NEEDFINDING
IN HUMAN CENTERED DESIGN
**Phase I: Problem Definition**
Selecting a focus user and clearly defining his or her problem

**Phase II: Need Finding**
Building up empathy by interviewing and observing the user

**Phase III: Ideation**
Creating many ideas to solve the problem

**Phase IV: Prototyping**
Rapid prototyping of one or more ideas

**Phase V: Testing**
Getting feedback on the first prototype to improve it

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**Design Thinking Process**
What is need finding?
What is need finding?
What is need finding?

Needfinding is the process of uncovering:

- User needs
- Opportunities for improvement
- Design Insights

by learning about their goals and values.
How does it work?

Turn into a detective: Try to understand why people do what they do

• "I don't know" state of mind
  Look without knowing what you're looking for (reduce bias)

• Observe
  Look for the difference in what people say and practice, surprises, hidden cues

• Ask questions
  5 Why's, Why Not?, How Else?

• Build Empathy
  User perspective doesn't need to make sense right away, trust the process, what are the emotions behind behaviors?
Problem: Ran through a red light.

Why? Late for work.
Why? Woke up late.
Why? Alarm clock broke.
Why? Didn't check if it worked.
Why? Forgot to do it last night.
Needfinding Methods

We are not looking for solutions yet: focus on user needs and goals only.
Needfinding Methods

We are not looking for solutions yet: focus on user needs and goals only.

- Ethnography / Observation
- Interviews
- Surveys
- Process / Experience Mapping
- Think-Aloud Sessions
- Diary Studies
- Participatory Design
Biases in Needfinding

- **Confirmation Bias**
  We see what we want to see.

- **Observer Bias**
  You could subconsciously bias your subject.

- **Social Desirability Bias**
  People tend to want to help and say nice things.

- **Voluntary Response Bias**
  People with stronger opinions are more likely to volunteer.

- **Recall Bias**
  People aren't always very good at recalling their true experience.
Interviews

• Try to avoid questions yes/no questions. Ask open-ended, semi-structured questions.
• Adapt your questions to their personal case and previous answers.
• Don't use jargon.
• Clarify examples and dive deeper.
• Allow for silence – if you listen, they will speak.
• Organize the interview: Introduction, questions to build trust and comfort, the crux, summary.
• Don't bias your subject: leading questions, your own facial expressions and reactions.
• Plan an practice, even if it won't go according to plan.
Using your observations

**Experience Map**

<table>
<thead>
<tr>
<th>PHASE 1</th>
<th>PHASE 2</th>
<th>PHASE 3</th>
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**Empathy Map Example (Buying a TV)**

- **Says**
  - I was expecting something different
  - What do you think?
  - Where should I start?

- **Does**
  - What size is best?
  - What brand do you like?
  - I want something awesome

- **Feels**
  - Why is this so hard?
  - What is best for me?
  - Maybe this isn’t the best

- **Thinks**
  - Do they think I’m stupid?
  - I want something awesome
  - Too many acronyms

**Character Profiles**

- Maggie, 52
  - **Demographics**
    - Female running 40 years old
    - High school graduate
  - **Behavioral Identifiers**
    - Likes to read books
    - Watches TV
    -variably
  - **Interests**
    - Books
    - TV

- Jamie
  - **Says**
    - Checks the website
    - Makes small decisions
  - **Does**
    - More research
    - Compares products
  - **Feels**
    - Overwhelmed
    - Excited
  - **Thinks**
    - I want something awesome
    - Too many acronyms
Use Case: Needfinding in the ICU

Designing Family-Centered Aids for the Intensive Care Unit

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ABSTRACT

Family member involvement has been shown to be key to the well-being and recovery of patients in an Intensive Care Unit (ICU), but they often find themselves overwhelmed and in an emotionally heightened state. ICU care teams, especially nurses, are typically considered to be in the best position to help and provide support to family members of patients. However, the heavy workload, lack of time, and personal interaction styles can make it difficult for them to be receptive to family member needs. To understand how current aids in the ICU are used and the challenges associated with them, we conducted 22 interviews with both family members and the care team. We also created prototypes of family-centered aids through a co-design session to reveal the opportunities that emerge for technology to facilitate family member support in the ICU by adding additional burdens on the care team.

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Nurture-Empower-Support: A Human-Centered Approach to Understand and Support ICU Families

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ABSTRACT

Family members have been shown to be integral to the well-being and recovery of patients in Intensive Care Units (ICUs). Working a loved one’s critical illness, however, can be a challenging and life-altering experience. We present the results of a need finding process aimed at investigating how interventions in the ICU can be designed to facilitate family member support in the ICU. We first delve into an in-depth, 9-month ethnographic study to understand the complex ICU environment and to observe family–care team interactions. We then explore family experiences using metrics and semi-structured interviews with a total of 20 family members. From these interviews, we derive a human-centered interaction design (Nurture-Empower-Support), a three-stage framework to aid the creation of a dynamic system that supports the dynamic needs of families in the ICU.

KEYWORDS

Intensive Care Unit, Human-Centered Design, Families, Nurses, Mortar, Empower, Support

INTRODUCTION

Intensive Care Units (ICUs) are areas of the hospital where critically ill patients receive specialized care. ICUs are not only complex environments requiring a highly skilled and trained staff, but they also represent a considerable challenge to patients due to the need to be in constant care and close monitoring from specialized equipment. ICUs distinguish themselves from a high multiepisode ratio and access to advanced technological equipment that is not routinely available elsewhere in the hospital.

In this paper, we explore how interventions in the ICU can be designed to mitigate the stressors in providing care and support for family members. We seek to understand family experiences in the ICU through a 9-month ethnographic study of the ICU, one-on-one semi-structured interviews with family members, and analysis of experience journals. We then

Since the shift to patient-centered care [1], family involvement in the ICU has been strongly encouraged [20]. Family members have been shown to play a critical role in the care of their loved ones [19] and have been identified as a virtual source of information to the care team, as well as key emotional support to the patient [21]. Since patients in the ICU are usually unconscious or too ill to participate in their own care or express treatment preferences, the responsibility of making decisions about patient treatments often falls on their family members [22]. Working a loved one’s critical illness and being confronted with a complex clinical environment can be overwhelming. As a result, families are often discouraged to engage in decision-making and struggle to make decisions [11] and experience anxiety, depression, and post-traumatic stress regardless of patient outcomes [4, 11].

The ability to recognize and respond to the needs of family members in the ICU can substantially reduce the negative impacts of stress and increase their capacity to support the patient [7]. However, lack of time and heavy workload can often reduce the care team’s responsiveness to family needs. Although research, for example, have been shown to be aware of the various dimensions of family needs, this knowledge is not always translated into practice [7]. This discrepancy is present between nurses and varying personal interaction styles often hinder the development of a nurse-family relationship [21] and hence their ability to provide support. Clinicians have been shown to be interested in patient-centered interventions but are not provided with resources to facilitate the development of a nurse-family relationship [20]. Indeed, it has been shown that families experience dialogues characterized by an emphasis on communication and little to no compassionate diagnosis, treatment, or emotional support of their loved ones [1].

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Since 1963, the computer has been a ubiquitous tool in daily life. As a result, the need for proper interaction design to support the user has become increasingly important. Interaction design is particularly relevant in healthcare, where proper design can be critical to user safety and patient outcomes. In this paper, we explore how interventions in the ICU can be designed to mitigate the stressors in providing care and support for family members. We seek to understand family experiences in the ICU through a 9-month ethnographic study of the ICU, one-on-one semi-structured interviews with family members, and analysis of experience journals. We then
Questions?