Design Thinking: using virtualized human-centered design to engage stakeholders and innovate pediatric complex care coordination

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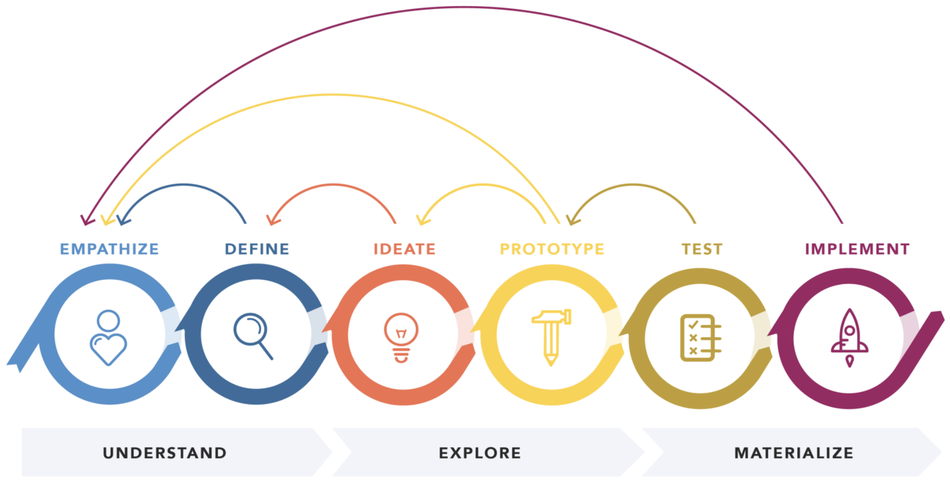
1- Project Summary

- *Children with medical complexity* (CMC) represent the pediatric population with the highest needs, but care coordination is poor leading to fragmented care, caregiver stress, high hospitalization rates and healthcare costs
- Our team used a novel virtualized human-centered design (HCD) process (figure 1) to elucidate the paint points of care coordination with input from various healthcare stakeholders at all levels of care at Duke Roxboro Children's Clinic
- We created three prototype interventions to enhance the care experience by addressing pain points voiced by stakeholders, with near-term plans to gather feedback and implement in a clinical setting and assess for effectiveness

2 – Virtualized Human Center Design Method



(Above) Figure 1. **Typical iterative stages of human-centered design**: empathizing with the stakeholder care journey, defining the pain points, brainstorming of solutions, prototyping and testing, and implementation. We are currently at the prototyping stage.

(Right) Figure 2. **virtual team meeting session** between NCSU and Duke members during the pandemic.

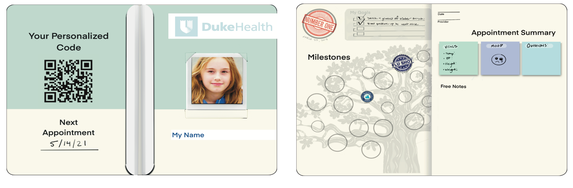
3- Stakeholder-Voiced Findings

Pain-points emerged from stakeholder discussions (ranked by importance to stakeholders):

1. Improving coordination of patient care
2. Improving family-provider communication
3. Providing more family support resources
4. Fostering inclusion
5. Health system communication
6. Improving information systems, platforms, and technology
7. Supporting providers and staff

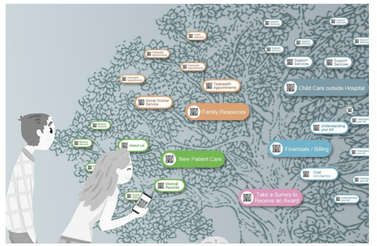
Based on the above pain-points, we designed 3 primary prototypes to present to our stakeholders for feedback.

4- Prototypes: Health Passports



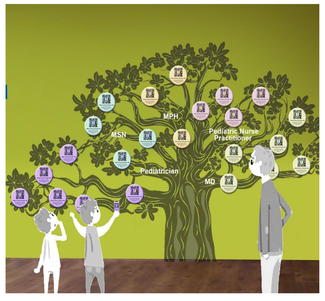
(Above) Figure 3: **Personalized Patient Health Passports.** As a tool to enhance care coordination, patients will be given a children-friendly health passport that can be used as a tool to engage children in their care, and carry pertinent narrative health data for caregivers to communicate with providers.

4- Prototypes: Interactive Waiting Room Trees



(Above) Figure 5: **Waiting room Resource Tree**. To address expressed needs for more family support resources, this tree will showcase community resources curated by clinic social workers based on patient needs organized by "branches" of themes, for example food resources. Embedded QR codes will link to virtual mobile-friendly site that displays more details and instructions on how to get connected.

(Below) Figure 6: **Provider Engagement Tree.** Stakeholder families voiced their lack of connection to the multitude of health workers that provide care to their child. This tree will serve as a tool to help families get to know their providers more intimately and engage families in provider-family relationship building.



5- Future Directions

- Final prototypes stakeholder testing -> product feedback revision and preparation for permanent clinical use
- Expand implementation to other clinical sites in Duke Health that care for CMC
- Evaluate the impact of the product on health outcomes for CMC population
- Revisit previous unused ideas to develop additional evidence-based medical care integration models

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