interviews were conducted with schedulers, technologists, managers, registrars, radiologists, referring physicians, and members of the patient and family advisory council

- **Scheduling Journey Map**
  - Centralized scheduling journey map was developed with schedulers and patients to gain a better understanding of the scheduling process and pain points

- **Site Observation**
  - Schedulers were observed in their working environment

- **Benchmarking**
  - Benchmarked scheduling solutions from other institutes and companies

- **Existing Data: Scheduling Error Emails**
  - Analyzed emails between the radiology department and centralized scheduling regarding scheduling errors

**Main Problem Categories Identified**

- **Knowledge Gap in Schedulers**
  - No standardized scheduling educational resource

- **Inefficient Communication of Updated Information from One Scheduler to Another**
  - Predominantly relying on post-it notes

- **Ambiguous Information**

- **Unbalanced Reinforcement from Admin to Schedulers**

- **Fragmented New Hire Support**
  - Negligible imaging specific training for new schedulers

*Example of a scheduler’s office space*
The ideation phase is characterized by co-creation sessions to review the insights from the research phase and generate alternative solutions for early testing.

Goals
- To translate research insights into potential solutions
- To build the initial framework incorporating existing tools
- Begin gathering contents for the prototype
Refinement Phase

- Using insights gained in the ideation phase, a functional prototype is created for evaluation and testing.
- **Goals**
  - To create an effective implementation plan
  - To validate and refine the final concepts with all stakeholders

- **Scheduling Guide Design**
- **Prototype Testing**
- **Scheduling Guide Design**
- **Scheduling Dictionary**
- **Co-Creation Activity**
- **Scheduling Guide Design**

- First prototype
- Tested with 5 schedulers
- Second Prototype
  - Physical and electronic versions
- Terminology reference with physical and electronic versions
- Schedulers
  - Technologists
- Final Prototype

Information redesign
A functional prototype educational tool was created with input from all stakeholders

Radiology 101 Centralized Scheduling Guide

- Table of Contents
- Contact Info
- Quick Reference Guide of CPT codes arranged by body part
- Site-based location instructions
- Scanner profiles
- Patient Q&A
- Add-on rules
- Scheduling guidelines
- Dictionary/Glossary

Preliminary feedback from schedulers has been overwhelmingly positive

Schedulers are more confident and feel better prepared to guide patients and answer questions
Conclusions

- Using human-centered design thinking, we created a comprehensive toolkit for schedulers. This tool will provide better education and empower our schedulers and ultimately translate to better patient care.

- Collaborators can use the co-design process to find new and creative solutions to common problems in a way that makes ‘thinking outside the box’ the new norm.