

ALLEVIATING HOSPITAL STRESS: AN EXAMINATION OF CHILDREN'S  
HOSPITAL NAVIGATION AND DESIGN METHODOLOGIES RESULTING IN A  
TOOLKIT FOR THE IMPLEMENTATION OF STRESS RELIEVING  
SYSTEMS FOR ADULT HOSPITALS

By

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## **DEDICATION**

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## LIST OF ABBREVIATIONS

Abbreviation	Description
UX	User Experience
HCD	Human-Centered Design
EGD	Environmental Graphic Design
EHCDH	Experiential Human-Centered Design Hospital

## **I. INTRODUCTION**

When it comes to healthcare, children are given significant consideration with how their treatment will be experienced and the type of environment they will be exposed to during their hospital stay. Nicklaus Children's Hospital in Miami, Florida highlights in their vision statement how important considering both the physical and mental health of a patient is saying they seek to be "There through all stages of health and life, both physically and mentally" (About Nicklaus Children's Hospital). It is understood the physical aspect of treatment is not the only important element to improving the health of children patients. Though doctors can treat the physical ailments which plague a patient, children's hospitals recognize efforts must be made to help ease mental stress, anxiety, and help with healing through creating a welcoming and cheerful environment for children to recover. This approach is evident in the design work created by MVSA Architects and Tinker Imagineers for another facility, the Juliana Children's Hospital in The Hague, Netherlands. The team focused on creating a narrative with characters the children would encounter throughout their hospital visit. Elements included illustrated wallpaper, games, and other interactive activities, which would help ease the mind of a child and distract from the difficult reality of the medical interventions they experienced. The team justified their approach by stating, "Research shows that child-friendly, distracting environment reduce stress, fear and the perception of pain in sick children, which helps them to recover sooner" (Experience Juliana Children's Hospital). Although children's hospitals are given great thought concerning design and stress relief, adult hospitals are severely lacking in these essential elements of healthcare. There will be many children who suffer from lifelong illnesses and require continuous treatment and

hospital visits into their adulthood and as such, the transition from an environment such as a children's hospital to the adult hospital setting can be disruptive and stressful. The rise in diagnosed cases of chronic illnesses in children such as childhood diabetes and asthma has created a population of long-term patients (Mundell). With the United States population growing year-by-year the patient population will increase. In the year 2050, it is projected that 4% of the American people will be 85 years of age or older (Americans Are Living Longer). Although Americans are living longer, health will continue to decline with age, meaning hospitals and the medical environment will take a more prominent role in the life of Americans. Given the statistics on the growing elderly population, examining the adult hospital setting and how it can be improved upon will be of benefit to this growing demographic.

This thesis seeks to explore the extensive design considerations given to children's hospitals and ways to apply them towards creating a more stress-free environment in adult hospitals. Methods used in children's hospitals will be discussed and a toolkit will be presented with guidelines for executing stress-relieving methods in the adult hospital environment.

### **Statement of Problem**

There is a stress-inducing non illness related problem in adult hospitals that is adversely affecting patient's physical and mental health. Surprisingly, this problem stems from environmental stressors present in the hospitals themselves. When a person visits a hospital, they can be overcome by "a host of psychological reactions, chief among them stress and anxiety" (Carpman and Grant 7). Stressors such as medical instruments, flashing lights, and the overall strangeness of the hospital environment contribute to what

makes adult hospitals anxiety prone and stressful (Chhari and Metha 274). Patients lack the feeling of comfort they find at home, a place that they can make their own, as they are presented with uniform and dull room layouts. Patients entering a hospital are often nervous and troubled about the medical intervention or examination they are about to undergo. Their expectations of the hospital experience is “to be hurt, be uncomfortable, be treated as a number...to be denied the privacy of normal life” (Beck 30). These factors are exacerbated when combined with the stresses of attempting to find their way around a massive multi-floor hospital which consist of “near-identical corridors leading to door after door of similarly-named wards and treatment rooms” (Pinchin). Together, these elements only contribute to a patient’s ill health and anxiety.

### **Purpose of the Study**

As the graphic design discipline has evolved, it has changed focus from a purely aesthetic discipline to become more dynamic through its embrace of human-centered design. Designers are no longer sought just for their creative skills after a concept is already developed, but have become more involved throughout the ideation process. Designers have been brought into the concepting and development stage because of the insights and unique creative methods they have to offer. Many of the methods designers have learned and developed come from the embracing of HCD philosophies such as empathy based design. Academic programs namely Stanford University Design School and Northern Michigan University are building human-centered design classes and learning experiences into their curriculum. Companies like IBM, Google, and IDEO have created toolkits that can be used by corporations and designers to solve human-centered problems such as a waste removal system for urban poor in Ghana, creating easier access

to satellite images for African tribes, and helping patient's track their health history via mobile app. While such toolkits have solved a wide range of issues, their present focus tends to result in outcomes such as websites, apps, and other traditional graphic design related mediums. At present, there are no toolkits providing step-by-step instructions and methods for addressing experiential environmental graphic design problems that focus on wayfinding, placemaking, and stress relief together. The toolkit created from this thesis research will target stressful wayfinding and placemaking issues in the adult hospital environment by showing how to identify potential stressful elements, outlining stress-relieving methodologies that can be applied towards addressing the identified factors, and helping to solve the problems discovered.

Hospitals are no longer constructed using the same floor plan or building ideology they once had. The pavilion-ward designed hospital's, built in the 1870s, were constructed to be two stories high and built in the formations of an "H, a U, or a single line" (Kisacky 38). The hospitals that are in use today such as the old Bellevue Hospital in New York City, which was founded in 1736, or the new Parkland Memorial Hospital in Dallas, Texas, built in 2015, vary in both size and shape. The lack of uniformity in hospital floor plans means a generic list of updates intended to relieve stress in hospital environments would not adequately address all of the issues each individual hospital faces. By creating a toolkit which outlines how to evaluate the space, what stress relieving methods can be used, and how to implement such practices, a hospital will be able to assess and incorporate stress-relieving design changes that are tailored to their specific needs. The toolkit would be something both designers interested in HCD and hospital personnel looking to make a positive change in their hospital would be able to

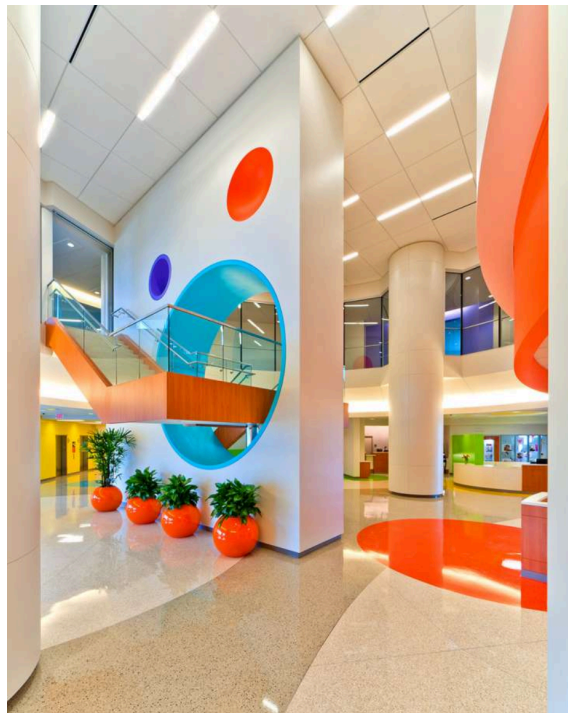


read and understand. One of the goals of this toolkit would be to allow for stress relieving design methods to be integrated during the development stage of planning a hospital or used to update an existing structure.

### **Design Aspect**

It is essential to understand just how significant a role design plays in changing the healing potential of an environment. Ghazali and Abbas (2012) discuss the difference between curing a patient, which is a physical fixing of one's health and healing a patient, pointing out that “healing is a psychological and spiritual concept of health” (Assessment of Healing Environment in Pediatric Wards 150). While doctors can cure a patient, it could be said that the hospital environment, given the right architecture and design elements, can help heal a patient by reducing psychological stress as studies have shown “Patients exposed to noise or stuck in windowless rooms required stronger painkillers, became anxious or even delirious more readily, and even often fell into depression” (Miller and Swensson 31). William Schlein, President of Anthrojects Architects, has been working on health care projects for twenty-four years and understands the importance of wayfinding and stress reduction in hospital design. He explained in his TED Talk (The Beautiful Hospital, 6:09–6:27), “Let the building be part of the wayfinding and it will also help with the healing. Reducing stress in a healthcare situation in a hospital situation goes a long way towards helping the patient and the family” (Schlein 2016). Wayfinding in children’s hospitals includes the use of icons to help identify the different areas of the hospital. Hierarchy of information is another element that children’s hospitals embrace for wayfinding purposes by creating signage that is substantial in scale, for instances elevator floor numbers, which allows for visitors navigating the hospital to quickly and

easily determine what floor they are on when exiting an elevator. New technologies such as navigation features in apps have begun to be integrated into apps for children's hospitals, for example the Discover CHW app. Created for the Children's Hospital of Wisconsin, the Discover CHW app allows parents of patients access to information about wayfinding around the hospital, their child's chart information, hospital guidelines, and patient family rights.



(Fig.1) Photo of Texas Children's Hospital West Campus (Geoff Lyon).

Shape and form can play a large role in transforming the hospital environment from a dull and stagnate structure to a setting that is lively and visually interesting therefore making for a less intimidating space. The Texas Children's Hospital West Campus, in Houston, Texas did just that when they integrated circles throughout the hospital from floor titles, light fixtures, and wall cutouts through which stairways lead (fig.1). Color was another part of the stress relieving and navigation process as Texas Children's Hospital West Campus made sure to include vibrant colors throughout the

hospital as “Each wing is marked by a base color at entrances and interior portals for orientation, while each floor deploys a secondary color visible in elevators lobbies and common areas” (Texas Children’s Hospital West Campus). As important as shapes and colorful design elements are to the healing process, it is important for there to be a space where patients and their family can escape the confines of their rooms and the hospital environment and sanctuary. Sanctuary spaces for example at the Morton and Linda Bouchard Healing Garden (fig.2) at Nicklaus Children’s Hospital in Miami, Florida provides patient’s and their family’s a quite outdoor location to getaway from the constant reminders of treatment like medical devices and doctors. The Healing Garden has stress-relieving features such as “colorful botanicals, topiaries and dynamic video wall, featuring calming outdoor scenes” (Healing Garden).



(Fig.2) Photo of the Healing Garden at Nicklaus Children’s Hospital.

Stress reducing methods used in children’s hospitals rely on more than just bright colors and engaging typefaces. While a cohesive color application for use in identifying areas and legible well laid out typography on signage is crucial to creating an easier to navigate hospital space, there is an additional component that must be considered during

the design process. The most critical stress-reducing component used in children's hospitals is called "experience." The objective is to make sure to create an positive experience through the way the graphics and typography are used in the environment, thereby forming a space that is not only memorable but creates an engaging and playful narrative through the different environmental design elements. In *The Wayfinding Handbook*, David Gibson talks about the true purpose of wayfinding saying, "Wayfinding design provides guidance and the means to help people feel at ease in their surroundings" (Gibson 12). By creating a narrative through the use of graphics which can help a patient and their family navigate the hospital space and experience, design can help reduce the stress of a visit.



(Fig.3) Photo of The sand castle MRI at Children's Health Imaging Center

In an effort to make the hospital experience less stressful children's hospitals recognized that many of the medical device's and instrument's could be intimidating to children and in an effort to make them more approachable they relied on cloaking the medical devices. Cloaking medical devices involves altering the appearance of a device

like the MRI sand castle at Children's Health Imaging Center in Addison, Texas (fig.3).

This changed the experience from a scary and foreign event to a playful adventure-like situation.

## **II. PRELIMINARY RESEARCH**

While researching hospital stress, various research methods were explored to form a thorough academic knowledge of the topic. The research methods used were an online survey sent out to healthcare professionals, on-sight visits to a children's hospital and an adult hospital, and studying of the toolkits created by IBM, IDEO, and Google Ventures in related areas of study which could be applied to this research.

### **Online Survey:**

An online survey (see Appendix) was conducted to gather feedback from medical professionals who work within the hospital environment. The survey was anonymous with an opt-in for participants to provide their name. The feedback provided was meant to validate that research was needed and to gain insight into what medical professionals perceive as stressful elements in the hospital environment, their thoughts on improvements that could be made, and if they believed the methods used in children's hospitals would help improve the adult hospital environment. The survey consisted of fifteen open-ended questions asked via the website Qualtrics.com. Of the forty surveys that were sent out, eighteen were filled out and submitted. The survey was taken by a wide range of medical professionals such as an Emergency Medicine Physician, Registered Nurses, Urologists, a Neurosurgeon, an Assistant Vice President of Operations, and many more.

The survey results were enlightening and several common themes emerged. When asked, "If there was a noticeable difference in the atmosphere in children's hospitals and adult hospitals" 94% agreed there was a notable difference. Some replies elaborated on these differences saying "Yes. Children's hospitals are much more

animated and fun”, “Yes; Children’s hospitals are more colorful and directed towards making the patients comfortable”, and “Yes. The staff and the environment tend to be more colorful and fun at a children’s hospital than at adult care facilities”. When asked if they believed using the same design principles as children’s hospitals would be beneficial in relieving the stress of adult patients, 50% were of the opinion it would be helpful, 22% answered it was possible, and 17% replied no.

The focus of the survey then shifted to understanding what stressors exist in the hospital environment. When asked if patients ever expressed frustration when having to navigate the hospital environment, 100% replied in a way which indicated they had patients who experienced such frustration. When asked if they found the directional signage in adult hospitals confusing and poorly placed making the hospital harder to navigate, 78% answered “yes,” 17% “no,” and one responded “sometimes”. Survey respondents were then asked if they could identify a factor that if changed would help relieve the stress of patients. Suggested elements for change included parking, better signage, escorts, and more color and artwork to make the hospital seem less dreary and sterile. The last area the survey explored was the use of technology in hospitals. When asked if their hospital has a navigation app, 89% answered “no” and 6% answered “yes.” When asked if their hospital had an interactive kiosk, 61% answered “no,” and 17% answered “yes.” Based on the survey, the majority of surveyed healthcare professionals agreed there are areas of stress in the adult hospital environment and indicate that it would make a positive impact to the adult hospital setting if changes were made to address these stressors.

## **Observational Sight Visit**

A vital research component was visiting both a children's hospital and an adult hospital in person to observe how the experiences were different from a visitor's viewpoint. The Children's Hospital in Oklahoma City, Oklahoma felt different than OU Medical Center Edmond in Edmond, Oklahoma even though they are both run by the OU Medicine group. One of the features The Children's Hospital used to make their hospital more identifiable was by having large outdoor signage on the corners of the main streets that ran along the hospital. These signs helped to direct patients and visitors to where they needed to go as well as help identify and differentiate the hospital from the various other hospitals in the area. The logo for The Children's Hospital had the word "children" in a blue child-like handwritten sans-serif typeface and incorporated a flying yellow kite. At the main entrance, large kite sculptures could be seen lining a center landscaped area leading to the main entrance. The consistence usage of kites both inside and outside the hospital helped establish brand identity and created an identifiable symbol for the hospital. Once inside visitors were greeted with two large statues of children at play. From the ceiling hung giant colorful glass butterflies which looked as if they were flying within the room at the top of a sizeable paneled glass ceiling which took the shape of waves and allowed visitors to see the sky. The furniture in various waiting areas throughout the hospital was colorful and some took the form of non-traditional shapes for instance waves rather than long regulator benches. Some walls had nooks cut out so that children could read or play in them. Walls displayed beautiful graphics with vinyl flowers and flowing lines while others had a colorful rainbow themed photos. Floor numbers were located on walls immediately visible from the elevators and were huge and varied in



color. The overall impression left from the hospital was one of life and a cheerful atmosphere. It was clear great effort was put into making the environment and overall hospital experience as stress-free and inviting as possible for both the patient's and visitors.

The OU Medical Center Edmond had a drastic difference in its design approach and appearance. There were two buildings on the hospital's property with multiple entrances, making the main hospital entrance challenging to differentiate from the professional building. The buildings were all a uniform white color with red identifying OU branded signage. The professional building was taller than the hospital, obscuring the signage for the Emergency Room from multiple angles. There was a hospital entrance on the east side with a covered carport, which in appearance looked similar to the covered carport of the emergency room entrance. The emergency room entrance only becomes visible if a visitor approached it from the south. The lack of informational hierarchy, along with the uniformity and close proximity of the professional building and hospital could easily lead to confusion when attempting to locate a particular area of the hospital. The interior of the hospital lacked any real character with white, plum purple, and pea green walls and randomly hung photos of artwork which had no real connection to the space or to each other. The furniture was standard hospital furniture, made of durable materials that were easy to clean but not visually appealing. The hospital had undergone many expansions over the years to the original building and created a labyrinth-like floor plan which was hard to navigate. After conducting the online survey and site visits the next step in the preliminary research was to review the field of design study known as human-centered design.

## IDEO, IBM, Google Ventures Toolkit Study

In the design world, the emergence of toolkits has changed the way designer's problem-solve and use design thinking. Design thinking has origins starting back in the 1960s and has been influenced over the decades by such individuals as Horst Rittel, Nigel Cross, and Richard Buchanan, among others (Szczepanska). Design thinking which "refers to the processes of ideation, research, prototyping, and user interaction" allows for non-designers and designers alike to use a set of creative approaches in an attempt to solve a wide range of problems (Lupton 5). Toolkits often contain a set of steps and methods that help users understand an issue they are tackling, assess potential solutions or improvements for the issue, and test solutions for the issue they face. Jake Knapp, the creator of Google Ventures' own toolkit, called the *Design Sprint*, points out that using the *Design Sprint* allows people to "solve big problems, test new ideas, get more done, and do it faster" (Knapp et al. 6). Toolkits exist to solve a wide range of issues in other non-design related disciplines, and one particular type of toolkit which has gained prominence is the HCD toolkit. A California based company, IDEO, is credited with creating the first HCD toolkit in 2009. IDEO's *Field Guide to Human-Centered Design* toolkit serves as a how-to guide giving designers step-by-step ways to approach problems that lay outside the realm of typical design solutions. Additionally, the HCD toolkit allows designers to go beyond traditional visual problem solving and expand their efforts towards resolving social, economic, and political issues. Many companies soon followed in IDEO's steps creating their own human-centered design toolkits. In a case study of IDEO's toolkit they the team helped create the Clean Team service which aided with the issue in Ghana where low-income family did not have access to waste-removal. The

Clean Team was made up of Ghanaians who serviced a rental toilet and waste removal system. A case study of IBM's toolkit helped patient's in Dubai track their health history as well as connect with loved ones via the apps Tifli and Hayati. A case study for the *Design Sprint* east African tribes were feeling the effects of climate change when they attempted to find pasture land for their livestock. The tribes were relying on emailed satellite images which had to be printed off and had to exchange many hands before getting to the tribes. The team running the *Design Sprint* helped develop the AfriScout app, which allowed the tribes to see satellite photos of where good pastoral lands were on a smartphone.

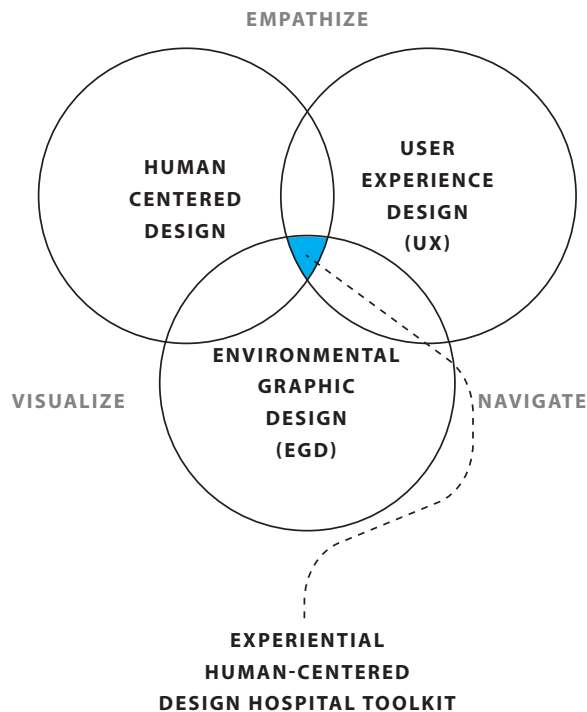
In IBM's *Enterprise Design Thinking Field Guide* the importance of a diverse team is discussed saying "Diverse teams generate more ideas than homogeneous ones, increasing your chances of a break through" (Enterprise Design Thinking Field Guide 3). The *Design Sprint* specifies the team members required with roles that include a leadership position called the "Decider" and experts from various backgrounds like design, marketing, finance, tech/logistics, and someone who interacts with consumers (Knapp et al. 34). In IDEO's *Field Guide to Human-Centered Design*, the second method of the toolkit includes steps for building an interdisciplinary team. All three of these toolkits show the importance of having diverse roles and participants on a team.

The observational site visit and study of HCD toolkits highlighted how empathetic approaches to design could impact the overall user experience. The observational site visit provided insight into the importance of navigational signage and the need to create a distinctive environment that would allow for differentiation among buildings and within the hospital itself. Examining the HCD toolkits provided insight into

different approaches used when attempting empathy based design methods. The methods from these toolkits formed the knowledge foundation upon which the toolkit for this research could be built.

### III. METHODS

The Experiential Human-Centered Design Hospital Toolkit developed from this research was influenced by toolkits as such IDEO's *The Field Guide to Human-Centered Design*, IBM's Enterprise Design Thinking, and Google Ventures' *Design Sprint* and by the methods found in User Experience Design, Environmental Graphic Design, and HCD (fig.4). The EHCDH Toolkit brings together these three design disciplines and overlaps their methodologies resulting in robust user-centric methods that take into consideration empathy, visuals, and navigation.



(Fig.4) Venn diagram of influences for the EHCDH Toolkit

#### User Experience Design

User Experience Design commonly referred to as UX Design, is “the process of enhancing user satisfaction by improving the usability, accessibility, and pleasure provided in the interaction between the user and a product” (What is UX Design, 0:52-1:02). The field of UX Design has been influenced by many discipline’s namely “visual

design, interface and interaction design, information architecture, and usability engineering” (Dirksen 61). There are roots to UX Design that can be traced back to Ancient Greece. The Greeks favored designs that were efficient and comfortable, which meant they were keeping the user in mind (Stevens). UX Design has changed dramatically since the time of the Ancient Greeks. Advancements in technology and the development of smart devices such as smartphones, voice activated device’s like Amazon’s Echo, and smart thermostat’s like Nest have played a role in making UX Design what it is today. Though the focus on efficient design that pleases the user is still present, there are more refined ways of practicing UX Design with particular principles and processes in place. Solutions to user problems are found through user experience research and iterative design process (Narang et al. 2765). UX Design involves user testing and feedback which takes place throughout the ideation and development process keeping the user and their experience at the center of the design process, providing UX Designers with great insight into users wants and needs. UX Designers consider what the user wants from the end product while still keeping the end product goals in mind. Considerations for products go beyond users wants, qualities such as if a product is “useful, usable, desirable, finable, accessible, credible, and valuable” are taken into account by UX Designer (Morville). Though UX Designers often work with digital formats, their process can be applied to physical problems as well.

### **Environmental Graphic Design**

EGD draws elements from graphic design, interior design, architecture, and other professions making it a diverse field. EGD requires designers to evaluate the space, consider its purpose, and determine how effective it is in serving that purpose. EGD

involves informative signage, directional signage, and graphics as well as landscaping for outside areas. Two significant components of EGD are wayfinding, the way a person navigates a space, and placemaking. Placemaking requires the designer to contemplate what a location is meant for, who will inhabit it, and how that location can evoke a particular presence or purpose. EGD is commonplace and is present in the design of airports, college campuses, shopping malls, and other public areas. Signage exists in those settings to aid people in finding their way around the environment and make the task of navigating a setting less frustrating.

### **Human-Centered Design**

HCD is a design process that focuses on the user and builds off the empathy developed while researching and working with the user to solve a problem. The HCD approach often works in stages and has different methods meant to generate ideas and concepts as well as test out prototypes and mockups of design solutions. Immersion into a problem to gain the first-hand experience and build empathy with the people affected is a significant part of the research process. HCD is a process that works on the idea that the designer does not merely design for the user, but works with the user to develop a solution.

### **Empathize**

Both UX Design and HCD focus on how project outcomes will affect users of the project. The focus on empathy as a significant component in these two types of design approaches makes the ability to see a project from the users perspective and emphasize with their needs crucial to the process. The toolkits created by companies like IBM, Google Ventures, IDEO have many similarities and differences in their methods;

however, one core value present in all three company toolkits is a focus on empathy. The *Design Sprint* uses Empathy Building Exercises as one of their methods and Enterprise Design Thinking utilizes a technique called Empathy Maps. Both of these methods are used to build empathy for and gain insight into users situational issues and a better understanding of the users state of mind. In *The Field Guide to Human-Centered Design*, empathy is referenced frequently throughout and its importance is emphasized saying, “Empathy is the capacity to step into other people’s shoes, to understand their lives, and start to solve problems from their perspectives” (The Field Guide to Human-Centered Design 22). Empathy can change a designer’s mindset from focusing only on aesthetic design choices to making design decisions based on informed knowledge from user feedback and researched information about a project. UX Design and HCD place importance on user involvement and feedback. Instead of designers studying a problem and creating a solution which is then presented to the would-be users, UX Design and HCD involve the user in the design and ideation process to gather information and develop a better understanding of a problem. Ways that toolkits will include users and gather feedback can be in the form of interviews. *The Field Guide to Human-Centered Design* features three interviewing methods whereas both *Design Sprint* and Enterprise Design Thinking each has one. All three toolkits feature methods that include users in various parts of their processes.

The EHCDH Toolkit incorporates empathy practices similar to those found in the IBM, Google, IDEO toolkits. There are many methods in the EHCDH Toolkit which require team members to put themselves in the shoes of patients and visitors to better understand a problem from their perspectives. Patients and visitors are also heavily



involved in providing feedback to the team through interviews, user testing, and in-person surveys. The feedback from patients and visitors comes from the visuals the team creates of potential design solutions.

### **Visualize**

The ability to visualize can help make problems more tangible and add dimension to the type of approaches used in finding design solutions. In HCD and EGD, design problems can fall outside the realm of the computer screen. The term “wicked problems” used by Horest Rittel and Melvin M. Webber to describe topics such as “Environmental degradation, terrorism, and poverty” refers to problems that both HCD and EGD can face (Camillus). These problems include physical environments that can attribute to or be the problem that needs correcting. This requires an understanding of the problematic environment and the issues that are present in that location. When working on a problem for a large location, the ability to visualize the space through site maps, photos, 3D models, and digital mockups are beneficial in understanding the space and allows for the ability to focus on a small area within that space.



(Fig.5) Crude prototype used by IDEO to visualize a design concept.

Prototyping is another way for designers to visualize proposed design solutions. In his book *Change by Design*, Tim Brown, the president and CEO of IDEO, discusses a project for the company Gyrus ACMI, a surgical instrument company. A team member from his team used a whiteboard marker, a 35 mm film canister, tape, and a plastic clothespin (fig.5) to create a prototype that helped the team better visualize a tool that before could only be described in gestures (Brown 90). Visualizations through photo manipulation, digital renderings, or prototypes all help to serve the purpose of gathering feedback from users and assessing design solutions. *The Field Guide to Human-Centered Design* uses Rapid Prototyping as a way to quickly and cheaply build, test, and learn from a suggested design solution. Enterprise Design Thinking uses Wireframing as a way to prototype ideas to get feedback from users. The *Design Sprint* uses Prototyping-Real Enough to test out ideas.



(Fig.6) Paper prototype testing of the EE app (UX Playground).

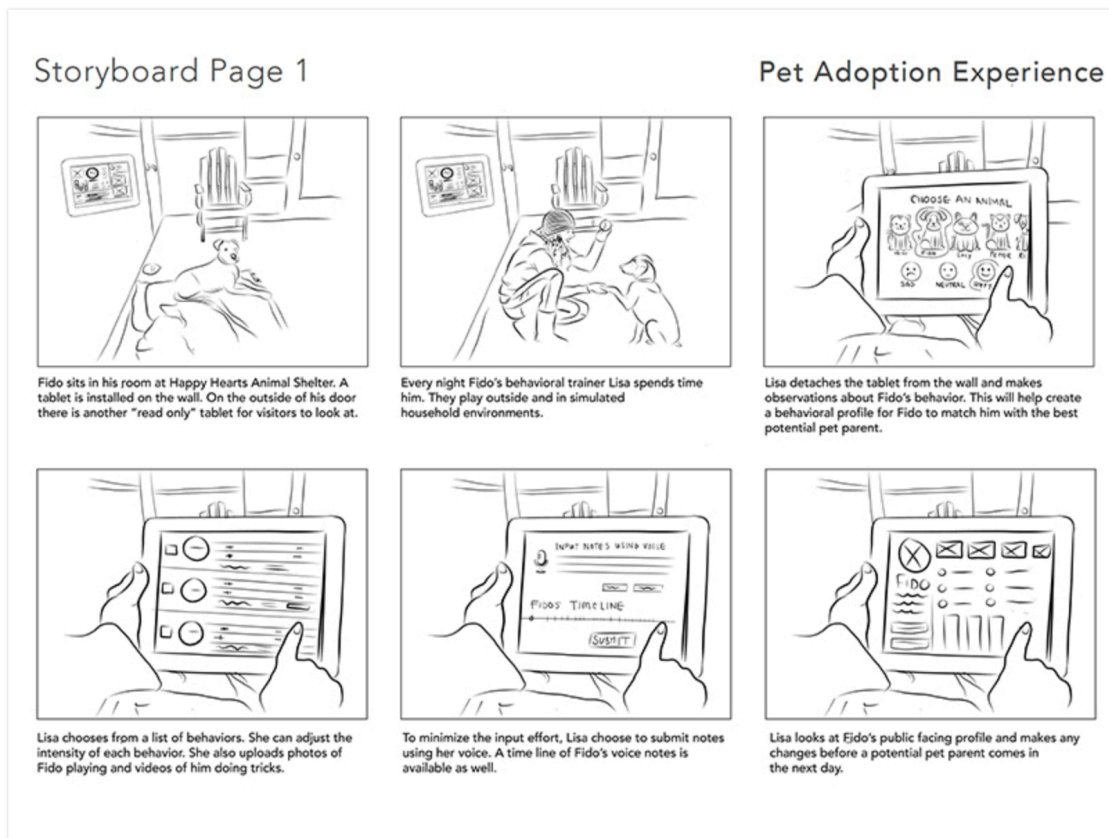
Given the complexities and foot traffic of a hospital, paper prototyping (fig.6), and digital mockups play a significant role in the EHCDH Toolkit. Providing patients and visitors with visuals of what a design solution could look like help those being interviewed to provide more detailed and specific feedback that would be hard to obtain

by merely explaining a design solution verbally. Visuals help both the team and the users see a solution in a space without actually having to implement any changes within that settings.

### **Navigate**

UX Design and EGD both share a common feature that must be considered when creating design solutions. Though UX Design typically results in digitally based solutions such as apps, websites, smart doorbells, whereas EGD produces physical solutions for instance site maps, signage, bathroom icons, they both must consider how their users navigate and interact with their designs. The need to understand a problem and how users navigate that problem helps to provide designers with a piece of more in-depth knowledge about the users experience. Considerations must be given from the start of a user's journey to the end goal or purpose of their interaction with a device or space. UX Design and EGD both rely on storytelling methods during the development of their design solutions. The *IBM Design Thinking Field Guide* explains their storyboarding method as “a way to iterate and communicate ideas and scenarios visually by telling user-centric stories” (IBM Design Thinking Field Guide 40). *The Field Guide to Human-Centered Design* and the *Design Sprint* both have storyboard methods in them as well. Storyboarding is more than a way to visually depict the user's journey (fig.7). It is a method that allows a team the chance to tailor the experience to a particular demographic or user. One way a team can narrow down the focus of who their user is by building a persona. A persona is a profile of information built to represent the type of user the team is designing for. The persona is often given a name, age, and personality traits to give the team a good understanding as to how this particular individual would navigate the

problem the team is confronting. IDEO, IBM and Google Ventures all have their own versions of persona building. The *Design Sprint* uses the User Journey Map technique, *The Field Guide to Human-Centered Design* uses the Define Your Audience exercise, and Enterprise Design Thinking's method is building personas.



(Fig.7) Storyboard for Pet Adoption Experience (Adrienne Levin).

As hospitals service a wide range of people, by using the EHCDH toolkit, a hospital design team will better be able to understand if a particular demographic is struggling with issues such as navigating the hospital, stress related to medical devices, using assistive technologies, reading, and locating signage. The EHCDH Toolkit incorporates persona building and methods similar to storyboarding to gain a better understanding of how patients and visitors navigate the hospital setting.

## **IV. OUTCOMES**

### **Experiential Human-Centered Design Hospital Toolkit**

The seven methods used in children's hospitals for stress relief and identified for inclusion in the EHCDH Toolkit include Cloaking Medical Devices, Color, Shape and Form, Hierarchy of Information, Sanctuary Space, Icons and Graphics, and New Technologies. The purpose of the EHCDH Toolkit is to help both designers and hospital personnel evaluate their hospital, identify areas of stress, and determine how they can implement these methods. It is worth noting that not all seven methods will apply to all hospital environments. Additionally, each hospital should be evaluated on an individual basis to ensure that techniques are only used when and where they are beneficial and needed. The toolkit details the type of team members necessary to create a successful and well-rounded team, the supplies needed, the tasks required for each method, and the time constraints for each activity.

### **TEAM ROLES**

One the most important components to properly execute the EHCDH toolkit methods is having the right team members. Creating a diverse multi-disciplinary team provides a range of viewpoints and experiences, ensuring patients will be considered in every step of the toolkit process and that design solutions will be tailored to the specific hospital's needs. The type of team members should be "An interdisciplinary mix of thinkers, makers, and doers is just the right combination to tackle any design challenge" (*Field Guide to Human-Centered Design* 35). The members who fill the role of thinkers for the EHCDH toolkit are the Team Coordinator, Medical Expert, and Brand Guru. The makers are the Design Expert, Architect, and Fabricator. The doers are the Patient

Liaison, and Hospital Management. All team members are required to contribute ideas and participate in creative task. The role of organizing and assembling a team will be the responsibility of the Team Coordinator.

Team Coordinator: This person will ideally have administrative experience in the hospital or could be an outsider with a design background brought in to help facilitate the tasks of the EHCDH Toolkit. This person keeps the team on schedule and helps lead activities of each task as well as leads conversations and ensure participation of all members. The suggested number of people for this role is one.

Medical Experts: This would be nurses, doctors, and/or medical staff member who can provide insight from their experience working in the hospital. Having more than one Medical Expert from different backgrounds is instrumental in building a robust, diverse team. The suggested number of people for this role is two to three.

Brand Guru: Someone familiar with and responsible for brand compliance for the hospital's image and marketing strategies. The suggested number of people for this role is one.

Patient Liaison: This is someone who interacts with patients such as a volunteer, concierge, greeter, or former patient. The suggested number of people for this role is one to two.

Hospital Management: This is someone who is involved in making big decisions for the hospital and part of the executive management team (i.e., Facilities Director). The suggested number of people for this role is one.

Design Expert: Someone who has a graphic design background, preferably someone who has experience in environmental graphic design. Required skills for this

position would include; layout design, presentation graphics, schematic diagrams, image manipulation, illustrator, and 3D modeling. Ideally, this position would be filled by two designers with varying expertise, experience, and backgrounds. Designers with different backgrounds, for instance, one in branding the other in User Experience and User Interface, will really add to the team's ability to create a wide range of prototypes and design solutions. The suggested number of people for this role is two.

Architect: This is someone who has a background in architecture. The architect will help with keeping design outcomes ADA compliant and contribute a understanding of working with floor plans and how certain changes will impact the integrity of a space. The suggested number of people for this role is one.

Fabricator: This is someone who has skills in a trade like sign making, furniture design, interior design, vinyl printing and application. The suggested number of people for this role is one to two.

## **SUPPLIES**

The overall supply list is as follows. Not all of these supplies will be used for each method. Check each individual method for the supplies you will need. Supplies are broken down into five categories:

Writing Utensils: Sharpies, Pens, Dry Erase Markers, Pencils

Paper: Printer Paper, Post-its, Note Pads

Discussion Space: Corkboard, Dry Erase Board

Technology: Projector, Timer, Computers, Cameras, Printer, a Pinterest account,

ColorSnap Visualizer app, Smartphone, Powerpoint or Keynote, Design Software

such as Adobe InDesign, Adobe Photoshop, Adobe Illustrator, Sketch, and Invision.

Miscellaneous: Thumbtacks, Dot Stickers, Paint Color Swatches, Rented Furniture, Books, Scotch Tape, Painters Tape, Easel, Poster Board.

## **WORK SPACE**

The ideal workspace would consist of a conference room with seating for up to 14, preferably with a center table and chairs, a computer with a projector, and minimal outside noise or interruptions. The room will need a large amount of wall space with a dry erase board and an area to put a corkboard if one is not present already.

## **TASKS**

The six tasks Discovery, Brainstorm, Creation, User Feedback, Presentation of Finding, and Implementation of the toolkit help the team know what part of the process they are in and what their overall focus should be on. The tasks for the methods will span three days. Each day will start a 9:00am and will end at or before 4:00pm with an hour for lunch everyday. This timeframe allows team members one hour in the morning and an hour in the afternoon to take care of work responsibilities. This is particularly necessary for team members with demanding schedules.

Discovery: The team takes on the role of a researcher. The team will observe, document, and research their hospital environment as well as speak to patients to discover stressors. The team's knowledge of the environment offers useful insight, but be open to looking at things from an outsider's perspective to discover new ideas beyond what the team may see every day. The tools for Discovery are Introductions, Research, Observe, Photo Documentation, Photo Collage, Shape Research, Patient Experience Storyboard



Color Groups, Memory Test, I Spy, Mapping, Document Your Surroundings, Explore The Space, and Role Play.

Brainstorm: The team will look at the information and insights gathered during the Discovery task. The value of this task is to identify problems, pain points, and potential solutions. This task involves the exchanging of ideas and will require your group to narrow down the scope of a challenge to identify a solution. The tools for Brainstorm are Compile Information, Select a Device, Color Theme, Moodboard, The Right Fit, Select a Sign, Positives and Negatives, Space Persona Building, Identify Comforts, Building a Narrative, Narrative Vote, Reflect, and Technology Selection.

Creation: The team will complete mockups, sketches, prototypes, or edit digital images as a way to present design solutions and test them as well as something visual patients can see to give feedback on. This task helps select and establish a creative direction for the project to move. The tools for Creation are Paper Sketch, Mockup, Photo Simulation, Schematic Development, Digital Prototype, Prototype Installation, Small Scale Trial, Paper Sketch, Digital Mockup, Illustrate, Paper Wireframe, Paper User Test, and Digital Prototype.

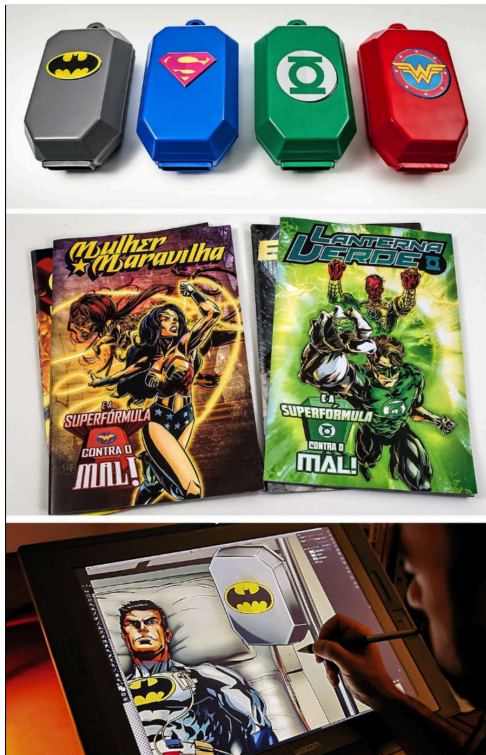
User Feedback: The team will test prototypes or mockups of solutions with a selected audience. The feedback from this task should provide the team with more understanding about their solution by giving insight into which elements are successful and which may be flawed. After this stage, the team may have to go back and make revisions based on feedback. The tools for Feedback are Interview, First Impressions, In-Person Feedback, Survey, and User Test.

Presentation of Findings: The team will reach out to architects, fabricators, or designers who can help make their design solution a reality. Collect quotes, ask about materials, and talk about project timeframes. The team will make a presentation and present the research, user feedback, and design solution to whoever has the authority to make your solution a reality. The tools for Presentation of Findings are Reach Out/Revise, Build a Presentation, and Present.

Implementation: If the Presentation of Findings is successful and hospital decision makers want to move forward with the stress-relieving solution then Implementation can only start once a budget is set and the designer or fabricator who will execute the project are identified and brought on board. This will likely take place after the three day time period of the method.

### Toolkit Methods

#### 1. Cloaking Medical Devices Method



(Fig.8) Photo of “Superformula” chemotherapy packaging and patient comic book (Ponce).

The goal of cloaking a medical device is to put a patient at ease. Medical equipment can look intimidating to patients, especially those who have never encountered them before. An example would be how MRI machines require the patient to be inserted into a small and confined space which can play on people's claustrophobic fear. With children's vast imaginations, something trivial can become far scarier than expected and though adults do not possess the imaginations they once had as children, they are no less susceptible to fear, especially of something new. The thought of getting an IV can be terrifying for a child since it involves needles, a fluid bag hanging on a large metal contraption to hold the fluid bag, and strange liquids that have to be put into their body through veins. Making an IV less scary reduces a child's stress aiding in their recovery. In Sao Paulo, Brazil at the A.C. Camargo Cancer Center they have created a superhero motif in one of the wards. The design team empathized with the children's need for their chemotherapy drugs and the effects they had on the children's bodies. The team sought to find a way the drugs could be administered that would inspire the children in their fight against cancer and help them understand why their bodies were affected by chemotherapy drugs. The solution they found was to brand the chemotherapy as "Superformula" and placed the drugs for the treatment inside superhero themed boxes. Illustrated comic books also helped explain to the children the chemotherapy process and how important the drugs were to their recovery (fig.8). Changing the experience of how the drugs are administered by shifting the focus on what they symbolize helps put the patient's mind at ease.

For the Cloaking Medical Devices method the team will be asked to research the types of devices in the hospital that can be a cause of stress for patients, observe patients

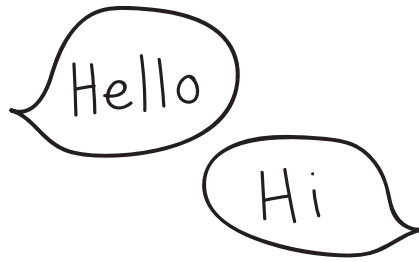
during their interaction with the devices such as MRI's and CAT Scans, the team will then compile the information gathered to examine if there is a particular device that is causing more stress than others, once a device is chosen the team will discuss ways that the device could be cloaked to alleviate stress, they will draw sketches of design solutions for cloaking the device, create a digital mockup and show it to patient to gather feedback, make revisions to the mockup, gather quotes from product designers, present the findings to hospital officials, and if the design solution is approved work to implement the design solution.

CLOAKING MEDICAL DEVICES SCHEDULE			
	DAY 1	DAY 2	DAY 3
9:00am	Introduction	Paper Sketch	Build a Presentation
9:30am	Research		Mockup
10:00am			
10:30am			
11:00am			
11:30am			
12:00pm	Lunch	Lunch	
12:30pm			
1:00pm	Complie Information	Interview	
1:30pm			
2:00pm	Select a Device		
2:30pm			
3:00pm		Reach Out/Revise	
3:30pm			
4:00pm			

(Fig.9) Schedule for the Cloaking Medical Devices method.

The plan for this method will take place over three days, with a start time of 9:00am each day and varying end times (fig.9). The Team Coordinator can determine what day of the week to start Day 1 actives. The supplies needed for the Cloaking Medical Device method are Computers with an internet connection, Paper, Pens, Post-its, Dry Erase Board, Dry Erase Markers, Dot Stickers Corkboard, Powerpoint or Keynote, Camera, and Adobe Photoshop.

[ Discovery Task ]



(Fig.10) Team members introduce themselves to each other.

*Introductions* (Day 1 9:00am–9:30am): Take time to allow each member of the team to introduce themselves and for the Team Coordinator to explain the toolkit and provide an overview of what the team will be doing over the course of the next three days as well as the timeline they will be working within.



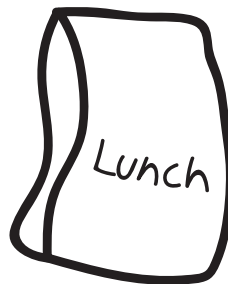
(Fig.11) The team will research patient demographics and reasons for visits to the hospital.

*Research* (Day 1 9:30am–10:30am): Look at the different demographics that visit the various areas of your hospital. Look for stats on gender, age, racial background, and identify the most common reasons people visit your hospital.



(Fig.12) Observe different types of testing, for instance CAT Scans.

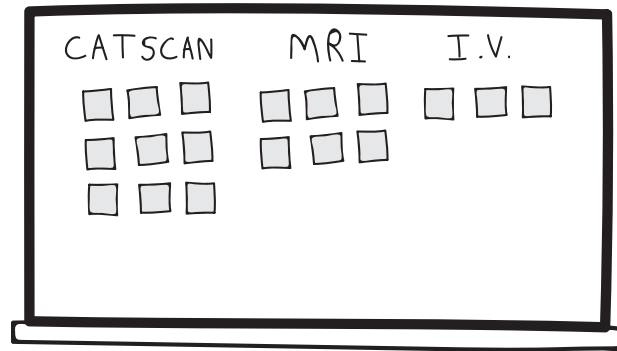
*Observe* (Day 1 10:30–12:00): Split the team into small groups and sit in on CAT Scans, MRIs, blood draws, IV insertions, or other procedures that are sources of patient stress. Write down your observations, noting any aspects of the test or treatment that are particularly stressful for the patient and write about how their behavior may change from start to finish. Ask patients about their experience and what stressed them about the procedure or test. Observe how they are introduced to the device and the area it is housed. Regroup before everyone heads to lunch.



(Fig.13) Take an hour break for lunch.

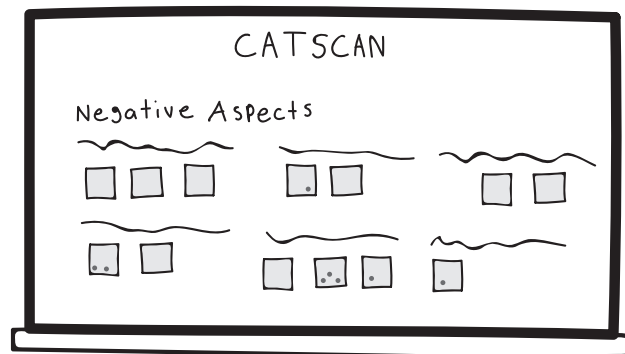
*Lunch* (Day 1 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.

[ Brainstorm Task ]



(Fig.14) Use post-it notes on a dry erase board to see what stress related themes emerge.

*Compile Information* (Day 1 1:00pm–2:00pm): On a dry erase board create a list of devices that have shown to be stressful for patients. Place post-it notes that have shortened sentences about the research your team has found during the teams observation and research. Look to see if there are common themes repeated, certain devices that are mentioned over and over again, and what it is about them that is stressful and what demographic is most stressed out by them. Is it a specific age group or a particular gender that finds one device more stressful?



(Fig.15) Use post-it notes to write down ways to cloak stress-inducing features of a device.

*Select a Device* (Day 1 2:00pm–3:00pm): Select one medical device to focus on for the remainder of the Cloaking Medical Device method. Your research will at this point most likely highlight a particular device or procedure that stands out as

the most stressful to patients. Once a device is selected, begin listing the device's most frightening or stress-inducing negative attributes. Compile a list of ways to address those negative attributes through environment changes or a way the device could be concealed or cloaked. Discuss, evaluate, and rank the team's different solutions using dot stickers applied to post it notes making sure that all team members have a vote. The idea that gets the most votes is the one your team will focus on realizing from this point forward.

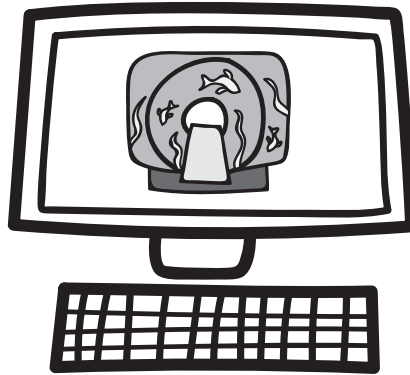
[ Creation Task ]



(Fig.16) Sketch solutions such as a CAT Scan that looks like an underwater scene.

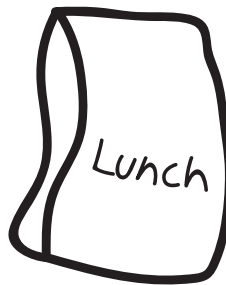
*Paper Sketch* (Day 2 9:00am–10:00am): Every member of the team should attempt to sketch the agreed upon solution regardless of artistic skill. Once the sketches are done, they should be pinned on the board and discussed.





(Fig.17) Apply the solution to a photo of the CAT Scan machine in Photoshop.

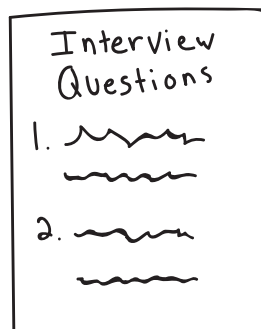
*Mockup* (Day 2 10:00am–12:00pm): Photograph the device and create a mockup applying the agreed upon solution via Photoshop or by creating a refined sketch of what the design result would look like and how it would cloak the device.



(Fig.18) Take an hour break for lunch.

*Lunch* (Day 2 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.

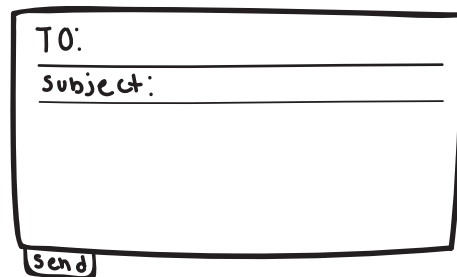
[ User Feedback Task ]



(Fig.19) Interview patients and ask them to provide you feedback on your solution.

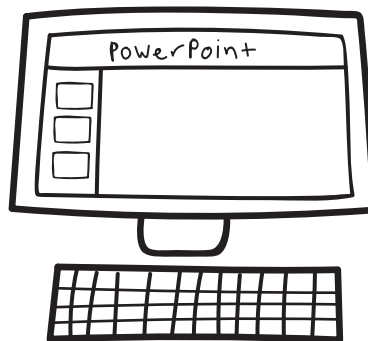
*Interview* (Day 2 1:00pm–3:00pm): Ask patients, nurses, and workers who have to encounter the device to evaluate the mockup and provide feedback. Ask if they believe your solution would help ease their stress level. If the input is positive move forward with implementing the design solution. If the reaction is neutral or negative, revisit your outcome and make revisions/improvements to the mockup based on patient response.

[ Presentation of Findings Task ]



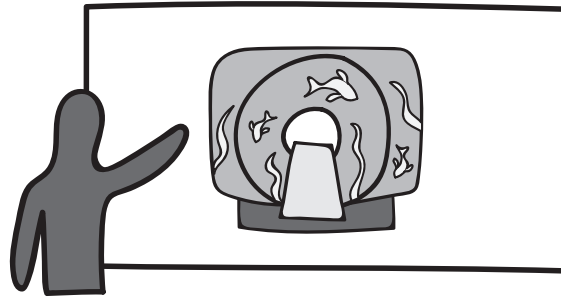
(Fig.20) Have team members reach out to fabricators while others revise the solution.

*Reach Out/Revise* (Day 2 3:00pm–4:00pm): While some team members work on making revisions have the rest of the team contact manufactures, engineers, or product designers for assistance in making the proposed solution a reality. Collect quotes, ask about materials, and talk about project timeframes.



(Fig.21) Create a presentation containing all of your team's findings.

*Build a Presentation* (Day 3 9:00am–10:00am): Create a presentation to show to whoever has the authority to make your solutions a reality. Include all the research and feedback from users as well as the design solution.



(Fig.22) Have your team present your findings.

*Present* (Day 3 10:00am–11:00am): Have your team give a presentation over the issue they have identified and the proposed solution for that issue.

#### [ Implementation Task ]

If the Presentation of Findings is successful and hospital decision makers want to move forward with the stress-relieving solution a must be budget set and the designer or fabricator who will execute the project need to be identified and brought on board. This will take place after the three day time period.

## 2. Color Method



(Fig.23) Photo of the outside of Edinburg Children's Hospital (Edinburg Children's Hospital)

Hospitals have undergone many visual changes throughout the years. Early hospitals were very minimalistic in their use of color. In 1869, the male ward at the Hospital of the Protestant Episcopal Church used the color white for their walls, furniture, and finishing as white would not hide dirt or blood as other colors would (Kisacky 56). Many hospitals were often established by religious organizations. As a result, the white of hospital interiors was meant to remind patients they should focus on their spiritual health as well since white represented the color of purity.

Children's hospitals have moved past the bland, dull interiors of old to start creating environments that are more welcoming and less intimidating. In the hospital environment color can help uplift children as "Colors used actively in children's spaces can exhilarate the child's spirit" (Kopacz 219). The Edinburg Children's Hospital uses color on the outside of their hospital façade to create a playful and inviting environment for children (fig.23). The colors along with the architectural design evoke the appearance of colorful blocks stacked up to form the building structure.

Color has a substantial impact on human's psyche and is influenced by culture and environmental norms. In the United States, the color red indicates stop or is associated with a warning of danger. If the wrong shade of red was used in the hospital environment, it could cause alarm to patients. Selecting a color scheme for the hospital environment will ultimately either aid in the healing process or detract from it. In her book *Color in Three-Dimensional Design*, Jeanne Kopacz talks about what effects can occur when a lack of color variation is present:

Experts in the field of design for health care concur that monotonous environments devoid of color variation can cause sensory deprivation. In order to sustain consistent physiological functionality, the brain needs exposure to a changing environment and some source of physical stimulation. A lack of such stimulation is essentially a detriment to the healing process...In addition, properly applied variable color will help users to orient themselves, particularly within the context of larger scale environments. (Kopacz 268)

Using color to both the inside and outside of hospital structures would prove to be a beneficial change to both the navigation and healing process.

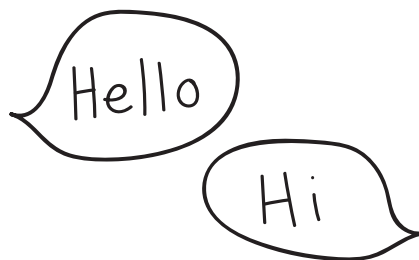
For the Color method the team will photograph the hospital, identify color group in the hospital, decide if a new color palette should be developed, create moodboards for color ideas, digitally apply the selected colors to the hospital environment, so the photos to users to gather feedback, make revisions to colors used in the digital application, gather quotes from painter and interior decorators, present the findings to hospital officials, and if the design solution is approved work to implement the design solution.

COLOR SCHEDULE				
	DAY 1	DAY 2	DAY 3	
9:00am	Introduction	Photo Simulation	Build a Presentation	
9:30am	Photo Documentation			
10:00am				
10:30am	Photo Collage			Present
11:00am	Color Groups			
11:30am				
12:00pm	Lunch	Lunch		
12:30pm				
1:00pm	Color Theme	First Impressions		
1:30pm				
2:00pm	Moodboard	Reach Out/Revise		
2:30pm				
3:00pm				
3:30pm				
4:00pm				

(Fig.24) Schedule for the Color method

The plan for this method will take place over three days, with a start time of 9:00am each day and varying end times. The Team Coordinator can determine what day of the week to start Day 1 activities (fig.5). For the Color method the supplies you will need are computers with internet connection, Paper, Pens, Post-its, Dry Erase Board, Dry Erase Markers, Corkboard, Powerpoint or Keynote, ColorSnap Visualizer app, Camera, Printer, Paint Color Swatches, and Adobe Photoshop.

[ Discover Task ]



(Fig.25) Team members introduce themselves to each other.

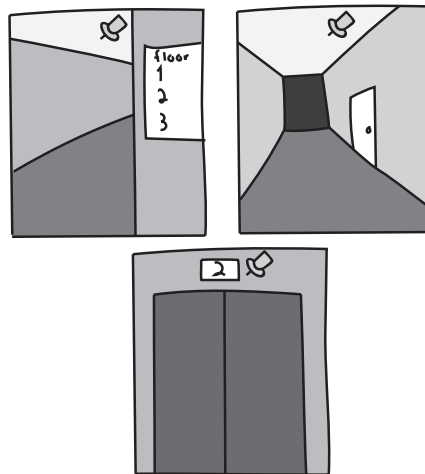
*Introductions* (Day 1 9:00am–9:30am): Take time to allow each member of the team to introduce themselves and for the Team Coordinator to explain the toolkit

and provide an overview of what the team will be doing over the course of the next three days as well as the timeline they will be working within.



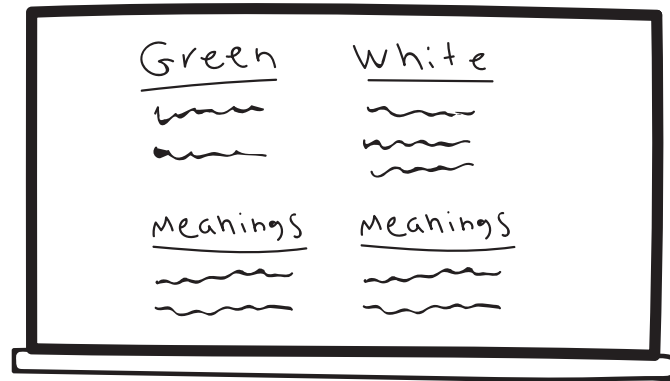
(Fig.26) Photograph the different colors of walls, furniture, and signage in the hospital.

*Photo Documentation (Day 1 9:30am–10:30):* Have the team members photograph different areas of the hospital as well as walls, furniture, signage using their smartphones or cameras. If you encounter visitors or patients ask them about their thoughts on the colors in the hospital.



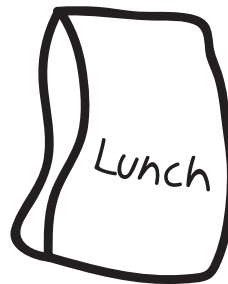
(Fig.27) Create a photo collage of the photos taken around the hospital.

*Photo Collage* (Day 1 10:30am–11:00am): Print out and create a collage out of the photos on a corkboard or on a computer that has a projector and project them all.



(Fig.28) Write down on a dry erase board colors and their meanings.

*Color Groups* (Day 1 11:00am–12:00pm): Write down on a dry erase board all of the colors that appear in the photos, use the paint color swatches to identify the various color names. Group them together by similar shades. Research on the computer the psychology of color, color meanings, and see if the meaning behind the colors fit with the type of atmosphere your team envisions for the hospital.

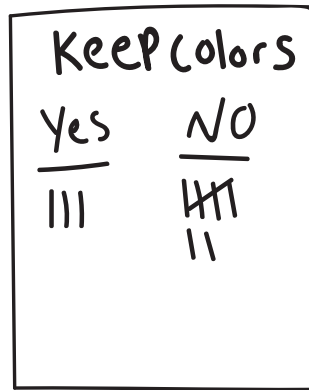


(Fig.29) Take an hour break for lunch.

*Lunch* (Day 1 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm. Over lunch have the team members create a Pinterest account and download the ColorSnap Visualizer app.

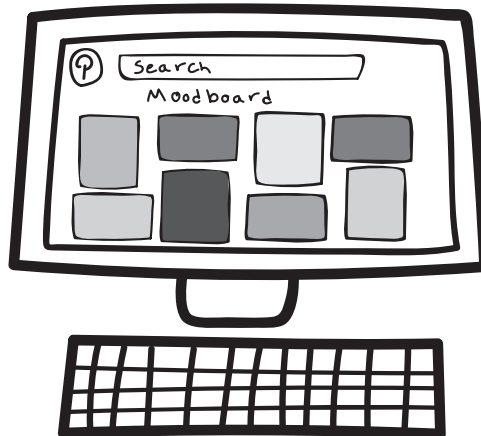


[ Brainstorm Task]



(Fig.30) Vote on if the colors found in the hospital should be kept or not.

*Color Theme* (Day 1 1:00pm–2:00pm): Discuss in detail existing color palettes in the hospital. Ask whether the colors are desirable enough to keep or if a new color palette should be developed. Vote on if the colors should be kept or not. If the existing colors are desirable look at ways to incorporate them more throughout the hospital. Examples of this would be in the color of furniture, signage, room colors, etc. If the vote is not to keep the colors then move onto making moodboards.

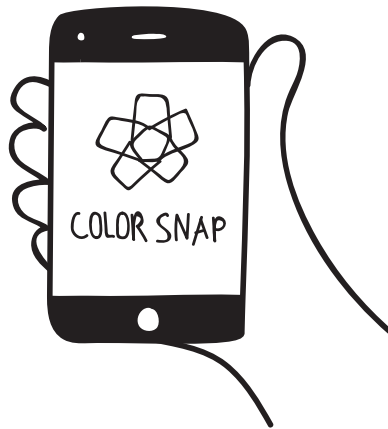


(Fig.31) Use Pinterest to create moodboards of the colors desired for the new color palette.

*Moodboard* (Day 1 2:00pm–3:30pm): If the team decided that new colors are wanted, team members will create moodboards on Pinterest of various color

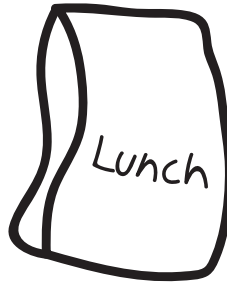
themes they would like to see in the hospital environment. Keep in mind certain colors are considered calming and others can be alarming, but feel free to venture outside the norm with colors that are bold and make a statement. Have each member present their moodboard and their reasoning for choosing those colors. Have the team vote on which moodboard is best and should be used for the hospital.

[ Creation Task]



(Fig.32) Use the ColorSnap Visualizer app to show the new colors in the hospital.

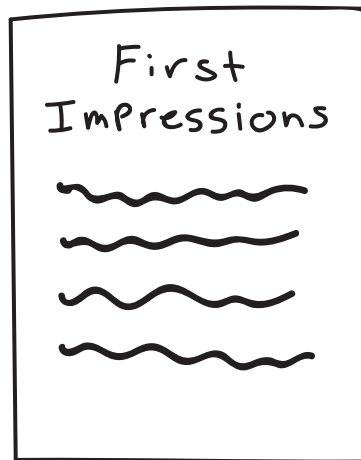
*Photo Simulation* (Day 2 9:00am–12:00pm): Using photographs of areas of the hospital you wish the new colors to be applied use Photoshop or an app like the Sherwin-Williams ColorSnap Visualizer to affect the color change to the photo to see what the difference would look like. Decide how the new colors will be implemented; either through applying wallpaper, vinyl graphics, paint. Simulate the desired color depiction on the photo or if wall graphics are desired create a digital rendering of what they would look like in the selected space.



(Fig.33) Take an hour break for lunch.

*Lunch* (Day 2 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.

[ User Feedback Task ]



(Fig.34) Show photos of the space with the new colors to patients and ask for feedback.

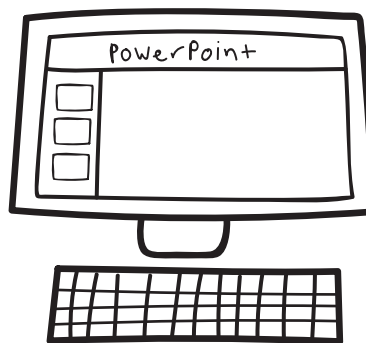
*First Impressions* (Day 2 1:00pm–2:30pm): Show the simulated photos to staff and patients; ask them for their first impression of the environment with the color changes. Ask what emotions the colors evoke in that space and if they are calming. Once you have amassed enough feedback see if the reactions are in line with the desired emotional response. If needed revise or refine the color palette you are using based on the user feedback.

[ Presentation of Findings Task ]



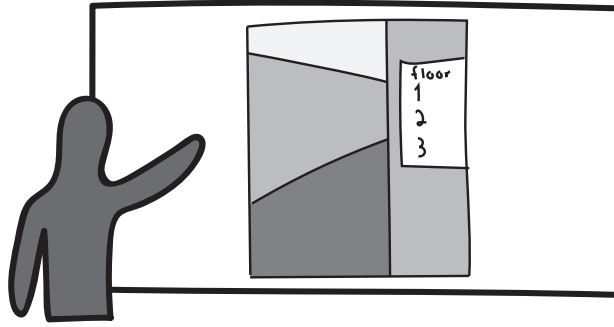
(Fig.35) Have team members reach out to painters while others revise the solution.

*Reach Out/Revise* (Day 2 2:30pm–4:00pm): While some team members work on making revisions have the rest of the team contact designers, painters, or interior decorators whoever can help you incorporate the desired colors into the space you wish to change. Collect quotes, ask about materials, and talk about project timeframes.



(Fig.36) Create a presentation containing all of your team's findings.

*Build a Presentation* (Day 3 9:00am–10:00am): Create a presentation to show to whoever has the authority to make your solutions a reality. Include all the research and feedback from users as well as the design solution.



(Fig.37) The team will present their findings

*Present* (Day 3 10:00am–11:00am): Have your team give a presentation over the issue they have identified and the proposed solution for that issue.

[ Implementation Task ]

If the Presentation of Findings is successful and hospital decision makers want to move forward with the stress-relieving solution a must be budget set and the designer or fabricator who will execute the project need to be identified and brought on board. This will take place after the three day time period.

### 3. Shape and Form Method



(Fig.38) Photo of Boomerang Health waiting area

The evolution of hospital building structures is directly related to health practices at the time. From 1700–1873, hospitals were built with the hope that disease could be prevented by allowing for the “bad air” to circulate out of long narrow wards through windows which were often located between beds (Kisacky 13). Today’s medical understanding of how germs and illness spread has helped shape the layout and design of modern hospitals. The number of areas patients and visitors will interact with has grown. Areas within the hospital like patient check-in, cafeterias, elevators, and waiting rooms are just a few of the areas that must be easy to find and identifiable for visitors and patients when attempting to move about a hospital. When C & Partners Architects were tasked with constructing Boomerang Health commissioned by Toronto Sick Kids, they approached the designing of the building in a way that incorporated shapes and features not often seen in the design of adult hospitals. For the waiting areas, they removed part of the walls around corners to make the space feel more open and less confining (fig.38). These open frames had rounded edges that gave the appearance of an area that was less rigid and more soft and inviting. Creating a more soft and inviting atmosphere through the changing of shape can aid in lessen patient anxiety. Remodeling walls and other building features can be cost intensive. Changing furniture can be a cost-effective way of improving the perception of space without the cost of expensive structural renovations.

For the Shape and Form method your team will visit different areas of the hospital to see what features and shapes that stand out, list the areas where different shapes appear, research the shapes meanings, select a shape to integrate into the hospital setting, identify where in the hospital this shape should go, create a schematic of how the space will change with the application of the shape, display your schematic so that you can

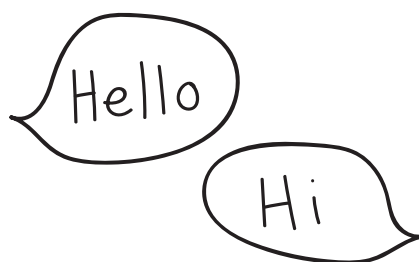
gather feedback from patients and visitors, make revisions to the schematic, gather quotes from product designers, present the findings to hospital officials, and if the design solution is approved work to implement the design solution.

SHAPE AND FORM SCHEDULE			
	DAY 1	DAY 2	DAY 3
9:00am	Introduction	Schematic Development	Build a Presentation
9:30am	Memory Test		Present
10:00am			
10:30am			
11:00am	I Spy		
11:30am	Lunch		
12:00pm			
12:30pm	Lunch		
1:00pm	Shape Research		In-Person Feedback
1:30pm			
2:00pm			
2:30pm	The Right Fit		Reach Out/Revise
3:00pm			
3:30pm			
4:00pm			

(Fig.39) Schedule for the Shape and Form method

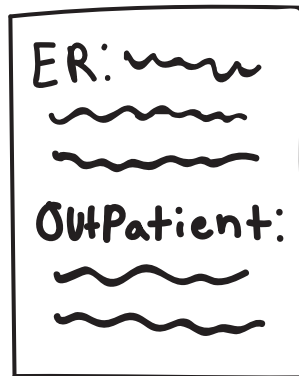
The plan for this method will take place over three days, with a start time of 9:00am each day and varying end times. The Team Coordinator can determine what day of the week to start Day 1 activities (fig.37). For the Shape and Form method the supplies you will need are computers with internet connection, Paper, Pens, Poster Board, Tape, a Dry Erase Board, Dry Erase Markers, a Printer, Adobe Illustrator, 3D modeling software, and an Easel.

[ Discovery Task ]



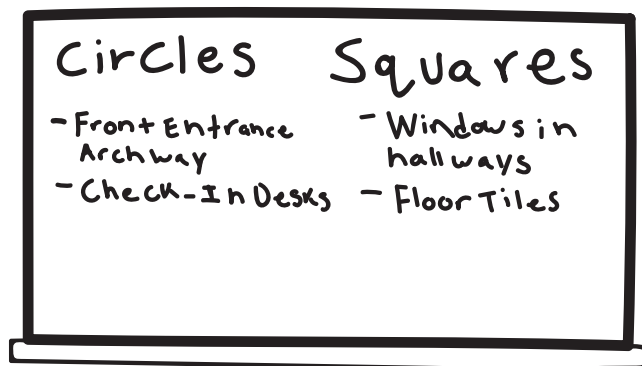
(Fig.40) Team members introduce themselves to each other.

*Introductions* (Day 1 9:00am–9:30am): Take time to allow each member of the team to introduce themselves and for the Team Coordinator to explain the toolkit and provide an overview of what the team will be doing over the course of the next three days as well as the timeline they will be working within.



(Fig.41) List each area of the hospital and write down noticeable features about them.

*Memory Test* (Day 1 9:30am–11:00am): Visit different areas of the hospital with your team and list each area and the shapes found in them. Once you are done, go back to the meeting room and describe features about each area that stood out for better or for worst. Were their particular shapes that stood out or repeated throughout the hospital.

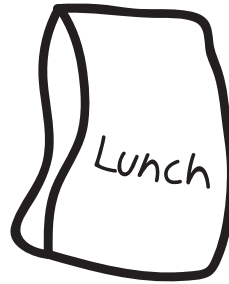


(Fig.42) On a dry erase board write down the different shapes found in the hospital.

*I Spy* (Day 1 11:00am–12:00pm): See if your team can identify existing shapes in the architecture of the building, at places like entrances, archways, or help desks.

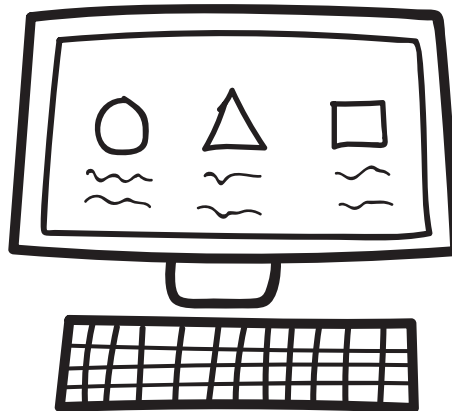


Also, pay attention to the shape of furniture, make sure to consider geometric, organic, and abstract shapes that repeat throughout the hospital.



(Fig.43) Take an hour break for lunch.

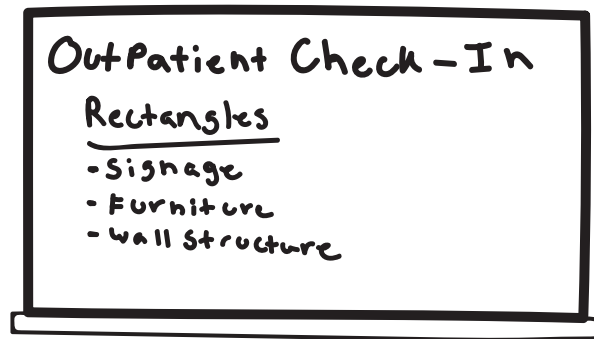
*Lunch* (Day 1 12:00pm-1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.



(Fig.44) Have half the team research shape meanings and the other half talk to patients.

*Shape Research* (Day 1 1:00pm-2:30pm): Have half the team use computers to research the meanings and uses different shapes have. Have the other half of the team print out a paper with shapes on it and ask visitors and patients which shape they are drawn too and why. Make sure all the shapes are black in color so color preference does not sway their feedback.

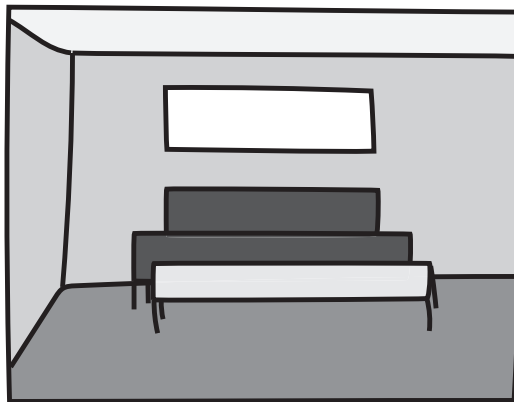
[ Brainstorm Task ]



(Fig.45) On a dry erase board write down ways your team can incorporate your shape.

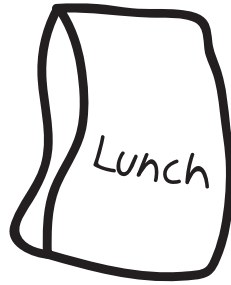
*The Right Fit* (Day 1 2:30pm–3:30pm): After identifying shapes in various areas of the hospital select an area that you would like to focus on. Make a list on the dry erase board of locations that you could incorporate shapes that you noticed already occurs in that space. Consider signage, furniture, bathroom signs, or wall graphics as possible elements of the environment suitable for change.

[ Creation Task ]



(Fig.46) Create a schematic of your space and show how your shape will be included.

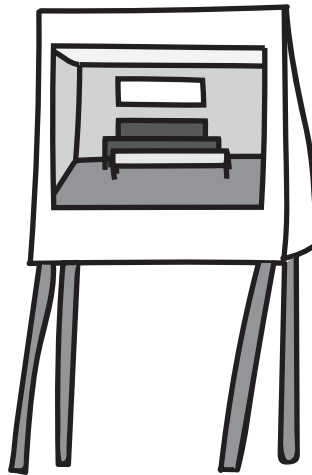
*Schematic Development* (Day 2 9:00am–12:00pm): Create a hand-drawn, digital schematic, or 3D model of the area you are working with and include the shape changes you wish to make.



(Fig.47) Take an hour break for lunch.

*Lunch* (Day 2 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.

[ User Feedback Task ]



(Fig.48) Put your poster board with your schematic on an easel and solicit feedback.

*In-Person Feedback* (Day 2 1:00pm–2:30pm): Tape your schematic to poster board and present it on an easel in the area you are focusing on and have a few of the team members ask patients for feedback. Ask them if the incorporation of more shapes would help to better identify the space or if the changes would liven the area up or if entering the space with these shapes would lessen anxiety about being at the hospital. Make revisions to the schematic if needed.

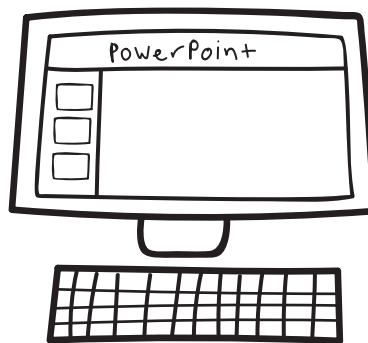
[ Presentation of Findings Task ]



(Fig.49) Have team members reach out to interior decorators while others revise the schematic.

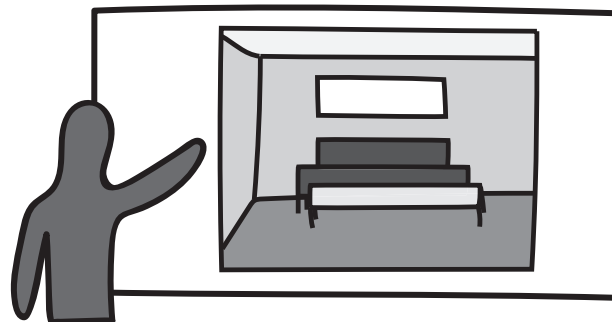
*Reach Out/Revise* (Day 2 2:30pm–4:00pm): While some team members work on making revisions have the rest of the team contact architects, designers, or interior decorators who can assist in incorporating the shapes in the identified area.

Collect quotes, ask about materials, and talk about project timeframes.



(Fig.50) Create a presentation containing all of your team's findings.

*Build a Presentation* (Day 3 9:00am–10:00am): Create a presentation to show to whoever has the authority to make your solutions a reality. Include all the research and feedback from users as well as the design solution.



(Fig.51) The team will present their findings

*Present* (Day 3 10:00am–11:00am): Have your team give a presentation over the issue they have identified and the proposed solution for that issue.

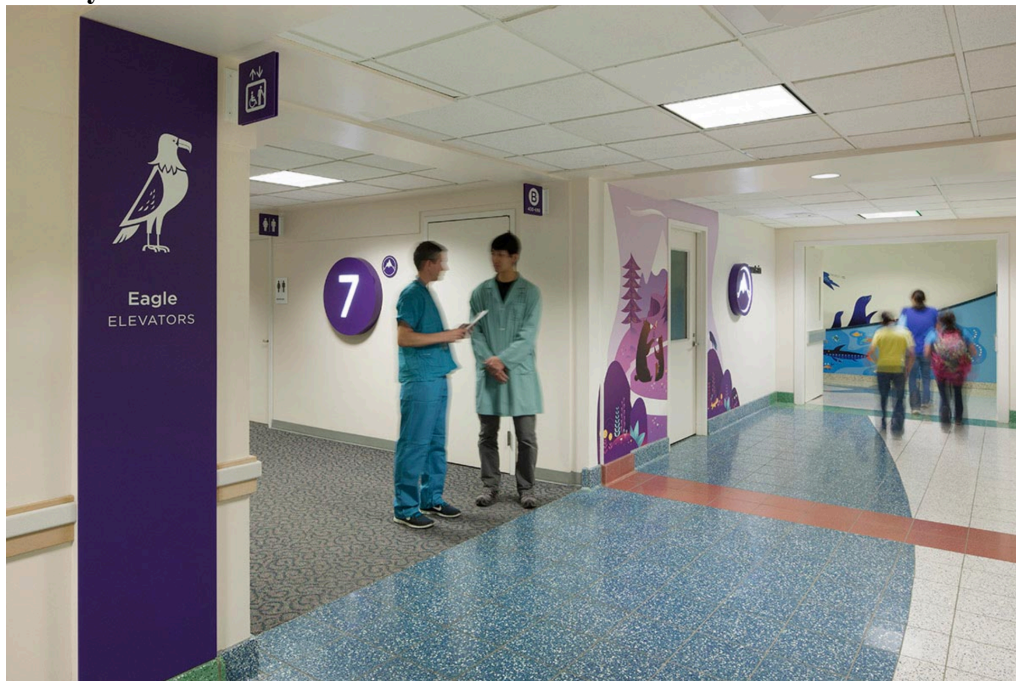
[ Implementation Task ]

If the Presentation of Findings is successful and hospital decision makers want to move forward with the stress-relieving solution a must be budget set and the designer or fabricator who will execute the project need to be identified and brought on board. This will take place after the three day time period.

[ Implementation Task ]

If the Presentation of Findings is successful and hospital decision makers want to move forward with the stress-relieving solution a must be budget set and the designer or fabricator who will execute the project need to be identified and brought on board. This will take place after the three day time period.

#### 4. Hierarchy of Information Method



(Fig.52) Photo of Seattle Children's Hospital signage system

With a building as large and complex as a hospital, the informative text and signage that aid patients and visitors in navigating the spaces are essential. Patients entering a hospital are often already stressed and nervous about the medical treatment they are about to undergo and are more susceptible to anxiety resulting from confusion with navigation. Jenifer Wilson-Barnett highlights Richard Lazarus' theory of the three stressors a patient would experience during their hospital stay; the three being, "threat, with fear of the unknown; loss, of freedom and familiar surroundings; and challenge as to how one is going to cope with hospitalization" (Wilson-Barnett 152). Similarly, visitors are likely to be worried about the loved one they are going to see and are therefore expected to experience many of the same stressors. The stressor of getting lost in unfamiliar surroundings is very present for visitors and patients when confronted with navigating a massive multi-floor hospital. Signage must be distinctive, recognizable, and clear in its message or it will only add to the stress of the hospital environment.

The Seattle Children's Hospital has done a commendable job of creating a system of signage that helps patients and visitors identify the boundaries of different areas of the hospital. Each area was given a color, animal icon, and name inspired by different geographical regions in the Pacific Northwest (fig.52). The signs include large illuminated circles with floor numbers and long floor to ceiling signs with animal names and icons to indicate what elevator they are at. All additional signage such as bathroom signs, ceiling hung informational signs, and wall vinyl applications help identify locations in hospital through the use of the same color as that area's theme. The text on the signs are often large so they are visible at a distance and use various weights of the same sans serif typeface to improve typographic hierarchy.

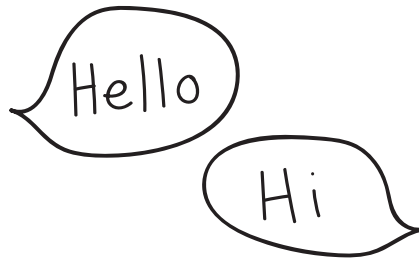
For the Information of Hierarchy method your team will journey through the hospital mapping out where different signage is and what issues make exist with it, photograph the signage present inside and outside the hospital, select a type of signage to focus on, write down the positives and negatives about that signage and how to address the negatives, create a digital prototype of the new signage, install a life size paper prototype of the signage, ask patients and visitors to provide feedback about the prototype, make revisions to the mockup, gather quotes from signage companies, present the findings to hospital officials, and if the design solution is approved work to implement the design solution.

HIERARCHY OF INFORMATION SCHEDULE			
	DAY 1	DAY 2	DAY 3
9:00am	Introduction	Digital Prototype	Build a Presentation
9:30am	Mapping		Present
10:00am			
10:30am	Document Your Surroundings		
11:00am			
11:30am			
12:00pm	Lunch	Lunch	
12:30pm			
1:00pm	Patient Experience Storyboard	Prototype Installation	
1:30pm			
2:00pm	Select a Sign	In-Person Feedback	
2:30pm			
3:00pm	Positives and Negatives	Reach Out/Revise	
3:30pm			
4:00pm			

(Fig.53) Schedule for Hierarchy of Information method

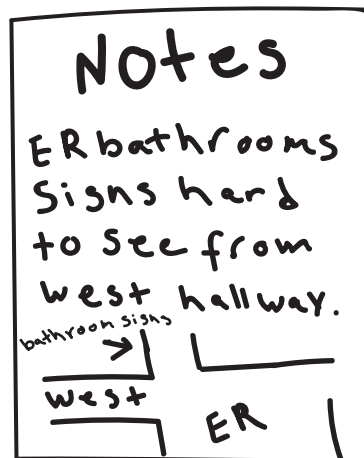
The plan for this method will take place over three days, with a start time of 9:00am each day and varying end times. The Team Coordinator can determine what day of the week to start Day 1 activities (fig.53). For the Hierarchy of Information method, the supplies you will need are computers with internet connection, Paper, Pens, Post-its, a Dry Erase Board, Dry Erase Markers, Corkboard, a Camera, Powerpoint or Keynote, Smartphones, a Printer, Tape and Adobe Illustrator.

[ Discovery Task ]



(Fig.54) Team members introduce themselves to each other.

*Introductions* (Day 1 9:00am–9:30am): Take time to allow each member of the team to introduce themselves and for the Team Coordinator to explain the toolkit and provide an overview of what the team will be doing over the course of the next three days as well as the timeline they will be working within.

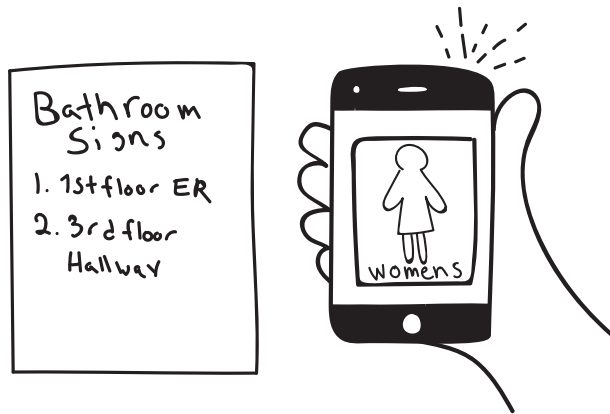


(Fig.55) Write notes about your journey around the hospital and sketch areas of concern.

*Mapping* (Day 1 9:30am–10:30am): Give your team a starting point and end destination. Have someone take notes as everyone discusses the effectiveness of the signage along their journey. Observe and talk to visitors about pain points and issues they have had with the signage. Talk about signs that you wish were larger, stood out more, or belong in a different spot. On your way back to your starting

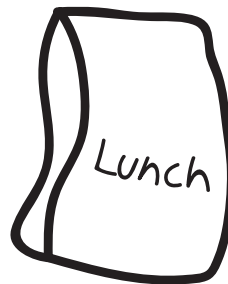


point, see if you can find a different route to get back to your beginning destination.



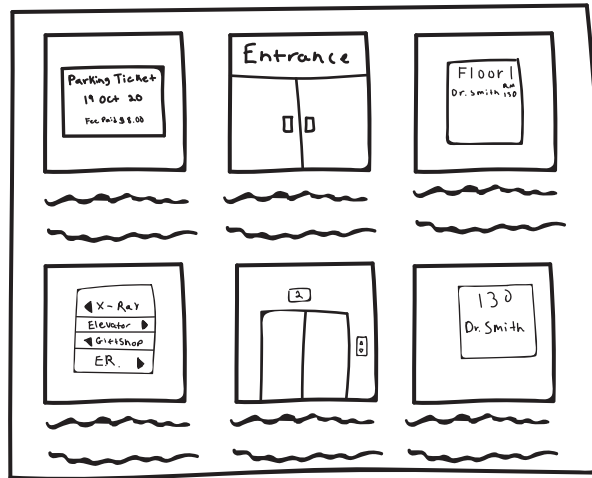
(Fig.56) Write down where different types of signage is and photograph them.

*Document Your Surroundings* (Day 1 10:30am–12:00pm): Split into teams and go to different parts of the hospital. Make a list on a sheet of paper of the signage found throughout the hospital, its location and have team member photograph the signs. Make sure to include outside signage that appears on the exterior of the hospital and along the street.



(Fig.57) Take an hour break for lunch.

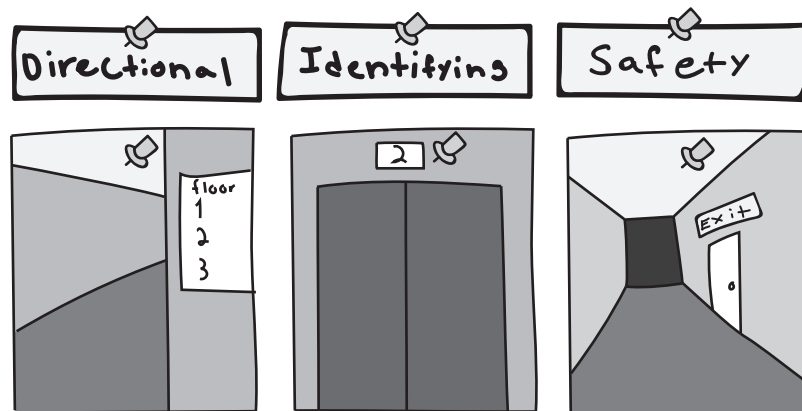
*Lunch* (Day 1 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.



(Fig.58) On a piece of paper create six boxes and draw your hospital experience.

*Patient Experience Storyboard* (Day 1 1:00pm–2:00pm): Have the team each take a piece of paper and draw six equal size boxes on the paper. In the boxes have them depict their journey through the hospital during the Mapping exercise only have them add signage improvements they wish they had and where it would appear.

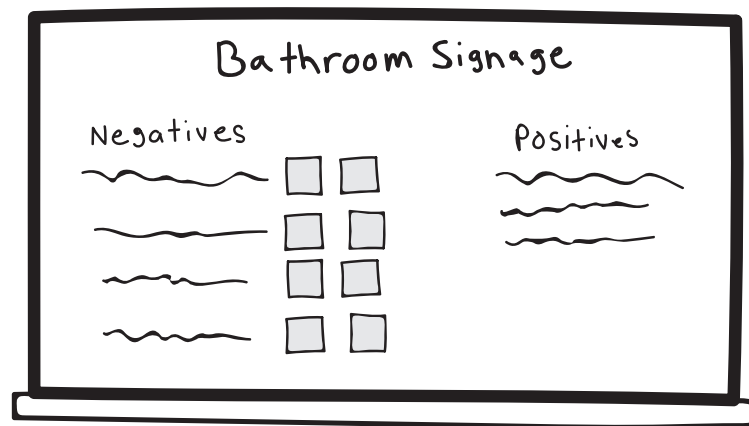
[ Brainstorm Task ]



(Fig.59) From the photos you took select signage to focus on.

*Select a Sign* (Day 1 2:00pm–3:00pm): Post photos of proposed hospital signage on a corkboard or project them onto a screen using a computer. Rather than attempting to change all the signage, select just one type of signage to focus on

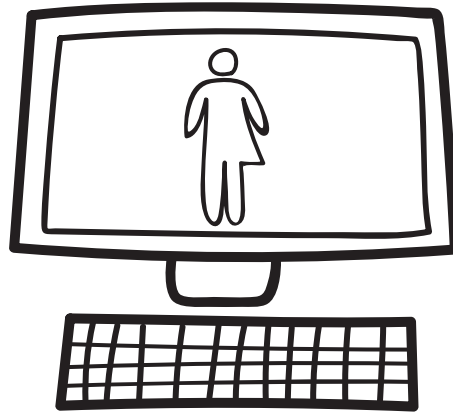
improving inside or outside the hospital. At the end of this method, the team has the option to decide on systematic changes and apply the final outcome to the various types of signage throughout the hospital. For now, the goal is to focus on just one kind of signage to address.



(Fig.60) List negatives about signage and use post it notes to address the problems.

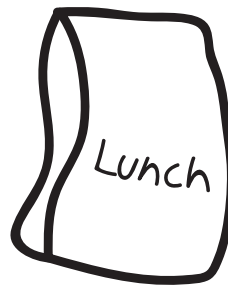
*Positives and Negatives* (Day 1 3:00pm–4:00pm): Once you've decided on what type of signage you wish to focus on, make two columns on a dry erase board and write all the positive things about the current signage in one column and all the negatives in the other. Once everything is listed each team member should write potential solutions for the negative issues on a post-it and place them in a line next to the negative quality they want to address. Have your team discuss the solutions and select solutions you wish to include in the new signage.

[ Creation Task ]



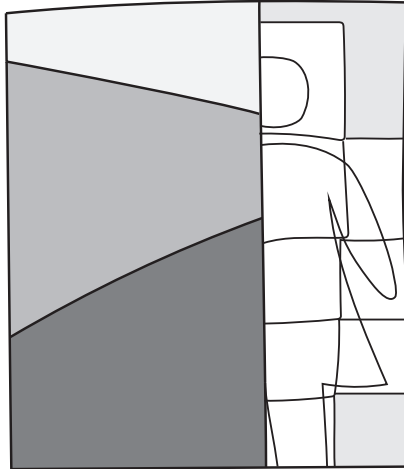
(Fig.61) Create a digital prototype in a design program like Adobe Illustrator.

*Digital Prototype* (Day 2 9:00am–12:00pm): Digitally create a prototype that is to scale for the location you will be placing your design solution for installation in the hospital.



(Fig.62) Take an hour break for lunch.

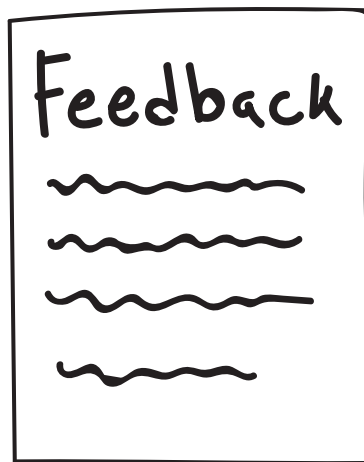
*Lunch* (Day 2 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.



(Fig.63) Tape up paper prototype in the space area of the hospital the team is focusing on.

*Prototype Installation* (Day 2 1:00pm–1:30pm): Print out the life-size paper prototype and select an area of the hospital where you can apply your paper prototype. For example, if bathroom signage was hard to find where could the paper prototype be placed to make it more effective and ease the stress of people trying to find the bathroom.

[ User Feedback Task ]

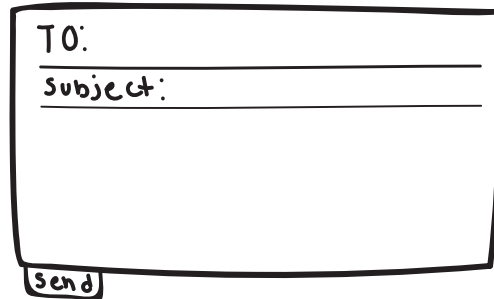


(Fig.64) Take feedback from visitors and patients while next to your paper prototype.

*In-Person Feedback* (Day 2 1:30pm–3:00pm): Station a few team members near your prototype and ask people who pass by for their thoughts on the prototype.

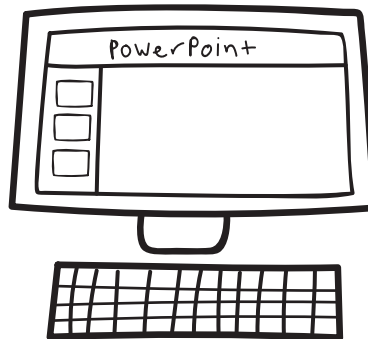
Ask if they believe it to be more effective than the existing signage, or if it adds to the signage that is already in place. Make revisions based on gathered feedback.

[ Presentation of Findings Task ]



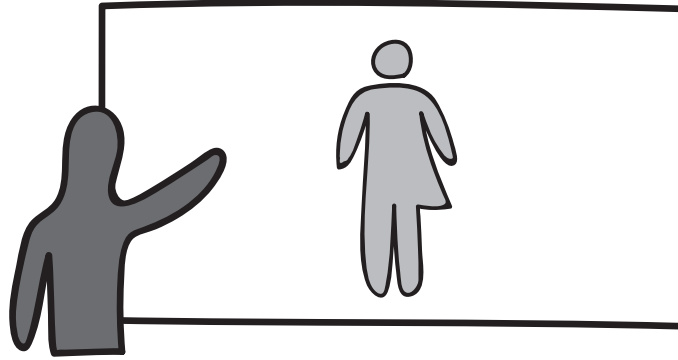
(Fig.65) Have team members reach out to signage companies while others revise signage.

*Reach Out/Revise* (Day 2 3:00pm–4:00pm): While some team members work on making revisions have the rest of the team contact and work with signage companies or designers who can help you decide on materials to use for your new signage and how they should be installed in the hospital. Collect quotes, ask about materials, and talk about project timeframes.



(Fig.66) Create a presentation containing all of your team's findings.

*Build a Presentation* (Day 3 9:00am–10:00am): Create a presentation to show to whoever has the authority to make your solutions a reality. Include all the research and feedback from users as well as the design solution.



(Fig.67) The team will present their findings

*Present* (Day 3 10:00am–11:00am): Have your team give a presentation over the issue they have identified and the proposed solution for that issue.

[ Implementation Task ]

If the Presentation of Findings is successful and hospital decision makers want to move forward with the stress-relieving solution a must be budget set and the designer or fabricator who will execute the project need to be identified and brought on board. This will take place after the three day time period.

## 5. Sanctuary Space Method



(Fig.68) Photo of The Children's Village at Children's Hospital in Oklahoma City

The hospital environment can be very overwhelming with the sight of doctors and nurses moving about. Hospital rooms can feel generic and confining, especially if the only view out of the room's window is that of another building or rooftop. It is easy to feel isolated in a hospital setting. If a patient's stay is an extended one, being confined to the same room day after day can become depressing and even hinder the healing process. A patient may also attempt to leave the hospital before treatment is complete because they cannot stand being kept in a room that offers no comforts of home. Children's hospitals have begun to appreciate the value of creating a space that is free of doctors and intimidating medical supplies. At the Children's Hospital in Oklahoma City, patients are welcome to visit the Children's Village (fig.68). The Children's Village is an outdoor space for patients to venture out of their rooms and have the freedom to play and just be removed, if only briefly, from the day to day routine of hospital life. Doctors are not allowed in this area so children can freely enjoy themselves without the fear of encountering doctors or the stressful medical devices or treatments.

For the Sanctuary Space method your team will look at floor places of the hospital to see if there is space inside or outside that is not being utilized, select a space to focus on as your sanctuary space, create a persona for the space to know what type of patients the space would be meant for, conduct a patient survey to ask patients what comforts from home they wish they had in the hospital, identify one or two comforts to put into your sanctuary space, implement the comforts in your space, hold a small scale trial with a few patients and gather feedback about what they think about the select area and the comforts you placed in it, make revisions to the type of comforts or area that will be used, gather quotes from architects or suppliers of your comforts, present the findings to



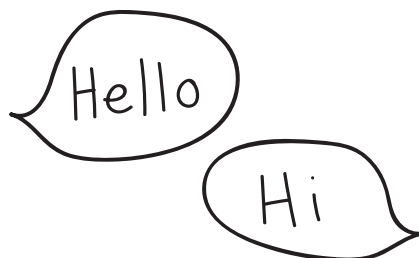
hospital officials, and if the design solution is approved work to implement the design solution.

SANCTUARY SPACE SCHEDULE				
	DAY 1	DAY 2	DAY 3	
9:00am	Introduction	Small Scale Trial	Build a Presentation	
9:30am	Explore The Space		In-Person Feedback	Present
10:00am				
10:30am				
11:00am	Space Persona Building			
11:30am				
12:00pm	Lunch	Lunch		
12:30pm				
1:00pm	Patient Survey	Reach Out/Revise		
1:30pm				
2:00pm	Identify Comforts			
2:30pm	Implement Comforts			
3:00pm				
3:30pm				
4:00pm				

(Fig.69) Schedule for the Sanctuary Space method

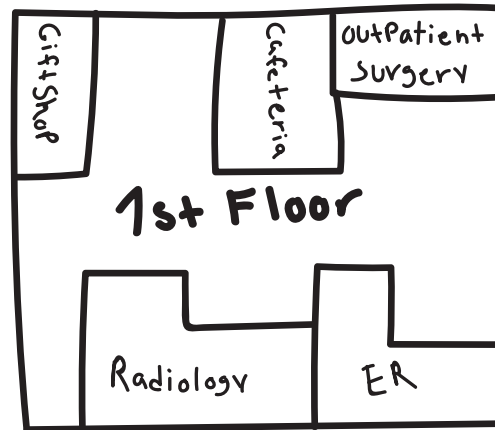
The schedule for this method will take place over a three-day period, with a start time of 9:00am each day and varying end times. The Team Coordinator can determine what day of the week to start Day 1 activities (fig.69). For the Sanctuary Space method the supplies you will need are computers with internet connection, Paper, Pens, Post-its, Rented Furniture, Books, Powerpoint or Keynote, a Dry Erase Board, and Dry Erase Markers.

[ Discovery Task ]



(Fig.70) Team members introduce themselves to each other

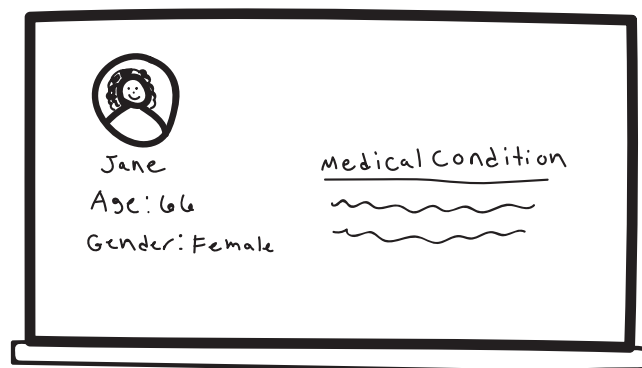
*Introductions* (Day 1 9:00am–9:30am): Take time to allow each member of the team to introduce themselves and for the Team Coordinator to explain the toolkit and provide an overview of what the team will be doing over the course of the next three days as well as the timeline they will be working within.



(Fig.71) Look at floor plans and see if there are spaces that are under utilized or empty.

*Explore The Space* (Day 1 9:30am–10:30am): Look at floor plans and different areas inside and outside the hospital that have empty space or for spaces that are not utilized. Identify these areas and create a list on a dry erase board.

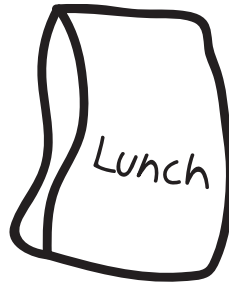
[ Brainstorm Task]



(Fig.72) List traits about the patient you are developing a persona for and put a face to them.

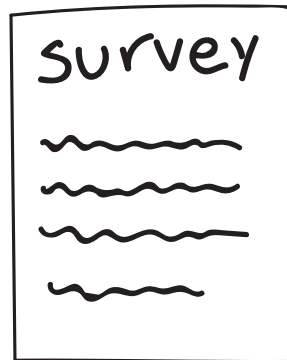
*Space Persona Building* (Day 1 10:30am–12:00pm): From your list select an area that would be a safe space for patients to visit and could also act as a sanctuary

space where patients could go to get away from the typical hospital environment. Once an area is selected, create a persona of the type of patient that would visit the space. Give this person an age, gender, medical issue, and a reason why they are at the hospital as well as their current feelings and emotions. Draw a face and features to give the persona more personality. The persona you build will represent the person you are designing this space for.



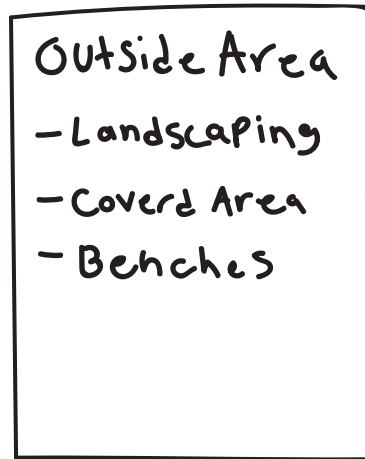
(Fig.73) Take an hour break for lunch.

*Lunch* (Day 1 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.



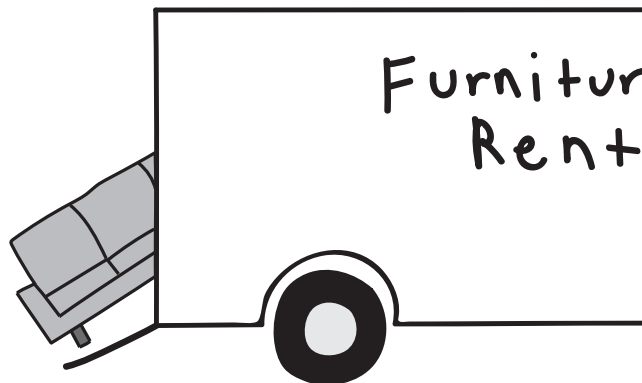
(Fig.74) Survey patients about the types of comforts they would like in a space.

*Patient Survey* (Day 1 1:00pm–2:00): Ask patients what comforts they wish they had at the hospital and if there was a space just for patients to go what they would want in that area.



(Fig.75) Select a space and make a list of comforts that would add to that space.

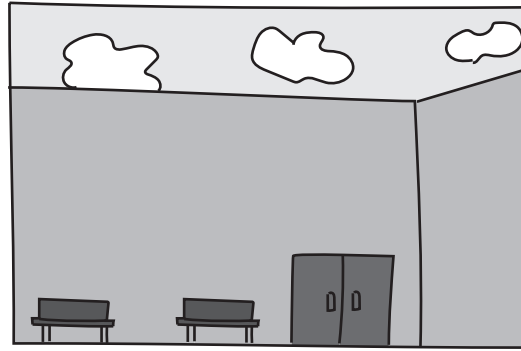
*Identify Comforts* (Day 1 2:00pm–2:30pm): Within this identified space, list both environmental and physical elements that could help patients identify this space as a sanctuary from the typical hospital environment. If it is outside, consider landscaping features. If inside, perhaps there is a reading area, an area for patients to play games, or even something as simple as a comfortable recliner to sit in and look outside with a beautiful window view. Consider the feedback you gained from patients and try to include some of those comforts.



(Fig.76) Bring in the comforts for your space.

*Implement Comforts* (Day 1 2:30pm–4:00pm): Choose one or two comforts and work with furniture rental companies, libraries, and other services to put the comforts in the space you have chosen.

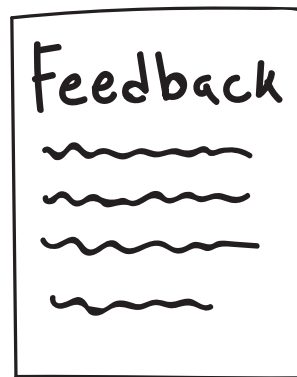
[ Creation Task ]



(Fig.77) In your space add your comforts furniture, games, etc that add comfort.

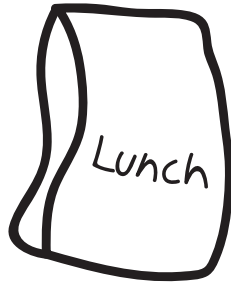
*Small Scale Trial* (Day 2 9:00am–10:00am): Allow low-risk patients to try them out, observe, and record how their experience goes.

[ User Feedback Task ]



(Fig.78) Have the patients that try out your space give you feedback.

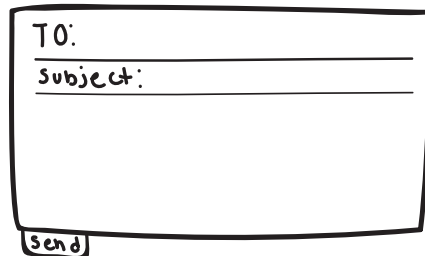
*In-Person Feedback* (Day 2 10:00am–12:00pm): Ask the patients who used your sanctuary space about their thoughts on the area. Ask them for suggestions for improvements for the environment. Ask if having access to a space like this helps relieve their the stress of being in the hospital. Take this feedback given and make the necessary revisions.



(Fig.79) Take an hour break for lunch.

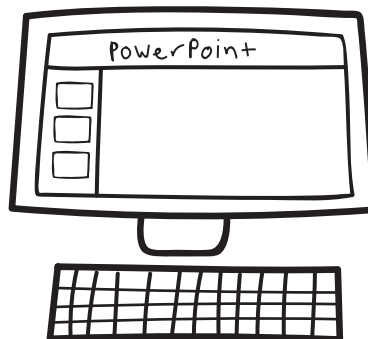
*Lunch* (Day 2 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.

[ Presentation of Findings Task]



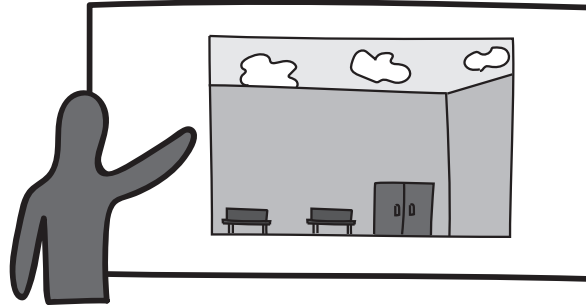
(Fig.80) Have team members reach out to companies while others revise the solution.

*Reach Out/Revise* (Day 2 1:00pm–3:00pm): While some team members work on making revisions have the rest of the team contact architects, designers, landscapers, and interior decorators who can help create a sanctuary space that has the desired comforts. Collect quotes, ask about materials, and talk about project timeframes.



(Fig.81) Create a presentation containing all of your team's findings.

*Build a Presentation* (Day 3 9:00am–10:00am): Create a presentation to show to whoever has the authority to make your solutions a reality. Include all the research and feedback from users as well as the design solution.







(Fig.82) The team will present their findings

*Present* (Day 3 10:00am–11:00am): Have your team give a presentation over the issue they have identified and the proposed solution for that issue.

#### [ Implementation Task ]

If the Presentation of Findings is successful and hospital decision makers want to move forward with the stress-relieving solution a must be budget set and the designer or fabricator who will execute the project need to be identified and brought on board. This will take place after the three day time period.

## 6. Icons and Graphics Method

6		Zebra Ward
5		Squirrel Ward
4		Otter Ward
3		Hare Ward

(Fig.83) Photo of the animal icons for the wards



(Fig.84) Photo of graphics throughout the wards

With a large number of medical specialty areas that exist in a hospital, it is crucial that these areas can be easily identified and found by patients and visitors. In his book *The Wayfinding Handbook*, David Gibson talks about the coat of arms used to represent the various colleges within Cambridge University (Gibson 39). By having a coat of arms as a symbol for each college, they could operate as individual entities while still acting within the Cambridge University system. Having symbols or icons for patients to reference in the hospital environment allows for communication with patients who do not speak or are not familiar with a certain language (Gibson16). The Great Ormond Street Children's Hospital has done something similar by developing a series of animal-based icons derived from illustrations for each ward (fig.83). Seven animals were chosen, and each was given their own environment and icon to be used across signage and along walls (fig.84). By combining icons and graphics, visitors and patients will be able to navigate the complex layout of the hospital by being able to identify what area they are in and what area of the hospital they started out in. Symbols and graphics help play a vital



role in creating a welcoming environment for children patients as well as adding to the wayfinding of the hospital meaning more stress free navigation.

For the Icons and Graphics method your team will need to look around the hospital to see if a set of icons and graphics are already in use, decide if the icons and graphics should be kept or new ones should be created, create a list of objects, animals, places, that could serve as new icon set for the hospital, vote on which icon set to use, have the team sketch the new icon set and vote on which ones should be used, create a digital mockup of the icons, draw illustrations of graphics that would go in the hospital along with the icons, conduct an interactive survey to ask patients and visitors their thoughts on the icons and graphics, make revisions to the icons, gather quotes from graphic designers, present the findings to hospital officials, and if the design solution is approved work to implement the design solution.

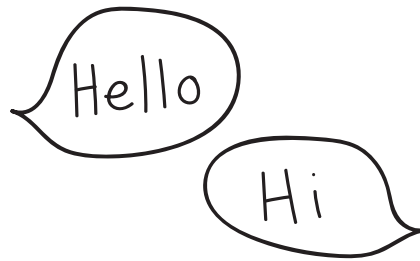
ICONS AND GRAPHICS SCHEDULE			
	DAY 1	DAY 2	DAY 3
9:00am	Introduction	Digital Mockup	Build a Presentation
9:30am	Research		Present
10:00am			
10:30am			
11:00am	Building a Narrative	Illustrate	
11:30am			
12:00pm	Lunch	Lunch	
12:30pm			
1:00pm	Narrative Vote	Interactive Survey	
1:30pm			
2:00pm	Paper Sketch	Reach Out/Revise	
2:30pm			
3:00pm			
3:30pm			
4:00pm			

(Fig.85) Schedule for the Icons and Graphics method

The schedule for this method will take place over a three-day period, with a start time of 9:00am each day and varying end times. The Team Coordinator can determine what day of the week to start Day 1 activities (fig.85). For the Icons and Graphics method,

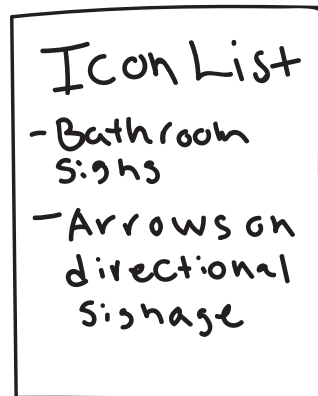
the supplies you will need are computers with internet connection, Paper, Pens, Post-its, a Dry Erase Board, Dry Erase Markers, Corkboard, a Camera, Powerpoint or Keynote, a Printer, Adobe Photoshop, Dot Stickers, an Easel, Poster Board and Adobe Illustrator.

[ Discovery Task ]



(Fig.86) Team members introduce themselves to each other.

*Introductions* (Day 1 9:00am–9:30am): Take time to allow each member of the team to introduce themselves and for the Team Coordinator to explain the toolkit and provide an overview of what the team will be doing over the course of the next three days as well as the timeline they will be working within.

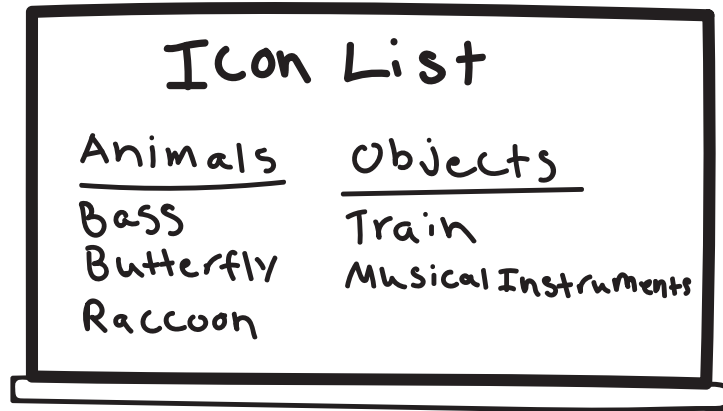


(Fig.87) Make a list of icons that appear throughout the hospital.

*Research* (Day 1 9:30am–11:00am): Look to see if your hospital is already using any type of icon or graphic system in their signage or for decorative purposes. Assess if the icons go together as a set. Do the icons represent the hospital or the

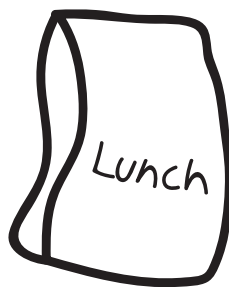
area the hospital services in any way? Research the hospital's history as well as the history of the community it serves.

[ Brainstorm Task ]



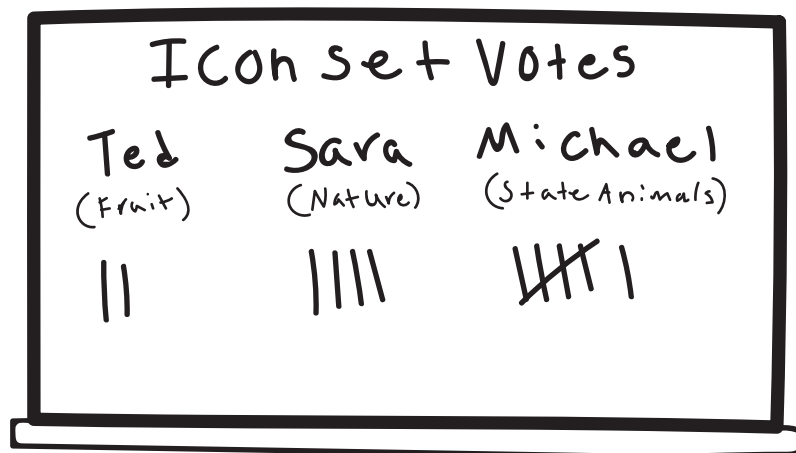
(Fig.88) List potential objects, animals, places that could become a symbol system.

*Building a Narrative* (Day 1 11:00am–12:00pm): If your hospital is using no distinctive icons or graphics for signage, then the first step is to create a narrative to tell through the icons and graphics you will create. Even adults enjoy a good story, so what story do you want to tell about your hospital? By creating a narrative, you will be able to create characters whose icons can represent the individual departments within the hospital. The narrative will also give you context for the graphics that could appear on walls, floors, and ceiling of the hospital. Look to your community. Perhaps if you are rural, the icons are the animals that live in the rural setting around you? Have your team members brainstorm different narrative ideas.



(Fig.89) Take an hour break for lunch.

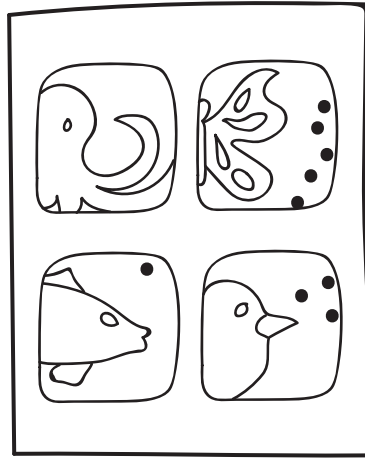
*Lunch* (Day 1 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.



(Fig.90) Vote on which objects, animals, or places will be the theme for your symbols.

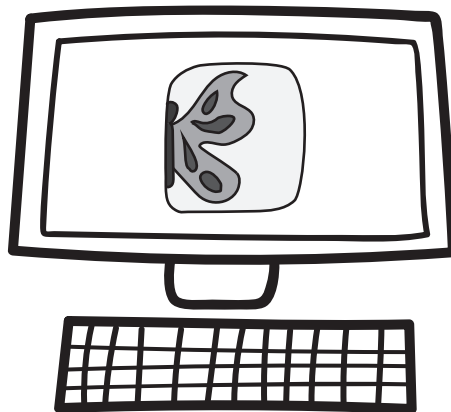
*Narrative Vote* (Day 1 1:00pm–2:00pm): Every member of the team should create a list of 5 creatures, objects, or symbols that could be used as icons and tell a story as to why they selected those particular icons. The team should then vote on the strongest icon and story set.

[ Creation Task]



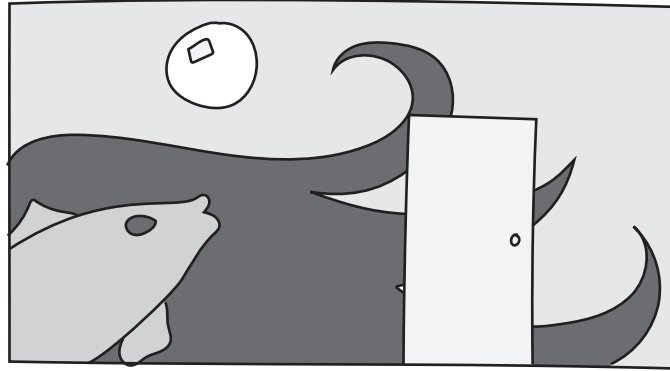
(Fig.91) Sketch icons and vote on which icons to use.

*Paper Sketch* (Day 1 2:00pm–3:00pm): Once a set of icons has been selected, every member of the team should attempt to sketch the five icons regardless of artistic skill. Once the sketches are done, they should be pinned on the board and each member will be given five dot stickers to vote for their favorite icon sketches. The votes can only be placed once for each icon set, but you can vote on multiple people's icons.



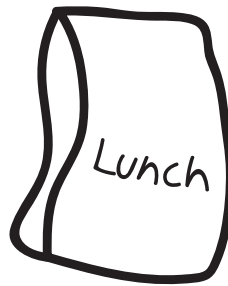
(Fig.92) Use a design program such as Adobe Illustrator to digitally mockup the icons.

*Digital Mockup* (Day 2 9:00am–11:00am): The selected icons should be created digitally and then placed in signage or in their intended environment via a photo overlay or a digital mockup.



(Fig.93) Use a design program such as Adobe Illustrator to mockup wall graphics.

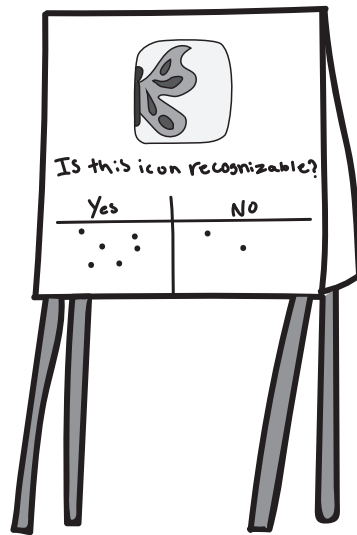
*Illustrate* (Day 2 11:00am–12:00pm): If additional graphics are desired to go along with the icons, they should be mocked up via sketches, photo overlay, or digitally within the space they are intended for.



(Fig.94) Take an hour break for lunch.

*Lunch* (Day 2 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.

[ User Feedback Task ]



(Fig.95) Have patients take a survey to provide feedback on your icons.

*Interactive Survey* (Day 2 1:00pm–2:00pm): Print out your icons and tape them to a poster board. Print out survey questions and tape those on the poster board under the icons. Place the poster board on an easel in a high traffic area of the hospital and have patients and visitor place sticker dots as their answers to the survey. Ask if having a system of icons and graphics would help to identify areas of the hospital better and help to relieve the stress of navigation.

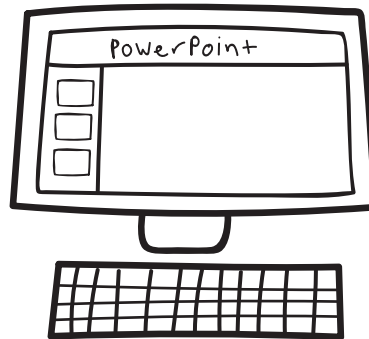
[ Presentation of Findings Task ]

TO:
Subject:
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(Fig.96) Have team members reach out to companies while others revise the icons.

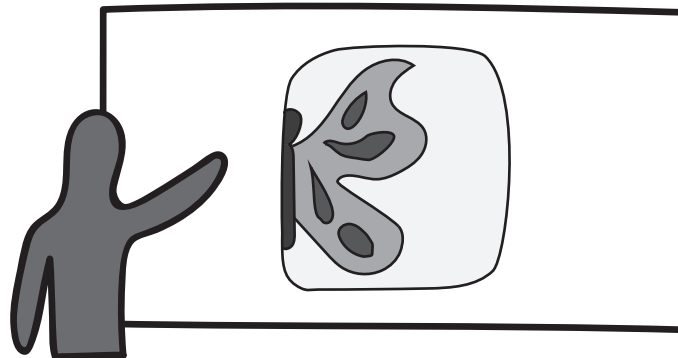
*Reach Out/Revise* (Day 2 2:00pm–4:00pm): While some team members work on making revisions have the rest of the team contact designers and signage

companies who can create and install your icons and graphics. Collect quotes, ask about materials, and talk about project timeframes.



(Fig.97) Create a presentation containing all of your team's findings.

*Build a Presentation* (Day 3 9:00am–10:00am): Create a presentation to show to whoever has the authority to make your solutions a reality. Include all the research and feedback from users as well as the design solution.



(Fig.98) The team will present their findings

*Present* (Day 3 10:00am–11:00am): Have your team give a presentation over the issue they have identified and the proposed solution for that issue.

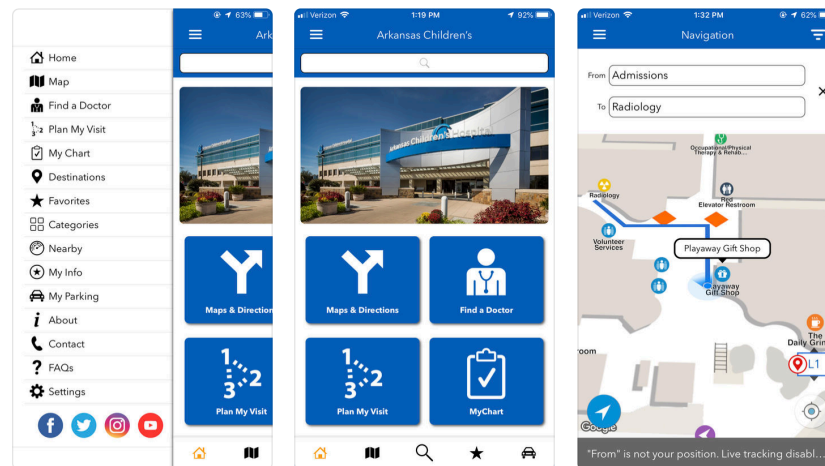
[ Implementation Task ]

If the Presentation of Findings is successful and hospital decision makers want to move forward with the stress-relieving solution a must be budget set and the



designer or fabricator who will execute the project need to be identified and brought on board. This will take place after the three day time period.

## 7. New Technologies Method



(Fig.99) Photo of Arkansas Children's Hospital MyACH App

The technologies used by hospitals to treat patients are continually evolving. The technologies patients encounter during the check-in process or during hospital navigation also need consideration. There were an estimated 224.3 million smartphone users in the United States in 2017 (“Research Peak of the Week”). Being able to utilize emerging technologies can only help to better aid hospitals in relieving patient’s stress. Arkansas Children’s Hospital has done just that by creating the MyACH App that allows patient’s parents to view upcoming appointments, lab test results, as well as a map function that will provide turn-by-turn instructions on how to navigate the hospital (fig.99). Rebecca Humar, the Family Engagement Coordinator at Arkansas Children’s Hospital, states in the Youtube video (0:18-0:27) *MyACH App\_for Staff* that they found their employees “spend at least 5 minutes every day assisting lost visitors. That equates to 154,000 hours of work time each year”(Humar, “MyACH App\_for Staff”). To combat the loss of work time, the map feature on the app allows patients to know where they are headed from the

second they park their car. The ability of the patient's family to navigate for themselves helps relieve the stress of feeling lost and reduces the number of times employees will be stopped and asked for directions.

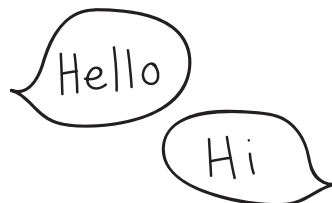
For the New Technology method have your team research what types of technology exist in your hospital and what types of technology other hospitals are using to aid patients and visitors, role play the part a patient start with finding parking and work have the team members individually work their way to a fictitious doctors appointment, reflect on the team members experiences as a patient trying to find their way around the hospital, from the discussion about their experiences have the team select a type of device they would like incorporate into the hospital to assist patients and visitors, decide what the purpose of this device will be and what features it will have, create paper wireframes and test them out with each other, select features and layouts from the wireframes and use them in a digital prototype, test the digital prototype with patients and visitors, make revisions to the prototype, gather quotes from UI designers, present the findings to hospital officials, and if the design solution is approved work to implement the design solution.

NEW TECHNOLOGIES SCHEDULE			
	DAY 1	DAY 2	DAY 3
9:00am	Introduction	Paper User Test	Reach Out/Revise
9:30am	Research		
10:00am		Digital Prototype	
10:30am			
11:00am			
11:30am			
12:00pm	Lunch	Lunch	Lunch
12:30pm			
1:00pm	Reflect	User Test	Build a Presentation
1:30pm			
2:00pm	Technology Selection		
2:30pm			
3:00pm			
3:30pm	Paper Wireframe		
4:00pm			

(Fig.100) Schedule for the New Technologies method

The schedule for this method will take place over a three-day period, with a start time of 9:00am each day and varying end times. The Team Coordinator can determine what day of the week to start Day 1 activities (fig.100). For the New Technologies method, the supplies you will need are computers with internet connection, Paper, Powerpoint or Keynote, Sketch, Invision, Adobe InDesign, Adobe Illustrator, Pens, Post-its, a Printer, Thumbtacks, and a Corkboard.

[ Discovery Task ]



(Fig.101) Team members introduce themselves to each other.

*Introductions* (Day 1 9:00am–9:30am): Take time to allow each member of the team to introduce themselves and for the Team Coordinator to explain the toolkit and provide an overview of what the team will be doing over the course of the next three days as well as the timeline they will be working within.

	Yes	No
Mobile APP	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Kiosk	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Digital Signage	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(Fig.102) Write down the types of technology the hospital has to aid visitors and patients.

*Research* (Day 1 9:30am–10:30am): Check to see if your hospital has an existing mobile app, interactive kiosks, or any other assistive technology. Also, research on the computer technologies that exist in other hospitals, airports, and malls that help with the customer experience and navigation.

## Parking Ticket

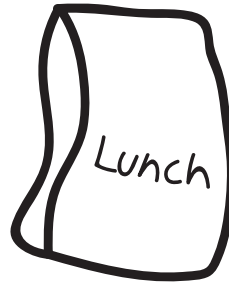
19 Oct 20

Fee Paid \$ 8.00

(Fig.103) Take on the role of a patient start with finding parking.

*Role Play* (Day 1 10:30am–12:00pm): Have the team members take on the role of a patient and set up a fictitious appointment. Have everyone go through the process of finding where to park as if they were a patient, find the accurate entranceway, and locating the right floor and office for the appointment. Have them pay attention to what type of guides there are to see the office of the doctor

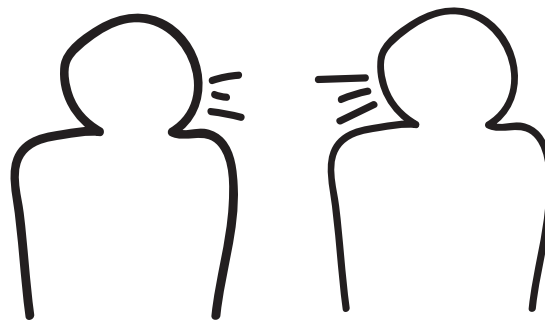
they are visiting. Everyone should do this individually and take notes throughout their experience. Regroup at noon before breaking for lunch.



(Fig.104) Take an hour break for lunch.

*Lunch* (Day 1 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.

[ Brainstorm Task ]



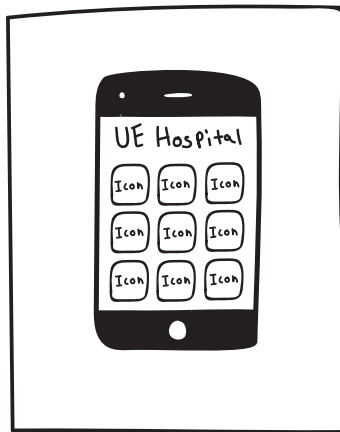
(Fig.105) Discuss your patient experience and the insights you discovered.

*Reflect* (Day 1 1:00pm–2:00pm): Look at your experiences and talk about what difficulties the team faced and what type of technologies the team believes would be an added benefit to the wayfinding process the patient or visitors go through when visiting your hospital. When navigating the hospital, did you wish you had an app telling you turn-by-turn instructions, or a kiosk at the front of the hospital for easy check-in to reduce your wait time? Perhaps your team have identified some other technology you believe would have been beneficial in reducing the stress of the overall experience.

(Fig.106) Decide on a technology your hospital will use and the features it will have.

*Technology Selection* (Day 1 2:00pm–3:00pm): Have your team decide on a particular technology to focus on. Plan what the purpose of the technology will be and how it will assist patients or visitors. If it is an app what features will it have? Will it be a stand-alone app or will it be added to the existing hospital app?

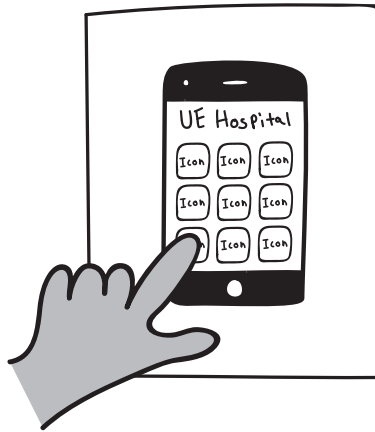
[ Creation Task ]



(Fig.107) Use templates of your device and draw the features and layout it will have.

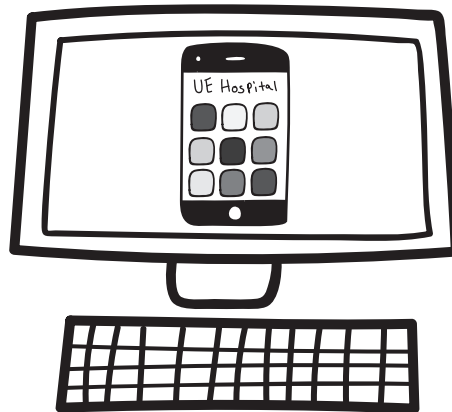
*Paper Wireframe* (Day 1 3:00pm–4:00pm): Now that you know what technology is needed to assist patients or visitors, your team needs to imagine how it will function. If you are making an app, create paper wireframes of how each page of the app will appear. Everyone is capable of creating wireframes, be sure to keep

them simple. Using templates of a phone or if your team is working on a kiosk or website use templates for those devices, to create your wireframes. Boxes with an X inside can be used to represent images, and wavy lines can be used to indicate where bodies of text will be.



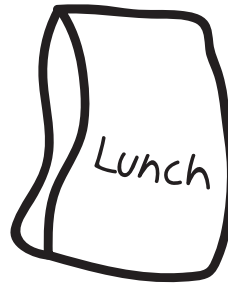
(Fig.108) Have team members test each other's paper wireframes.

*Paper User Test* (Day 2 9:00am–10:00am): Test these paper version with the team members asking them to tap on the paper as if it were a real app, website, or digital screen. Let them provide feedback or ask questions if they find parts of the layout or navigation confusing. Revise your paper wireframes and have everyone pin them on the board to discuss the different elements the team believes should be included in the digital prototype.



(Fig.109) Create a digital version of your wireframes.

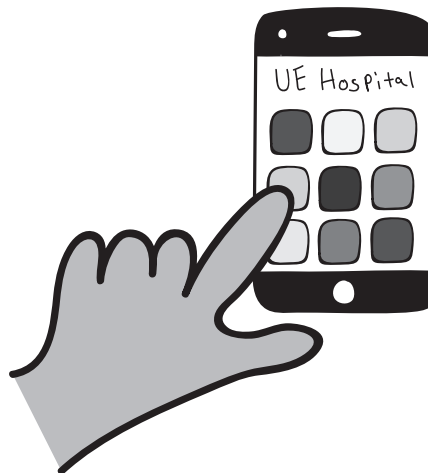
*Digital Prototype* (Day 2 10:00am–12:00pm): Once your team has identified what elements of the wireframe you like and want to include such as layout and features, create a digital version of the app. This digital version does not have to be fully functioning, merely a more refined digital representation of the wireframes so test users have a better understanding of what they are looking at.



(Fig.110) Take an hour break for lunch.

*Lunch* (Day 2 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.

[ User Feedback Task ]



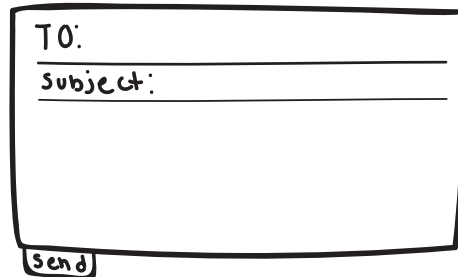
(Fig.111) Have patients and visitors users test your digital prototype.

*User Test* (Day 2 1:00pm–4:00pm): Invite participants to try out your digital prototype and provide you with feedback. Ask them about how they think the prototype functions given its purpose or if there are any other elements they wish



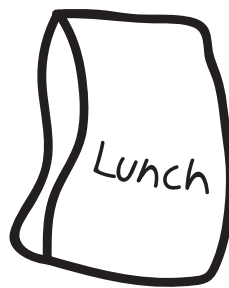
were present. Ask if having technology like this would reduce their stress about the hospital experience. Be sure to ask if they believe the app serves its desired purpose they and if they would use it. Make the suggested revisions to the prototype.

[ Presentation of Findings Task ]



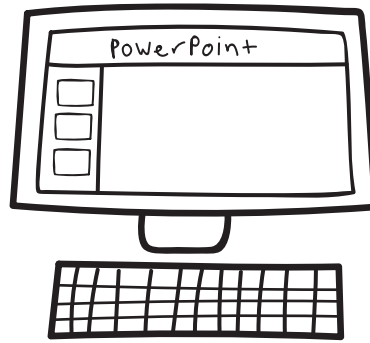
(Fig.112) Have team members reach out to companies while others revise the icons.

*Reach Out/Revise* (Day 3 9:00am–12:00pm): While some team members work on making revisions have the rest of the team contact designers who can turn your wireframe into a functioning app, website, etc. If you want to install a kiosk, reach out to different companies who provide them to find the one that fits your needs. Collect quotes, ask about materials, and talk about project timeframes.



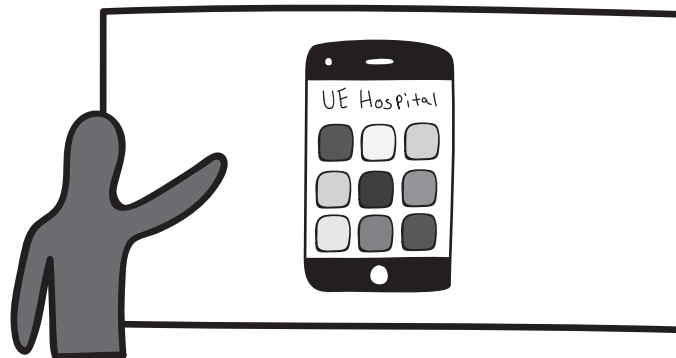
(Fig.113) Take an hour break for lunch.

*Lunch* (Day 3 12:00pm–1:00pm) Try to have your team eat at places close to the hospital. It is important to start back promptly at 1:00pm.



(Fig.114) Create a presentation containing all of your team's findings.

*Build a Presentation* (Day 3 1:00pm–2:00pm): Create a presentation to show to whoever has the authority to make your solutions a reality. Include all the research and feedback from users as well as the design solution.



(Fig.115) The team will present their findings

*Present* (Day 3 2:00pm–3:00pm): Have your team give a presentation over the issue they have identified and the proposed solution for that issue.

#### [ Implementation Task ]

If the Presentation of Findings is successful and hospital decision makers want to move forward with the stress-relieving solution a must be budget set and the designer or fabricator who will execute the project need to be identified and brought on board. This will take place after the three day time period.

## V. CONCLUSION

This thesis sought to research and explore the extensive stress-relieving design considerations given to children's hospitals with the intent of assembling a toolkit that would aid in creating a stress-free environment in adult hospitals. Adult hospitals lack the stress-relieving design elements that children's hospitals have. Children's hospitals address the effects stress has on the physical and mental health of patients when designing their hospital environments. These stress-relieving practices were identified through the examination of different children's hospitals and can be found in the seven methods of the EHCDH Toolkit: Cloaking Medical Devices, Color, Shape and Form, Hierarchy of Information, Sanctuary Space, Icons and Graphics, and New Technologies. These toolkit methods were organized and outlined instructions on how to evaluate adult hospitals for areas of stress, ideate potential design solutions, and user test the design solutions. When properly applied these methods provide the necessary elements for stress relieving hospital design.

Through research of the fields of UX Design, EGD, and HCD, the methods in these disciplines have been combined to create the EHCDH toolkit. This toolkit focuses on the practices of empathy, visualization, and navigation which were inspired by and emulate toolkits created by IDEO, IBM, and Google Ventures. Though the EHCDH toolkit has been designed to maximize impact when executed in its entirety, each method has been laid out in such a way that they may be implemented independently and in any order. This allows for the toolkit to be progressively executed in a manner and timeline that best suits each hospital's individual needs and resources.

The value of this research is the EHCDH Toolkit requires a multi-disciplinary team which opens the lines of communication and brings together people who have an interest in improving stress-related issues in the adult hospital environment like designers, hospital personnel, and patients. This toolkit seeks to validate design decisions through the development process rather than rely on the intuitions designer have about a space. This toolkit helps to define what methods should be used to identify and address stress-related problems in adult hospitals. The methods allow for testing and refining of design solutions based on user feedback.

### **Future Research**

With the toolkit in place, the future research will consists of forming a multi-disciplinary team as specified in the toolkit and working through the process of transforming an adult hospital environment utilizing the methods contained in the EHCDH toolkit. Potential team members could include graduate students from local universities with majors in architecture, interior design, healthcare management, and graphic design. Additional team members could be gathered from my personal, professional and academic networks. A viable candidate identified to apply the EHCDH Toolkit methods is OU Medical Center Edmond in Edmond, Oklahoma. It has serviced the people of Edmond and the surrounding communities for over 65 years. While the hospital boasts advanced services, the building however shows its age. The hospital lacks personality and with its age and unique construction was a perfect fit for the methods of EHCDH Toolkit. Collaborating with a pre-existing contact at OU Medical Center Edmond, we would work together to field the team required by the toolkit, decide who the team coordinator would be, and what method the team would focus on.

The Implementation Task in the EHCDH Toolkit requires further develop to better outline what steps should be taken after a design solution is approved. This step can be expanded upon by actually working through one of the methods from the toolkit at a hospital and further research into how other toolkits implement the design outcomes they have found.

Consideration will need to be given to what form the toolkit will take as there are many ways a toolkit can be displayed. IDEO uses a PDF for their toolkit, the *Design Sprint* has been printed in book form and has short videos on Youtube about what occurs on each day of the *Design Sprint*, and IBM provides a PDF of their toolkit and classes that can be taken on their website about the different team roles. Moving forward, future research will review the viability and value of three different approaches of delivering the toolkit: a printed binder, a website, and/or a series of sequenced videos with a dedicated Youtube channel.

Additional considerations for future research would include:

- Development of a workshop that would teach EHCDH toolkit methods.
- Presentation of the EHCDH Toolkit at medical and design conferences.
- Evaluate how the EHCDH Toolkit could be implemented in other places like nursing homes, long care facilities, and other stressful environments.

The adult hospital environment will always contain some elements of stress due to the nature of the medical field. Environmental factors alone cannot eliminate the burden of physical ailments or their treatments. By designing the hospital environment in such a way as to reduce stress, the environment can become a source of support rather than an additional strain on patient health.

## **APPENDIX SECTION**

### **Survey Questions**

1. What is your job title?
2. How long have you been involved with the medical field?
3. Have you ever worked in a children's hospital?
4. Would you say there is a noticeable atmosphere difference in children hospitals and adult hospitals?
5. Considering the design efforts made to make children's hospitals less intimidating and more inviting; do you believe applying these same design principles would be beneficial to relieving stress in an adult hospital environment?
6. If you have worked in both a children's hospital and an adult hospital, do you have a preference for working in one or the other and why?
7. Do patients ever express frustration to you over hardship of navigating the hospital environment?
8. Have you ever been stopped while walking through the hospital and asked for directions?
9. Have patients shown up late to appointments as a result of having a hard time finding the right floor/office within the hospital?
10. Do you find the directional signage in your hospital confusing or poorly placed, making it hard to navigate the hospital?
11. Can you identify a factor that if changed in the hospital setting would help relieve stress of patients?
12. Do you believe the outside of your hospital is easily identifiable from other hospitals or medical facilities around or near it?
13. What steps does your hospital take to relieve the stress of patients?
14. Does your hospital have a navigation app?
15. Does your hospital have interactive kiosk to help with patient check-ins or hospital navigation?

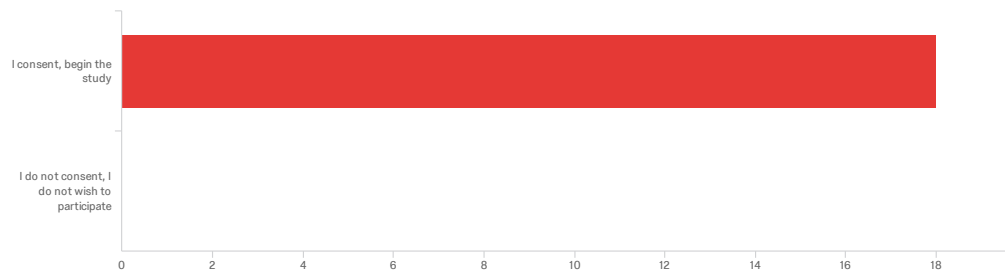
## Survey Results

### Default Report

*Alleviating Hospital Stress*

February 26, 2019 2:31 PM MST

Consent - You are being asked to complete this survey because of your experience in the medical field and you can offer valuable advice, insight, and feedback. Your answers to the survey will be anonymous unless you decide to provide optional contact information so that I may be able to get in touch with you for any follow-up questions or to collect additional research. Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device. By clicking the button below, you acknowledge that your participation in the study is voluntary.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	You are being asked to complete this survey because of your experience in the medical field and you can offer valuable advice, insight, and feedback. Your answers to the survey will be anonymous unless you decide to provide optional contact information so that I may be able to get in touch with you for any follow-up questions or to collect additional research. Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device. By clicking the button below, you acknowledge that your participation in the study is voluntary.	1.00	1.00	1.00	0.00	0.00	18

#	Field	Choice Count
1	I consent, begin the study	100.00% 18
2	I do not consent, I do not wish to participate	0.00% 0

18

## Q1 - What is your job title?

What is your job title?
Pharmacist
Physician assistant
Emergency Medicine Physician
Registered nurse- assistant nurse manager
Optometrist/stay at home mom
AVP of Operations
Registered Nurse
Certified Professional Coder
Secretary St. Visitors Parish
Resident physician
Neurosurgeon
Urologist
Regristered Nurse
nurse practitioner
Nursing supervisor
Rn case manager
RN
Registered Nurse.



## Q2 - How long have you been involved with the medical field?

How long have you been involved with the medical field?

40 years

7 years

7 years

16 years

10 years

13 years

6 years

45 years

20 years

2 years

14 years

13 years (4 of that medical school, 5 residency, 3 in practice)

7 years

11.5 years

30 years

40 yrs

5 years

7 months as a licensed professional. 4 years as a student.

Q3 - Have you ever worked in a children's hospital?

Have you ever worked in a children's hospital?

---

No

Yes

Yes

Yes

No; but volunteered once

No

No

No

No

Yes

Yes

Yes

No

yes

yes

No

No

Only as a student.

Q4 - Would you say there is a noticeable atmosphere difference in children hospitals and adult hospitals?

Would you say there is a noticeable atmosphere difference in children hospi...

Yes

Yes

Yes

Yes

Yes

Yes

Yes. Children's hospital are much more animated and fun

Yes

Yes

Yes; Children's hospitals are more colorful and directed towards making the patients comfortable.

Yes

Yes

Yes. The staff and the environment tend to be more colorful and fun at a children's hospital than at adult care facilities.

absolutely

yes

Not applicable

Yes

Yes.

Q5 - Considering the design efforts made to make children's hospitals less intimidating and more inviting; do you believe applying these same design principles would be beneficial to relieving stress in an adult hospital environment?

Considering the design efforts made to make children's hospitals less intim...

Possible

Maybe. It just seems calmer

Yes, absolutely, 100%, and it is a shame that they are not included in adult hospitals.

Yes, great idea!

Yes

Yes

Absolutely!

Possibly

Absolutely, regardless of age, all are afraid and apprehensive

Yes, providing the cater towards adult tastes/interests etc.

No

If done very tactfully. Sometimes we have to put some of our adult patients in the pediatric ward d/t overflow and I don't think that necessarily relieves their anxiety, but that may just be b/c they know they are in a pediatric ward.

To an extent I agree more colorful and fun environments can be helpful to all ages. I don't think the extremes of games and toys would really be as helpful but changing up the colors and designs of the hospitals could be helpful.

yes

no

Yes

No; I believe it might make adults feel belittled or like they are unable to be trusted with the severity of their situation.

Q6 - If you have worked in both a children's hospital and an adult hospital, do you have a preference for working in one or the other and why?

If you have worked in both a children's hospital and an adult hospital, do...

I prefer adult care in general

I prefer the work environment of the children's hospital (bright colors, natural sunlight), however prefer working with adult patient populations.

I prefer adults for the atmosphere but like caring for children

N/a

N/A

N/A

Never worked in a Children's Hospital

Yes; the Children's hospital is more relaxed.

I prefer working in an adult hospital. I have never enjoyed caring for children.

Adult because that's who I prefer to take care of. Children are much more difficult, in my opinion, to treat surgically. Difficult for parents (and many surgeons including myself) to see them in pain, etc.

I have children at my current hospital but we aren't a children's hospital so I don't think I can accurately answer this.

children's hospital as it is more relaxed and inviting

no

N/a

Never worked in a children's hospital

I prefer being in an adult hospital because I don't enjoy working with children. Working with children entails both caring for the patient perhaps just as much as caring for their parents. This can be challenging and frustrating for me. I prefer to work with adults.

Q7 - Do patients ever express frustration to you over hardship of navigating the hospital environment?

Do patients ever express frustration to you over hardship of navigating the...

---

Yes

Yes

Yes.

Sometimes

Yes

Yes

Yes

Rarely

Yes

They don't express frustration frequently, but they do ask for directions a lot.

Yes

Yes

Yes, the hospital is very hard to get around and even I get frustrated with the directions.

always

yes

Sometimes

Yes.

Q8 - Have you ever been stopped while walking through the hospital and asked for directions?

Have you ever been stopped while walking through the hospital and asked for...

---

Yes yes

Oh yes

Yes.

Yes

Yes

Yes

Yes

Yes

Yes

Yes, frequently.

Yes

Yes

Yes, I have asked nurses stations and information desks directions.

every day

no

Yes

Always

Yes.

Q9 - Have patients shown up late to appointments as a result of having a hard time finding the right floor/office within the hospital?

Have patients shown up late to appointments as a result of having a hard ti...

---

Yes

I believe so

Yes.

Yes

Yes

Yes

Yes

Yes

Yes

Yes

Yes

Yes

Yes, miscommunication about directions or just lack of direction have caused patients to be late.

almost every clinic

yes

Yes

No

Not applicable. I work in the emergency room.



Q10 - Do you find the directional signage in your hospital confusing or poorly placed, making it hard to navigate the hospital?

Do you find the directional signage in your hospital confusing or poorly pl...

---

Yes

Yes

Yes.

Yes

Yes

Yes

Yes

No

Sometimes, depending on the hospital

Yes; it is very limited and you have to look hard to find it. Even then, it is not thorough.

No

Yes

No I think the directions are accurate but maybe just not enough of them.

in some areas yes, there is a lot of construction being done so sometimes it is hard for even staff to navigate due to constant changes in areas that are closed

yes

Yes

Yes

Yes.

Q11 - Can you identify a factor that if changed in the hospital setting would help relieve stress of patients?

Can you identify a factor that if changed in the hospital setting would hel...

---

Better signage

Parking.

Signs for the bathroom more noticeable

A welcome desk at every portal

Utilizing color and artwork to make the hospital seem less dreary and sterile.

Yes

Friendlier staff

More communication between staff and patients.

But directions/signage for main patient/visitor entrance. Also better directions to the front help desk.

I believe that providing softer lighting environments and less noise at night would help patients sleep and thus make their hospital experience less stressful.

I always seemed to be asked directions in the same 2 spots. If they put some sort of signage at those areas or a kiosk, it might be helpful.

Better communication with staff so that communication with the patient would be standard with everyone. Patients complain one staff member tells them one thing then another staff member comes in and says the opposite which is confusing and frustrating.

easier access and direction/guidance

it would be nice to have escorts for people to get to the buildings they need to get to

Eye level identifiers

Accurate wait times to be seen or for results.

Q12 - Do you believe the outside of your hospital is easily identifiable from other hospitals

or medical facilities around or near it? Why do you feel this way?

Do you believe the outside of your hospital is easily identifiable from oth...

NA

Yes because it's newer looking than the surrounding buildings

Yes. It is the only academic institution in the state.

Yes.

Yes; primarily height of building

No. the building was built in 1967 and has the very forgettable, utilitarian look to it. A Medical Office Building was built directly in front of the hospital in the 1980's and blocks the hospital from sight at the major intersection it is located on. Finally, the hospital is placed far back from the street and the city council dictated signage be placed far back from the curb to accommodate future road expansion.

Yes. The surrounding buildings are schools and small offices.

No because ours is the only hospital in town.

The signs are very large and easily read

Yes. It is a large building and they just placed new street signs that are very helpful.

Yes. The hospital is very large compared to the surrounding buildings in the community and the hospital is covered in decals with the hospital's name and logos.

Yes. It's a very large building amongst very small buildings (small town)

No. I work in Houston medical center where one hospital has multiple building and skywalks you can easily go from one hospital into the next and not even realize it.

yes as it is the only hospital in the area and has large signs on the outside

yes because there are large signs on the building. The parking is the biggest issue - getting to guest parking is a bit of a headache

Yes

Yes. The architecture of my hospital is well known around Dallas. It is the only tall building in the area and is easily identifiable from a distance.

## Q13 - What steps does your hospital take to relieve the stress of patients?

What steps does your hospital take to relieve the stress of patients?

As far as navigating nothing really. Only signage and helpful staff

We have child life specialists, chaplain services, music therapy.

They have their own tv station for patients to listen to about the hospital and benefits

N/a

The leadership does daily rounding on patients at 10 am weekdays where we take them the newspaper and a warm blanket. We ask them how their visit is going and what we can do to make it more comfortable for them. Our volunteers provide guidance and help throughout the hospital.

They have prayers said over the loud soaker, offer mass services, and spiritual guidance.

Staff approaches people who appear lost

TV in all waiting areas.

Minimal from a design standpoint. They occasionally have volunteers and therapy dogs, but this is infrequent.

We have social workers, counselors, and chaplains on staff to interact with the patients and their families when needed.

That's a broad question, but from this regard I would say our hospital is incredibly nice. Private rooms, many have balconies. The volunteers that are at the hospital during the day are very helpful.

They provide calm quite environments with city views for down time.

mostly just making the environment inviting and pleasing to the eye

they offer lunch and lectures for family and patients to take a break

Unknown

Therapy dogs is all I can think of

Private rooms for all patients, chaplain services available, service pet visits.

## Q14 - Does your hospital have a navigation app?

Does your hospital have a navigation app?

No

No

No.

No

No

No

No

No

No

Not to my knowledge.

I do not believe so.

No

Yes, I find it to be helpful if you know the exact location room number of where you are going but general directions aren't the best.

no

no

N/a

No

No.

Q15 - Does your hospital have interactive kiosk to help with patient check-ins or hospital navigation?

Does your hospital have interactive kiosk to help with patient check-ins or...

---

No

No

Yes.

I'm not sure

Yes; one

No

No

No

No

No

Yes

No

They have information desks.

no

no

No

There are help desks with a staff member to help.

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