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Pre-Post Areas of Ambulatory Surgery:

Using a human-centered approach to designing preoperative and postoperative areas of ambulatory surgical environments

July 9, 2019

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Professor, Spartanburg Regional Healthcare System,
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Moderated by: Rita Ho, LEED AP

Kaiser Permanente

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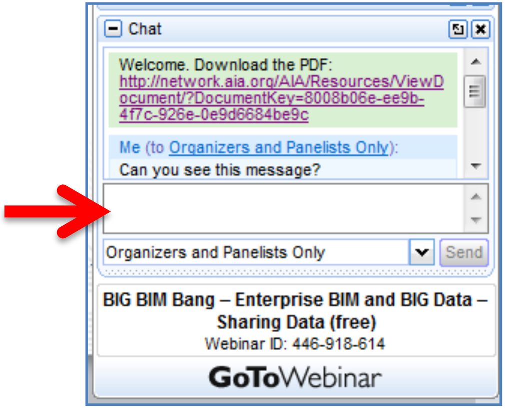

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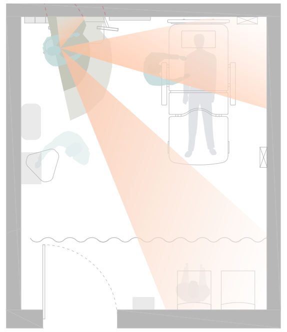
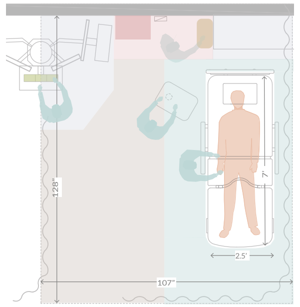


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PRE-POST AREAS OF AMBULATORY SURGERY:

Using a Human-centered Approach to Designing Preoperative and Postoperative Areas of Ambulatory Surgery Centers

JULY 9, 2019

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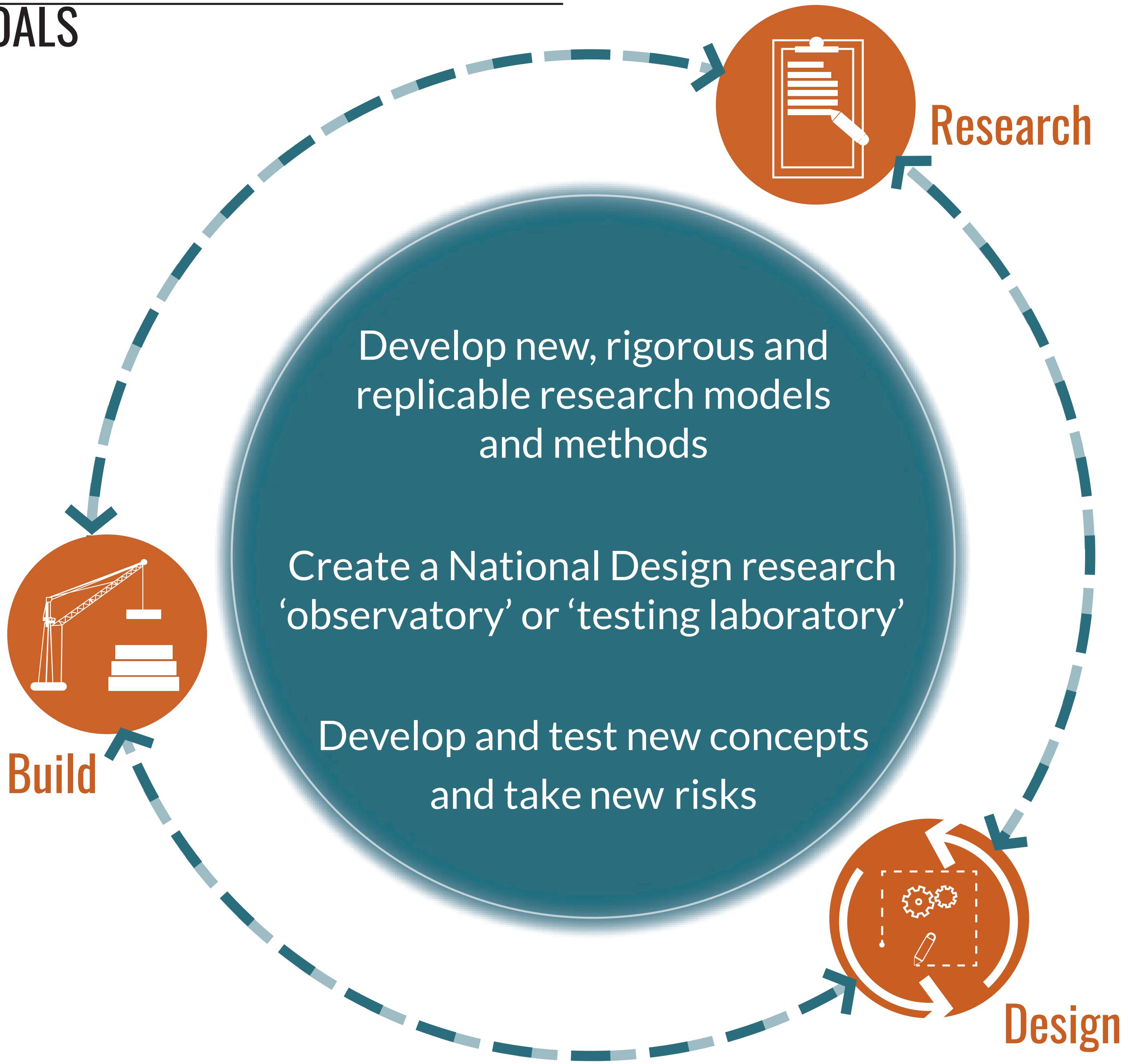
GOALS



RESEARCH FOCUS

‘Needle biopsy’ or ‘tissue sample’ on the most significant healthcare settings

Settings where significant patient care and treatment is delivered

Settings built repeatedly in healthcare facilities and systems

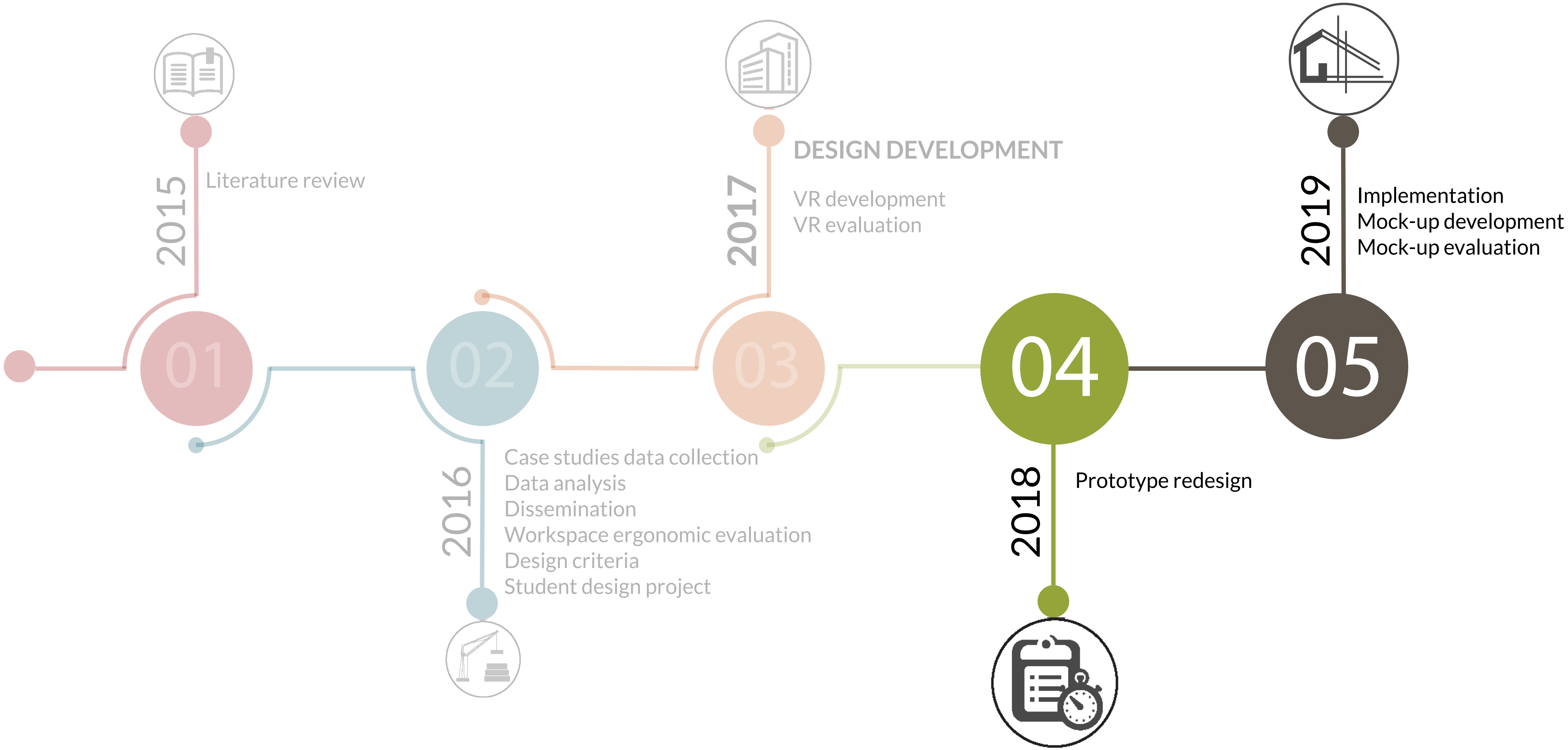
RESEARCH AGENDA

- Patient safety
- Patient and staff experience
- Population health

PROJECT OVERVIEW

OVERVIEW

IN A SNAPSHOT



01

PROJECT TEAM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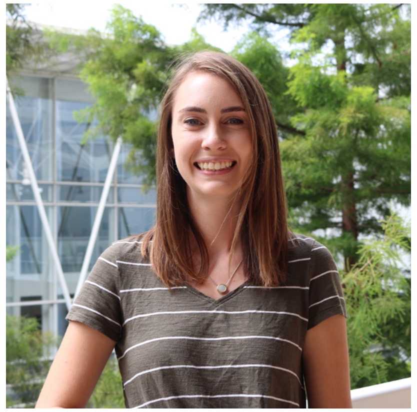
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PUBLICATIONS

Journal of Interior Design

Balancing the Human Touch with the Need for Integrating Technology in Ambulatory Surgical Environments: Barriers and Facilitators to Nursing Work and Care Team Interactions

Anjali Joseph, Ph.D., Deborah Wingler, MSD-HHE, and Zahra Zamani, Ph.D., Clemson University

ABSTRACT

Ambulatory surgical environments are dynamic and complex, involving coordination across multiple groups of care providers and requiring numerous sources and handoffs of information. As in other areas of healthcare, these settings have grown increasingly complex over the years with the integration of new equipment and technology such as electronic medical records. However, little thought has been given to the design of workspaces in these settings to support evolving work processes and emerging technologies. The purpose of this research study was to understand nurses' work patterns in preoperative and postoperative workspaces of ambulatory surgery centers, and to identify environmental design strategies that support or act as barriers to critical interactions between care teams due to the integration of new technologies. In-depth case studies were conducted at two ambulatory surgery centers using a multimethod approach consisting of behavior mapping, shadowing, spatial analysis, and semi-structured interviews with nursing staff. The study data were collected over two consecutive days at each site. The majority of patient care activities such as bedside care and charting were carried out directly with the patient in the patient bays. Nurses were observed standing or walking for approximately 70% of the observations, and face-to-face interactions were dominant in both case studies regardless of the technology implemented. Key environmental facilitators and barriers to nurses' work in surgery centers include: accessibility, flexibility, visibility, size, and privacy. Architects and interior designers can play an important role in designing human-centered work environments for nurses in surgical settings that effectively support the critical tasks and interactions that must take place. Designing work systems requires a human-factors approach to design that examines the range of activities, interactions, people, technology, and design of the workspace and its elements.

Background

The number of surgical procedures conducted in outpatient environments, such as ambulatory surgery centers (ASCs), has risen significantly over the last couple of decades due to changes in the Medicare reimbursement policy, with more than 3600 types of procedures being performed in over 23 million surgeries annually (Ambulatory Surgery Center Association, 2016). This rapid growth has been supported through innovations in technology and advances in surgical and anesthesia techniques, allowing surgical procedures that once required lengthy inpatient hospital stays to now be performed in outpatient settings where the patient is able to go home the same day (Cullen, Hall, & Golosinskiy, 2009). Benefits associated with increased efficiency

Advances in Human Factors and Ergonomics in Healthcare and Medical Devices

An Ergonomic Evaluation of Preoperative and Postoperative Workspaces in Ambulatory Surgery Centers

Deborah Wingler(✉), Anjali Joseph, and Rutali Joshi

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Abstract. Healthcare organizations are faced with the challenge of renovating existing infrastructure or building new facilities to enable the inclusion of computer workstations and address growing technological demands. The majority of existing ergonomic tools for evaluating computer workstations primarily focus on the interface between the care provider and the computer. This paper describes the development and application of an expanded ergonomic evaluation framework that focuses on the work system versus the workstation. The tool was tested and refined through visits to five facilities where the ergonomic evaluation tool was used to assess five preoperative and seven postoperative rooms/bays in surgical suites with varying spatial configurations and types of workstations. The comparative evaluation showed that all workstations met most of the basic checklist requirements, but there were significant differences related to the location of the workstation and adjacencies to other zones in how effectively the workstations were integrated into the space.

Keywords: Healthcare · Ergonomic · Workstation · Evaluation · Work system

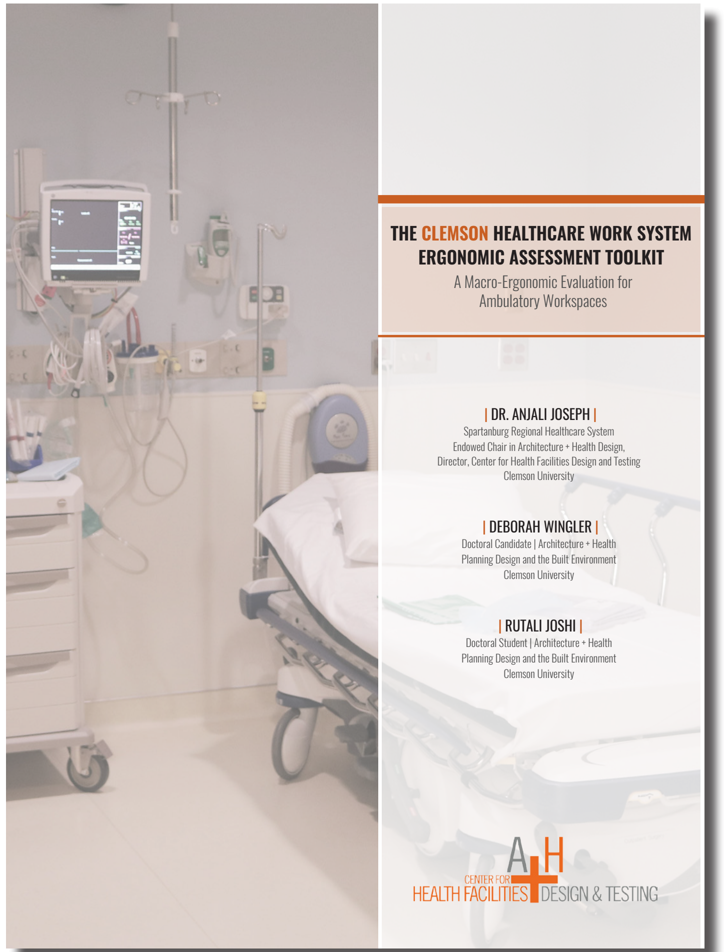
1 Background

The number of ambulatory Surgery Centers (ASCs) has rapidly grown over the last two decades from 1,000 in 1998 to over 5,400 in 2016 due to the dramatic increase in the number of surgical procedure being conducted in outpatient settings in the United States each year [1].

To improve the quality of care, an influx of $20 billion for the investment of infrastructure and systems to support the implementation of health information technology (HIT) was inserted in 2009 into the US healthcare system with the American Recovery and Reinvestment Act [2]. As a result, computers have been incorporated into the clinical workflow in a diverse range of healthcare settings. The inclusion of healthcare information technology (HIT) has transformed the ambulatory surgical environment by increasing the amount of computer work that is done by care team members while in the presence of patients and their care partners.

The Center for Health Facilities Design and Testing (CHFDT) website

https://www.clemson.edu/centers-institutes/health-facilities-design-testing/resources/tools/index.html



Health Environments Research & Design Journal

Research

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SAGE

Using Virtual Reality to Compare Design Alternatives Using Subjective and Objective Evaluation Methods

Deborah Wingler, PhD, MDS-HHE, EDAC[1], Anjali Joseph, PhD, EDAC[1], Sara Bayramzadeh, PhD, MArch[2], and Andrew Robb, PhD[3]

Abstract

Objective: This study sought to develop a method that supports a more evidence-based approach to evaluating multiple design options in virtual reality (VR), combining subjective insights gathered using traditional approaches and objective feedback gathered using the VR platform. Additionally, this study sought to understand how objective data garnered from the VR platform could be used to compliment traditional evaluation strategies. **Background:** VR can be a viable research platform for supporting evidence-based design practices. Prior studies have predominately utilized experiential user feedback. While able to provide valuable subjective insights, these approaches are less effective in making objective comparisons between multiple designs alternatives. **Method:** A repeated measures study was conducted with nursing faculty. User feedback was captured through surveys, interviews, and the VR platform. **Results:** The survey, interview, and the objective VR data converged in terms of identifying the highest performing design option. Survey data showed that Room 2 performed best in terms of perceived physical access to supplies, unobstructed movement, and availability of space to accommodate additional equipment. VR data showed that participants in Room 2 had significantly higher visibility to both patient and care partners throughout their simulated interaction. **Conclusions:** Simulation-based evaluations in VR that use a combination of users' subjective insights and objective data obtained from VR can be an effective tool for helping designers evaluate multiple design options. The use of scenario-based simulations provided a structured and clinically relevant approach to comparing three preoperative rooms, supporting a more robust assessment of users' physical response to a simulated healthcare environment.

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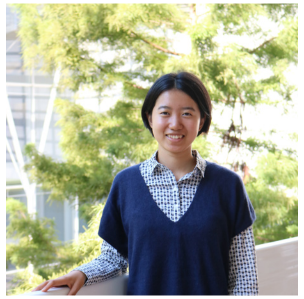


SHICONG CAO

MASTER OF ARCHITECTURE
+ HEALTH STUDENTS

SECOND SEMESTER OF PROGRAM

LANEY TUTEN

MEGAN GIRVAN

WENZ TUTTLE

LUKE DAVIS

01

FOCUS

Designing a patient care room/bay in the preoperative or postoperative area of an ambulatory surgery center

GOALS

1. Expose design students to the range of ergonomic issues at play in the design of preoperative and postoperative spaces in ambulatory surgery centers

2. Develop innovative design solutions for a preoperative or postoperative room/bay that addresses a range of design and performance goals including the integration of a computer workstation to support electronic charting

DESIGN CONSIDERATIONS

Design Criteria

for each room design option

1. **COMFORT**
   adequacy and quality of three-dimensional space through furniture ergonomics, material selection, color and light
2. **WORKSPACE ERGONOMICS**
   design and integration of computer workstation to support staff performance
3. **VISIBILITY**
   support communication and collaboration between care team, patient and care partner within room/bay
4. **PRIVACY**
   provision of acoustical and visual privacy while allowing for staff connectivity to unit
5. **FLEXIBILITY**
   ability to flex over time and between functions
6. **DAYLIGHTING/LIGHTING STRATEGIES**
   absence/presence of outdoor views, impact of artificial or natural light on glare
7. **AMENITIES**
   provision of positive distractions, access to technology, toilet, other?
8. **FUNCTIONALITY**
   functionality of zones and adjacencies, and support for nursing tasks

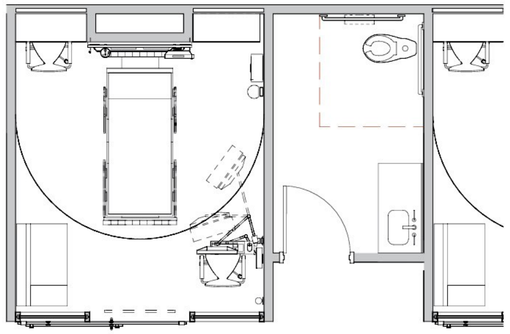
11 design features

in each room design option

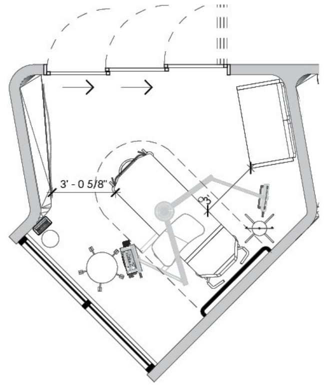
- Patient bed
- Computer workstation
- Vitals monitor
- Hand sanitizer
- Storage for care supplies
- Storage for patient belongings
- Care partner seating
- Sharps container
- Glove dispenser
- Trash can
- Enclosure materiality

2D Floor Plan | 3D Perspective | Virtual Reality

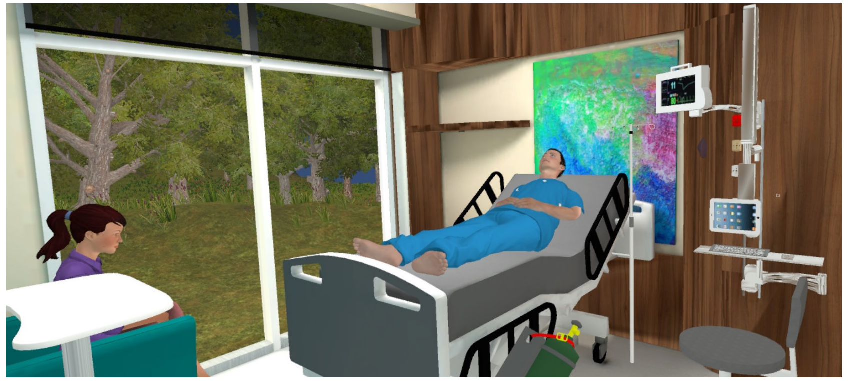
Room 1



Room 2



Room 3



COLLABORATORS

SCHOOL OF ARCHITECTURE

Anjali Joseph

SCHOOL OF NURSING

Kathleen Valentine

SCHOOL OF COMPUTING

Andrew Robb

PARTICIPANTS | Nursing faculty from School of Nursing

METHODOLOGY

APPLICATION OF SCENARIO BASED SIMULATIONS

It is essential for **designers** and **end-users** to have a mutual understanding of **end-users needs** and **work processes** when making design decisions

Dunston et al.,2011; Peavey, Zoss, & Watkins, 2012; Traversari, Goedhart, & Schraagen, 2013

Compelling, **task-based scenarios** that require user interactions with objects in the environment allow clinical end users to understand space in the context of their **workflow**

Rebelo, 2012

Task-based scenarios allow for an objective comparison across **multiple design options**

Rebelo, 2012

allows for a **holistic evaluation** of a user's interactions with system components

HQCA, 2016

BACKGROUND

Physical mock-ups have been widely used in healthcare design projects as a design communication tool to facilitate **user involvement** and confirm design details prior to construction of critical areas.

Traversari et al., 2013; Peavey et al., 2012; Dunston et al., 2011

Virtual reality (VR) has been increasingly implemented into the design process as a means for eliciting **user-feedback** due to technological advances in 3D-CAD software and high-quality, affordable VR technology.

Saskia Kuliga, 2015

While studies using physical and virtual mock-ups have predominately focused on utilizing traditional qualitative methods found in environment and behavior research to obtain subjective feedback, both **subjective and objective measures** are needed to provide a holistic evaluation of a user's experience.

Rebelo, 2012

VR provides a unique opportunity to objectively evaluate **interactivity** between **user and environment**, as the VR platform exhibits the capacity for capturing users real-time position and interaction within the environment.

Traversari et al., 2013; Peavey et al., 2012; Dunston et al., 2011

PROJECT OBJECTIVES

1. To compare three preoperative room prototypes using scenario-based simulations in VR to identify a high performing prototype and design features, which would then be built out as a physical mock-up and integrated into existing or new healthcare facilities.

2. To understand how the subjective insights gathered using traditional approaches agree with or contradict the objective feedback gained using the VR platform.

3. To understand whether the data obtained using VR could provide additional insights and evidence-based data to help identify a high performing prototype and design features.

RESEARCH DESIGN

Research Design	A repeated measure study
Setting	common study area within the School of Nursing
Participants	21 nursing faculty (male=2, female=19)
VR Gear	HTC Vive headset, HTC Vive hip tracker, two hand-held controllers
VR Platform	Unity3D

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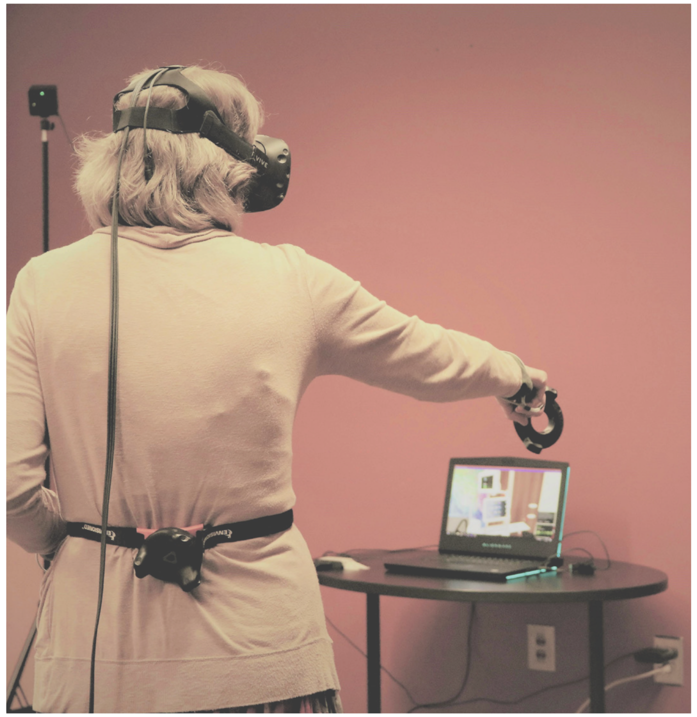
RESEARCH METHODS

PERFORMING A SCENARIO
Completing 6 tasks in each prototype

SURVEYS
Rating perceived work performance within each prototype

INTERVIEWS
Providing insight into prefered prototype and participants VR experience

VR PLATFORM
Capturing movement and visual orientation within each prototype



PERFORMING A SCENARIO

06 tasks
24 discrete steps

A 30-year-old male patient with a baseline medical condition of successful post congenital heart structure repair during childhood has been admitted for surgery. The patient is having a surgical repair of a right torn rotator cuff. Preoperative preparation will require IV meds and hydration.

Task	Steps	Script
Introductions (nurse, patient and care partner)	1. Sanitize hands	Please **locate the hand sanitizer** in the room and **simulate sanitizing your hands** by touching the hand sanitizer.
	2. Greet patient and care partner	Please **greet the patient and care partner** (family support) and explain that you will be taking care of them today.
	3. Adjust computer workstation	**Please relocate yourself to the computer workstation. Move the computer workstation chair out of your way, and position the computer workstation to a standing position.**
Patient Interview	1. Log into EHR	Please **simulate logging into the computer** by tapping on the keyboard. Please **simulate reviewing the patient chart** by looking at the computer workstation monitor.
	2. Interview patient	Please **explain to the patient and care partner** what **care activities** they can expect today.

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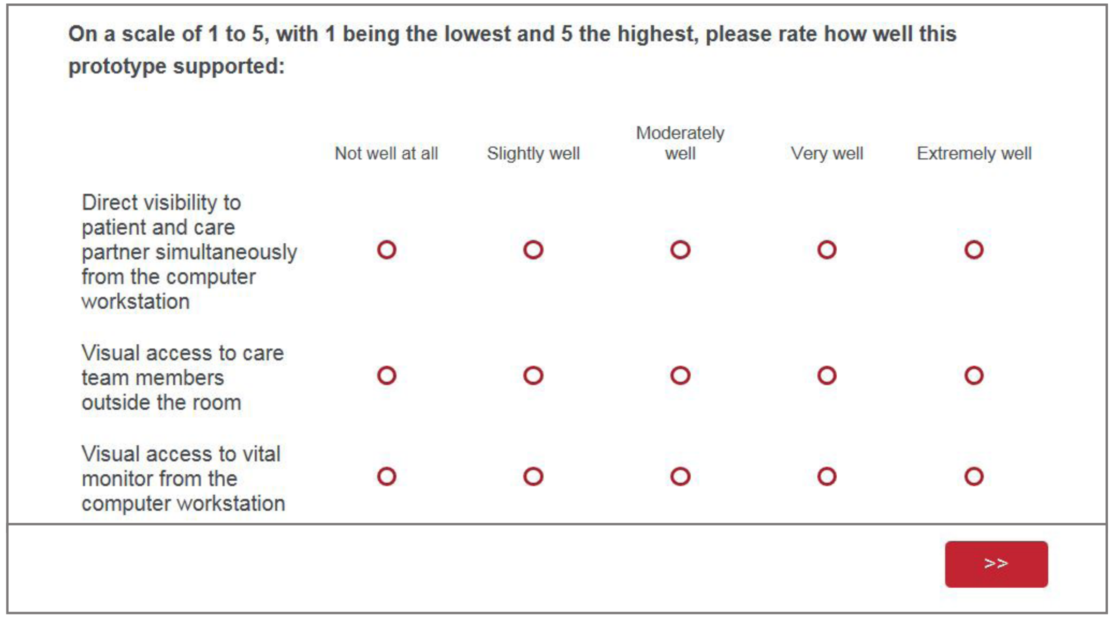
SURVEYS

- Survey developed in **Qualitrics**
- Administered by investigator **verbally**
- Responses recorded into a **laptop**
- 9 Questions for each room option broken into 4 categories- ***visibility (3), privacy (1), accessibility (3), and flexibility (2)***
- Participants **rated** experience with each environment on a **5-point likert scale**
- Participants provided **qualitative insights** into facilitators and barriers in the environment through **4 open ended questions**



On a scale of 1 to 5, with 1 being the lowest and 5 the highest, please rate how well this prototype supported:

	Not well at all	Slightly well	Moderately well	Very well	Extremely well
Direct visibility to patient and care partner simultaneously from the computer workstation	○	○	○	○	○
Visual access to care team members outside the room	○	○	○	○	○
Visual access to vital monitor from the computer workstation	○	○	○	○	○

>>

INTERVIEWS

- Semi-structured interview questions helped to
  - *Determine **preferred prototype***
  - *Identify any **desired features** partcipants would like to see added to the prototype*
  - *Gain insights into the **VR experience***
- Conducted for **10-15 minutes** using **photo-elicitation**
- Participants encouraged to **write or draw** on **images** as needed
- Interview responses **audio recorded**

Interview Orientation

I will be conducting a short interview to further understand your VR experience. The interview will be audio recorded. Once I start the audio recorder, you will hear me say your participant ID# to ensure your responses are appropriately cataloged.

Interview Questions

1. Which room design features do you feel are the most important from the perspective of doing your nursing care activities well?
2. Which room design do you feel would most optimally supported the tasks from the scenario? (***set three images out for participant to choose***)
3. What features did you like in this room? (***prompt participant to draw on the selected image to highlight features***)
4. Are there any features from your preferred room design that you felt were missing?
   a. If so, what features would you like to see added into that prototype?
5. How well did the VE support your ability to understand the aesthetic quality of each room?

VR DATA

- **HTC Vive Hip Tracker**
  Physical location on the participant was maked on an x and y coordinate as the moved through the virtual environment

- **Head Mounted display**
  The direction of head rotation was captured at any given moment within the virtual environment in the form of a vector

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RESEARCH PROTOCOL

1. ***Consent***
2. ***Place*** VR head-mounted display (HMD) and hip tracker
3. Participants placed in test room to ***familiarize*** themselves with components and ***practice*** moving components
4a. Participants placed in ***1st room***
   - Participants complete the primary tasks and associated steps from the scenario
   - Participants verbally surveyed
4b. Participants placed in ***2nd room***
   - Participants complete the primary tasks and associated steps from the scenario
   - Participants verbally surveyed
4c. Participants placed in ***3rd room***
   - Participants complete the primary tasks and associated steps from the scenario
   - Participants verbally surveyed
5. ***Remove*** VR head-mounted display (HMD) and hip tracker
6. Participants complete Presence ***Survey*** and demographic ***questions***
7. Conduct semi-structured ***interview*** with participants

The order in which the preoperative rooms were presented to participants was ***randomized*** *to mitigate the effect of increased familiarity with the VR platform over the course of the experiment*

RESULTS

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SURVEY RESULTS

Significant differences were found for all three accessibility questions and for one of two flexibility questions

accessibility

flexibility

	Room 1 m (SD)		Room 2 m (SD)		Room 3 m (SD)		F	P
	M	SD	M	SD	M	SD		
direct visibility to patient & family simultaneously from computer workstation	4.48	0.93	4.38	0.97	4.29	0.96	0.262	1
visual access to team members outside the room	4.14	1.2	4.50	0.70	4.20	1.00	1.07	3.61
visual access to vital monitor from the computer workstation	4.38	0.86	4.57	0.926	4.62	0.67	0.66	0.528
visual privacy for patients while performing patient care activities	2.67	1.37	2.90	1.37	2.71	1.38	0.45	0.643
physical access to patient care supplies	3.76	1.14	4.57	0.75	3.24	1.34	8.94	0.002
physical access to all sides of patient	3.29	1.10	4.10	0.94	4.00	1.05	4.32	0.028
unobstructed movement during patient care activities	2.81	0.98	4.00	0.95	3.71	1.01	8.36	0.002
adjustability of the computer workstation to support patient care activities	4.43	0.81	4.24	1.091	4.57	0.98	0.55	0.584
availability of space to accommodate flow of additional equipment	3.05	1.02	4.14	0.912	3.95	0.86	8.14	0.003

03

INTERVIEW RESULTS

Interview question: *Which room design do you feel most optimally supported the tasks from the scenario?*

Room 1 = 1/21 participants selected room 1 as their preferred room

Room 2 = 12/21 (57%) participants selected room 2 as their preferred room

Room 3 = 8/21 (38%) participants selected room 3 as their preferred room

INTERVIEW RESULTS

VISIBILITY perceived increased patient and care partner visibility in Room 1

"...Open view of patient, view of care partner was nice." (P21, R2)

ACCESSIBILITY the co-location of supplies afforded reduced travel distance to perform direct patient care tasks

"The workstation had everything on it. Everything was collocated. Things did not get in the way of each other . . . Moving around was easy. Supply drawers at the mobile computer were good." (P4, R2)

ACCESSIBILITY the angle of the room afforded a more fluid flow around the bed

"It was diagonal. I loved it... easy access to all sides of patient, required less travel to accomplish tasks." (P16, R2)

FLEXIBILITY the increased mobility of the boom mounted computer workstation was considered to support flow of additional equipment traffic

"...mobility of computer, clear floor under computer, uncluttered room...easy for moving patient and equipment in and out." (P10, R2)

AESTHETICS many participants especially enjoyed the visual application of the ceiling in Room 2, even if they preferred Room 3 overall

"Really liked the look of this room... love the scene on the ceiling." (P16, R2)

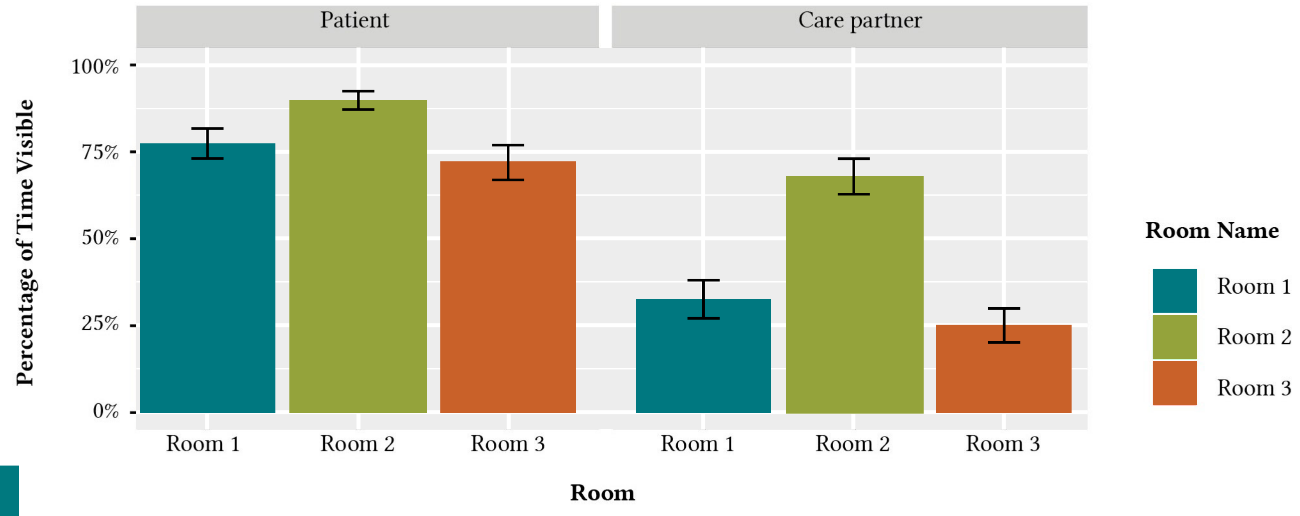
PRIVACY lack of ability to shield patients from both internal and external facility traffic

"Openness to corridor through glass is nice... curtains are needed for privacy." (P9, R1)

VR DATA

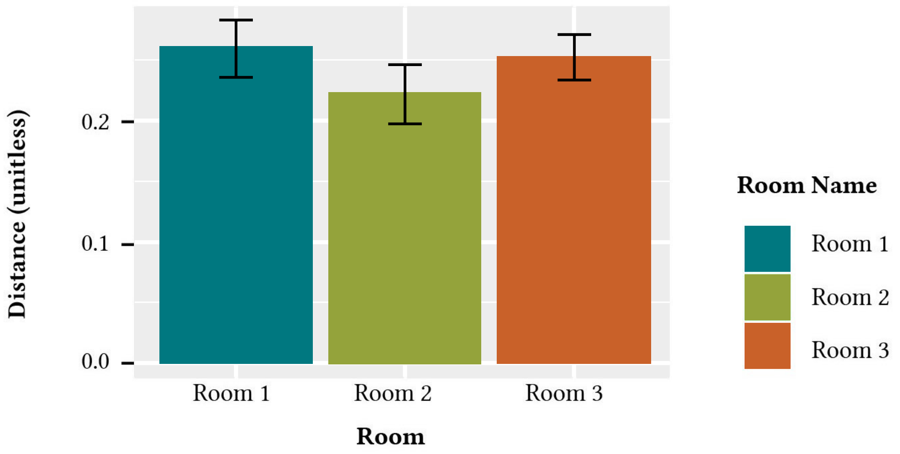
VISIBILITY: proportion of time when the patient and care partner were visible to the patient

[patient and care partner were significantly more visible to the participant in **Room 2**]



ACCESSIBILITY: distance participants traveled when completing their tasks in each room

[participants traveled the shortest distances when in the **Room 2**]



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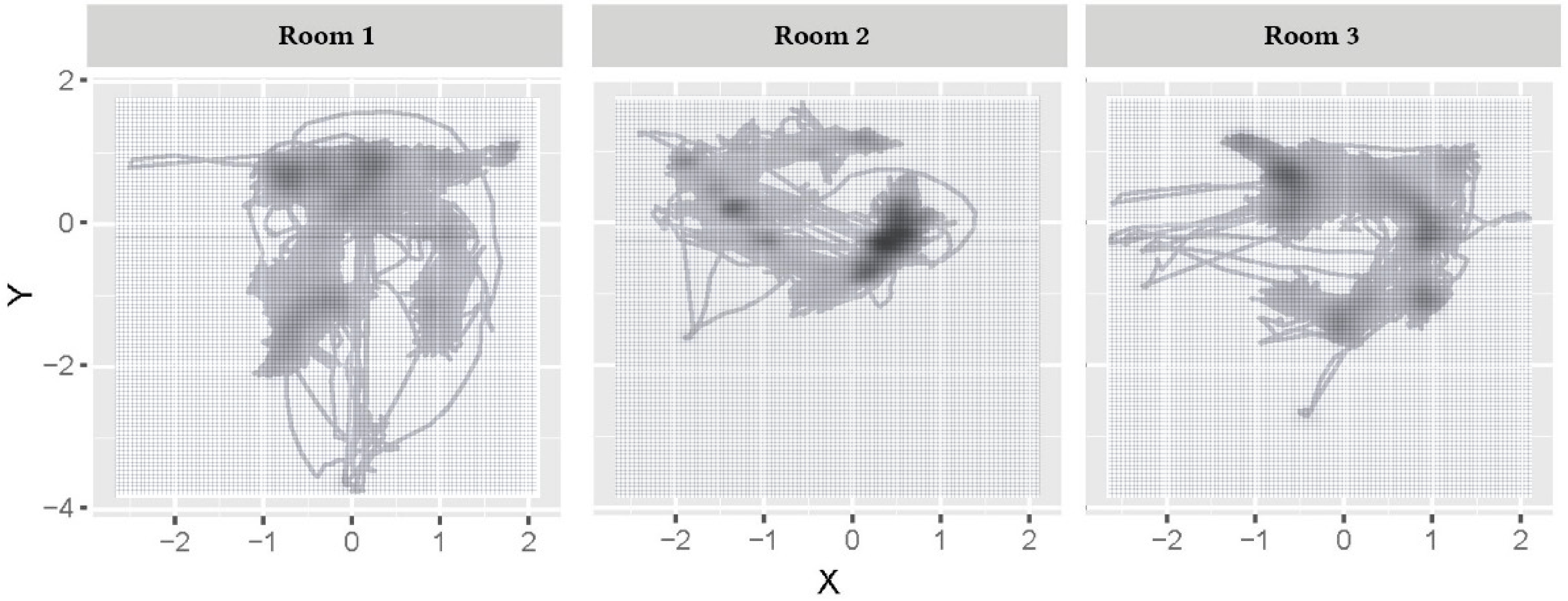
VR DATA

PATH ANALYSIS: the paths participants followed while performing tasks in each room

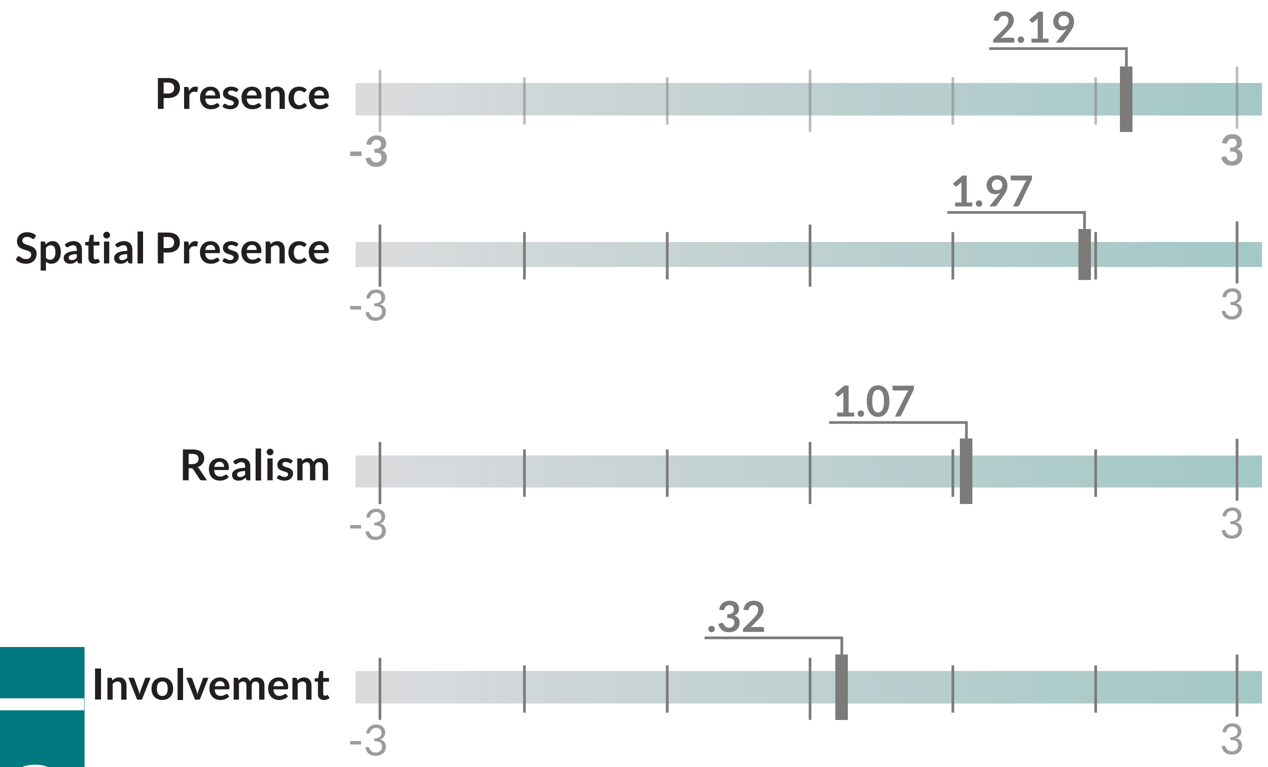
[more compact movement pattern in Room 2 in contrast to Room 3 and Room 1]



VR DATA

PRESENCE SURVEY

Participants experienced weak to moderate feeling of presence on all four dimensions



INTERVIEWS

Participants reported a high level of presence

"I was impressed, caused me to consider aspects of the room that I would probably not have considered, it helped me to study the room, if it were a real room I don't know if I would have felt any different" (P7)

"The VR was incredible, I really felt that I was in the space, I didn't even feel like there was an outside world." (P8)

"It was perfect! It looked like a real room."

"Surprisingly well, it was very realistic... size of the room, spacing, positioning of the equipment."

IMPLICATIONS

IMPLICATIONS

ONE VR data was extremely valuable and allowed for statistical comparison between design alternatives.

TWO VR may not be able to completely address all design performance characteristics such as those related to privacy or aesthetics.

THREE Objective data from the VR may not be able to clearly identify why one option performs better than another.

FOUR The combination of subjective and objective data is complementary and can be used to make well-informed design decisions.

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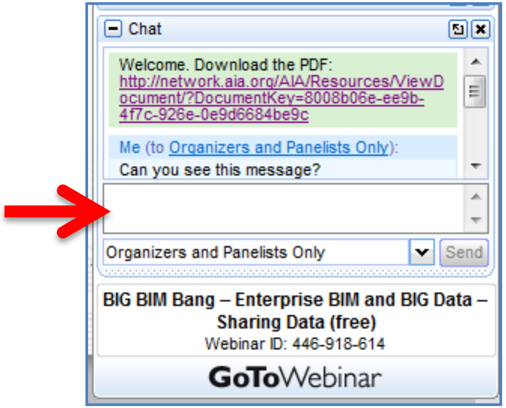
Question Reminder

Submit your questions and comments via the chat box.



APPLICATION

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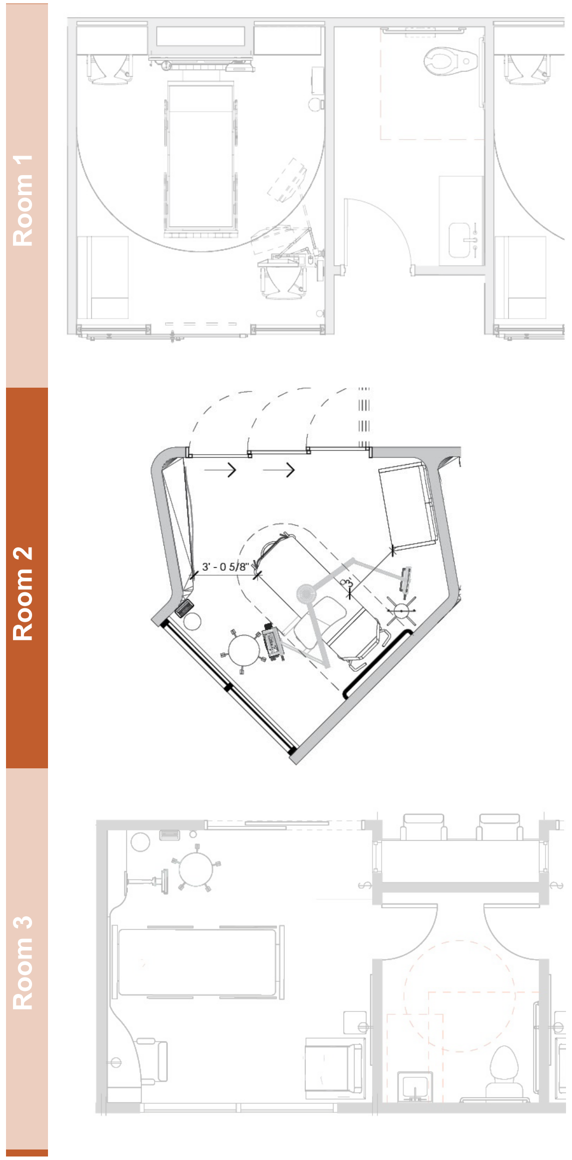
2D Floor Plan | 3D Perspective | Virtual Reality



PREFERRED DESIGN FEATURES

1 ACCESS

- **Equal width** around patient on all sides to support fluid movement during patient care activities
- **Size and location** of care partner zone
- Supply and computer workstation **mobility/portability**
- **Proportional space** allocation to support unobstructed f low of equipment supplies and people
- **Wall tilt angle** allows for expanded floor area by foot of bed and increased care partners visibility

2 VISIBILITY

- **Multiple viewing options** for patient in supine position (i.e., tv height, view to outside, ceiling art, and wall art)
- **Rotated/angled axis** for equipment and furniture position/ placement that affords visibility to patient, partner, and additional care team members simultaneously
- Patient, care partner, and staff **view to the outside**

3 EQUIPMENT

- **Co-location** of sharps and waste disposal
- **Co-location** of supplies and computer workstation
- **Co-location** of hand sanitizer and computer workstation
- Vital monitor & computer workstation **mobility**

4 TEXTURE & FINISHES

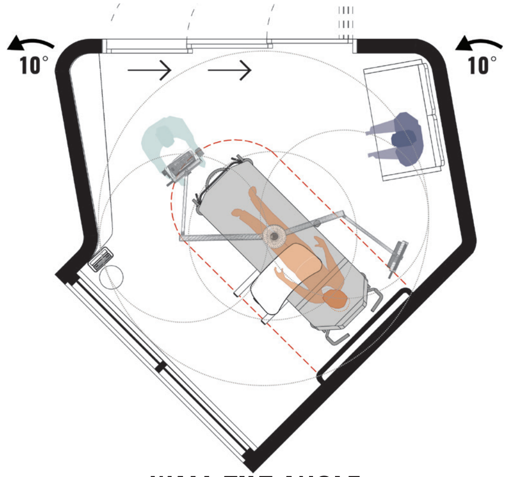
- **Light wood grain** on headwall & built-in storage
- Seating fabric with **natural motif**
- **Roller shades** on window & **tv monitor**
- Nora **rubber floor**

5 CEILING FINISH

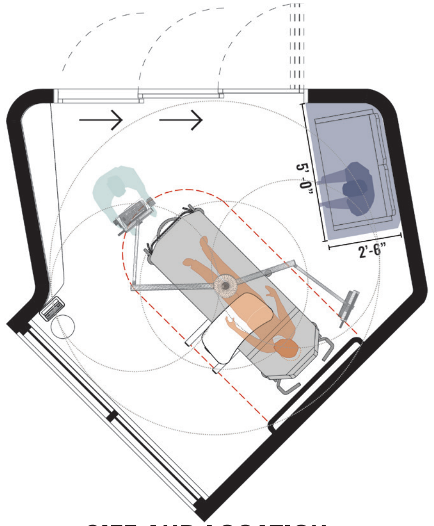
- **Ambiance created** through the ceiling treatment

ORIGINAL DESIGN | 140 SQ. FT.

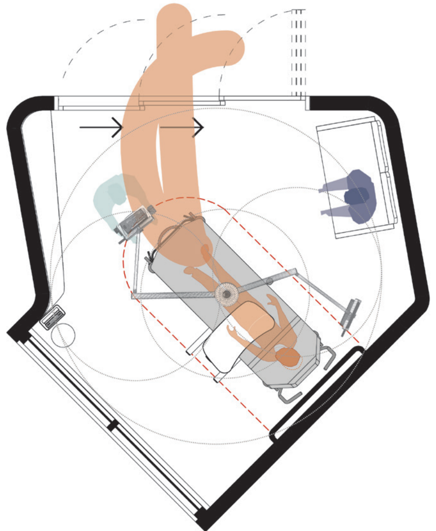
ACCESS

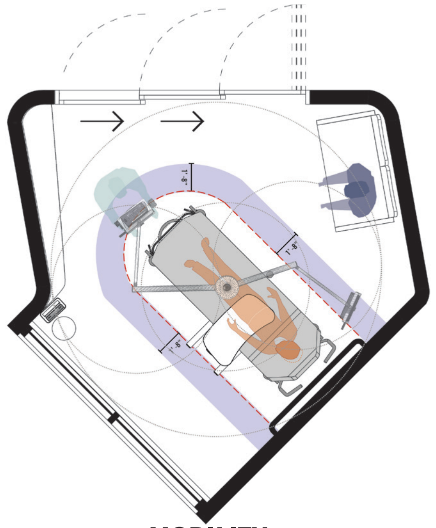


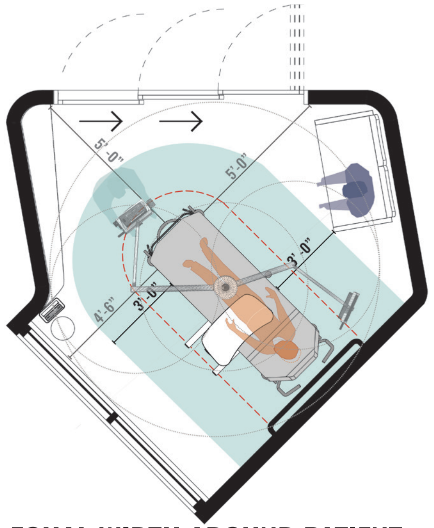
WALL TILT ANGLE

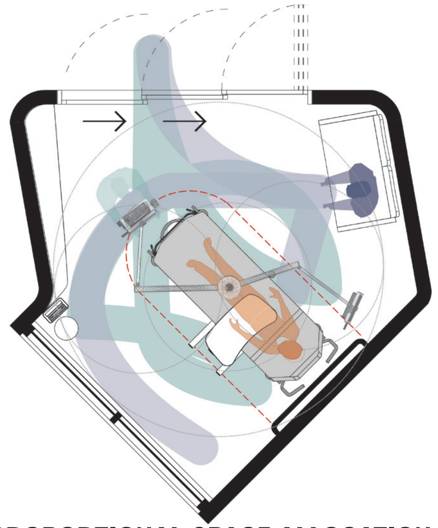


SIZE AND LOCATION


EASE OF PATIENT ACCESS

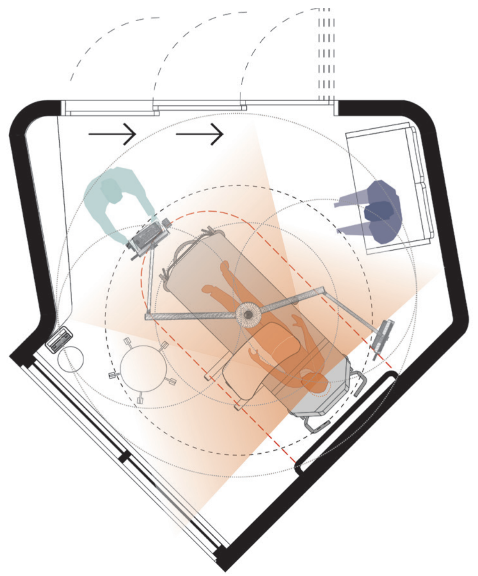

MOBILITY


EQUAL WIDTH AROUND PATIENT

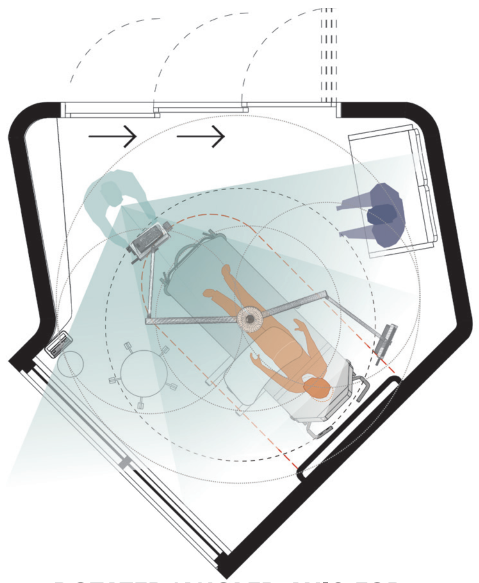

PROPORTIONAL SPACE ALLOCATION TO SUPPORT UNOBSTRUCTED FLOW

ORIGINAL DESIGN | 140 SQ. FT.

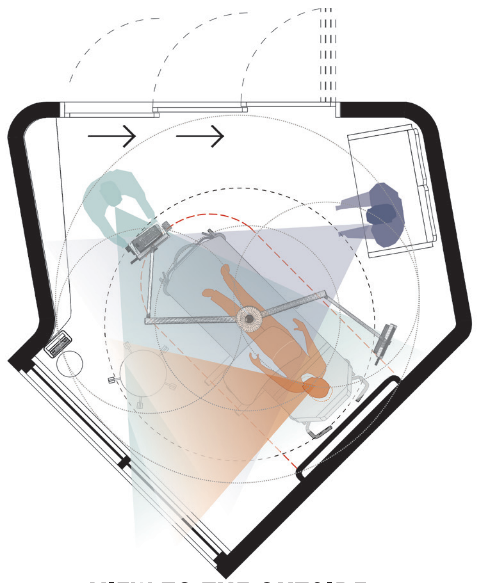
VISIBILITY



MULTIPLE VIEWING OPTIONS



ROTATED/ANGLED AXIS FOR EQUIPMENT AND FURNITURE



VIEW TO THE OUTSIDE

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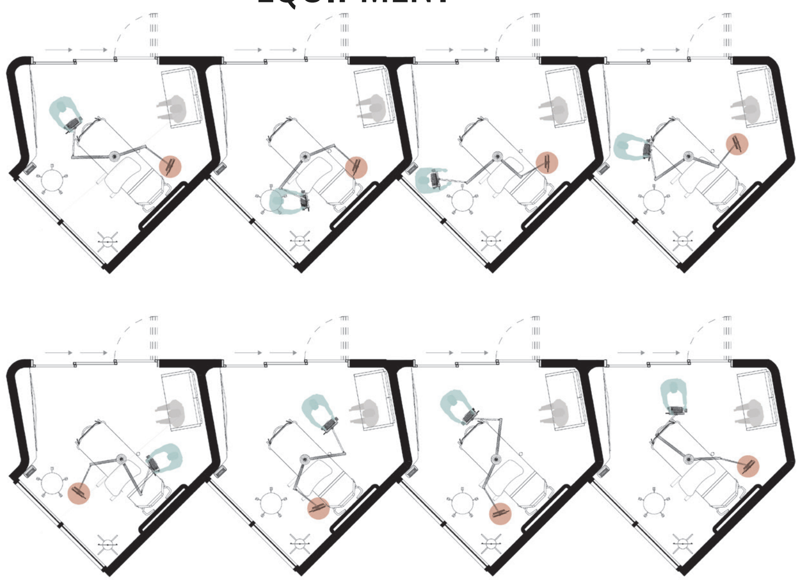
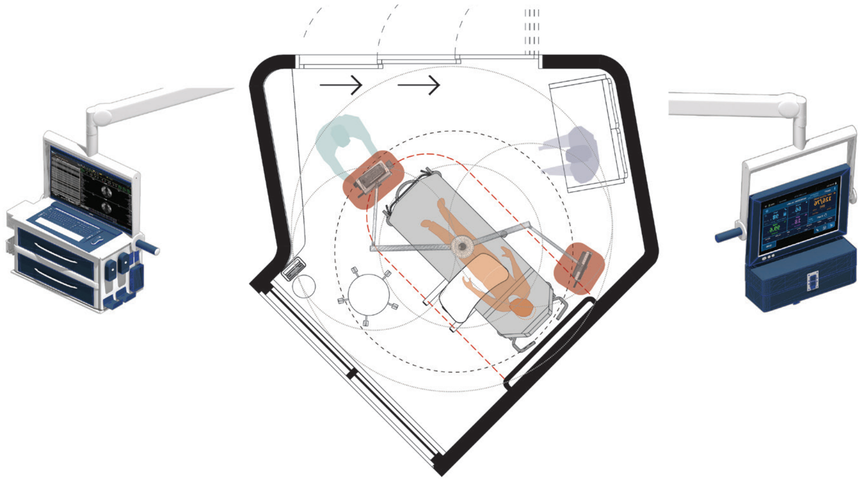
ORIGINAL DESIGN | 140 SQ. FT.

EQUIPMENT

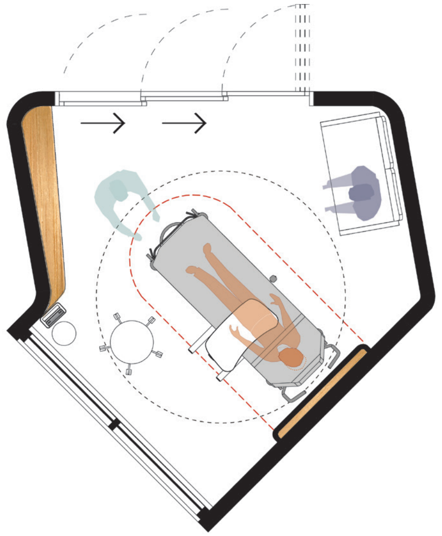


CO-LOCATION OF SHARPS AND WASTE DISPOSAL

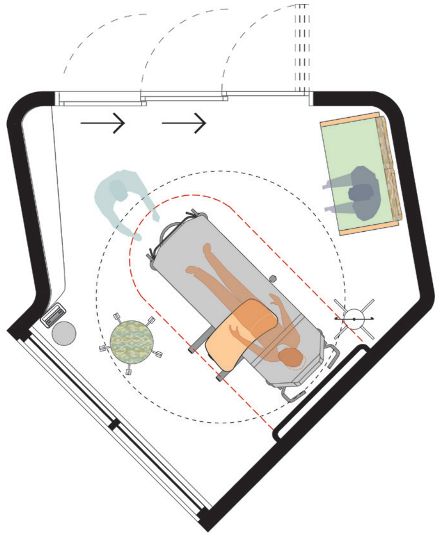


CO-LOCATION OF SUPPLIES AND COMPUTER WORKSTATION
CO-LOCATION OF HAND SANITIZER AND COMPUTER WORKSTATION

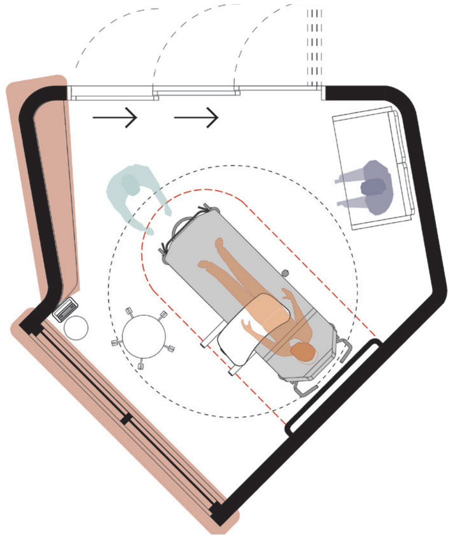
TEXTURES & FINISHES



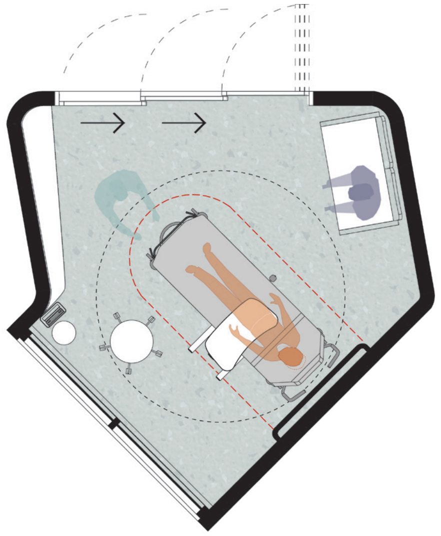
LIGHT WOOD GRAIN ON HEADWALL & BUILT-IN STORAGE



SEATING FABRIC WITH **NATURAL MOTIF**

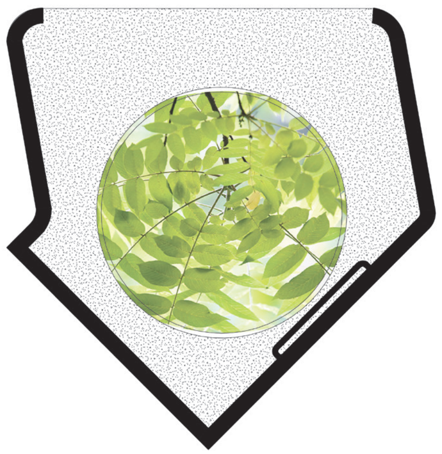


ROLLER SHADES ON WINDOW
TV MONITOR



NORA **RUBBER FLOOR**

CEILING FINISH



AMBIANCE CREATED THROUGH THE CEILING

**ARTWORK BY HENRY DOMKE FINE ART*

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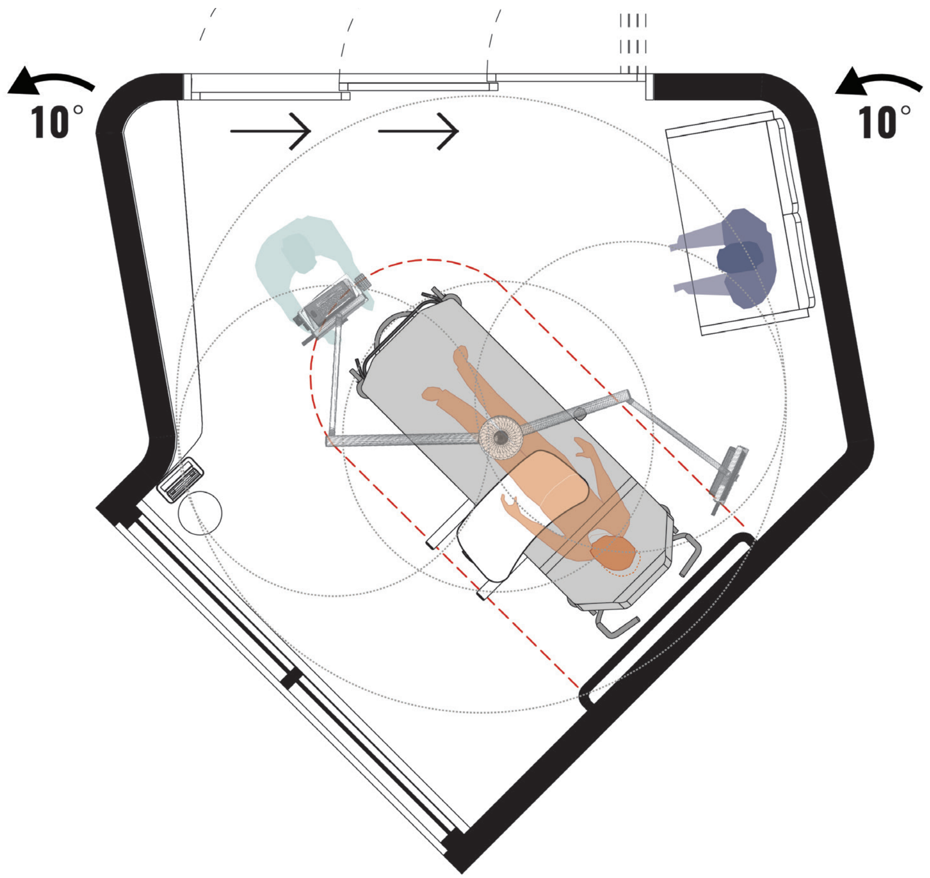
ORIGINAL DESIGN



LIMITATIONS OF THE DESIGN

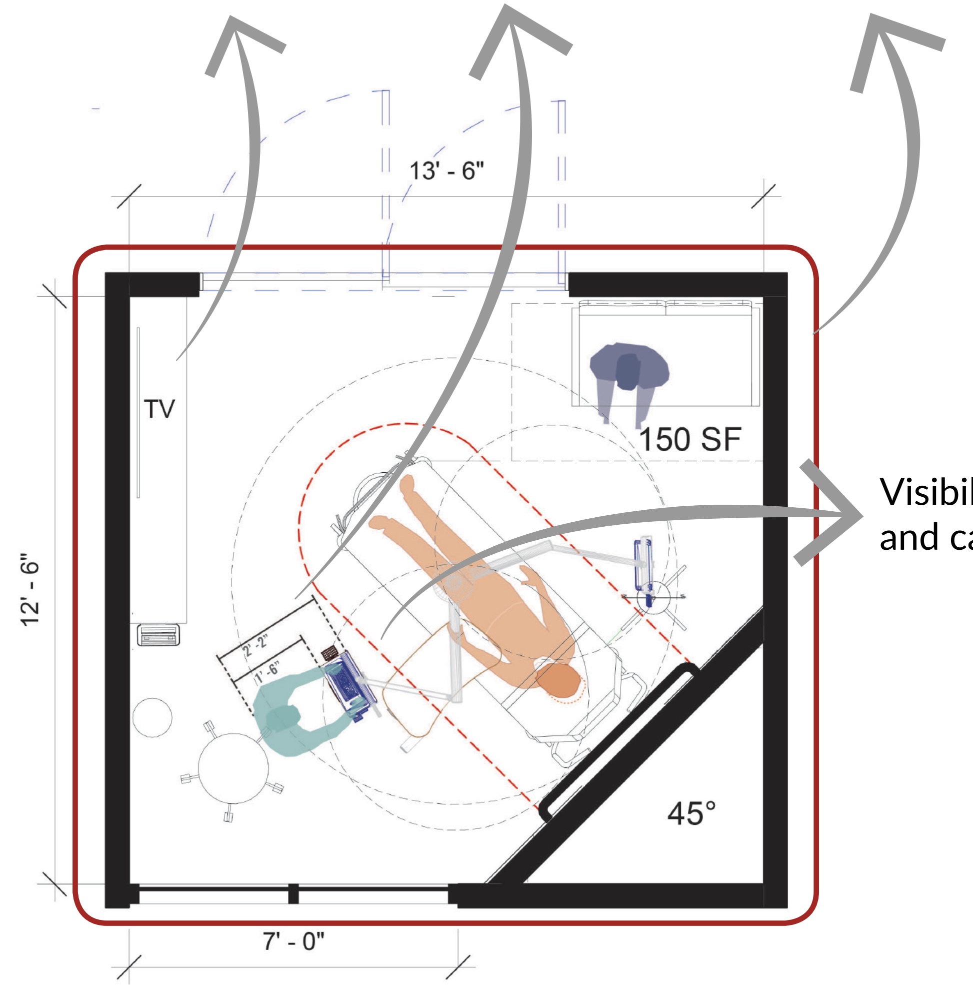
- Impracticality of construction of angled room
- Lack of space for movement near the carepartner zone

MODIFIED DESIGN

Provision of sufficient storage

Ease of movement

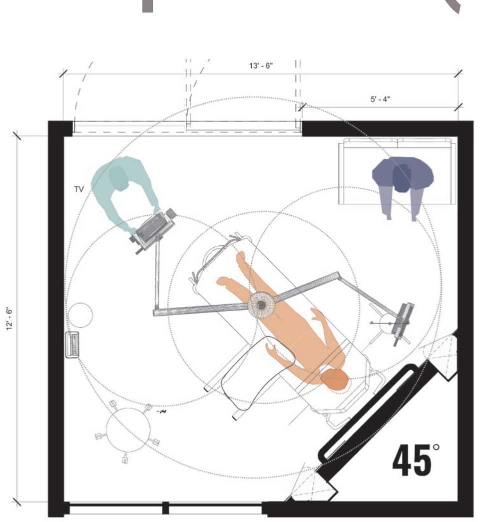
Angular to rectangular plan



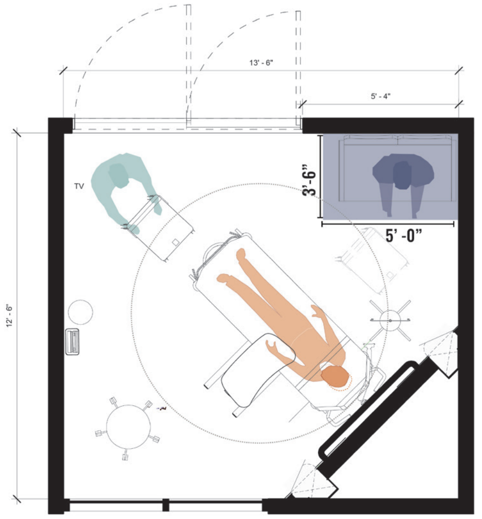
Visibility of patient and care partner

MODIFIED DESIGN | 150 SQ. FT.

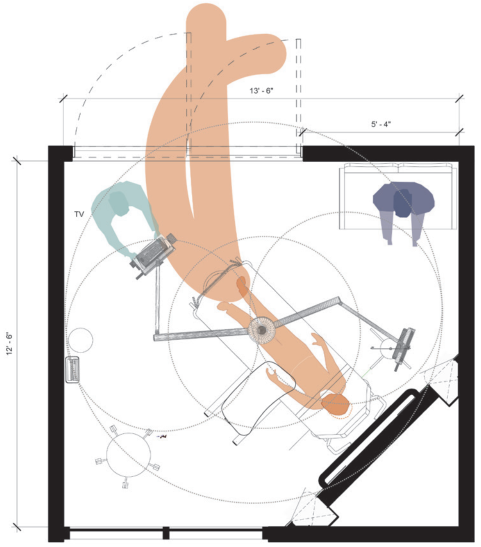
ACCESS



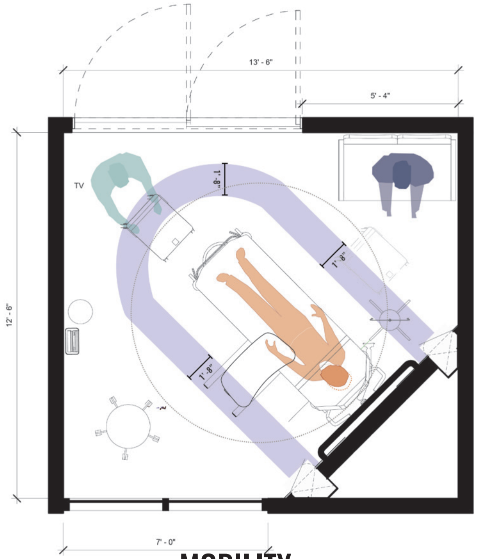
WALL TILT ANGLE



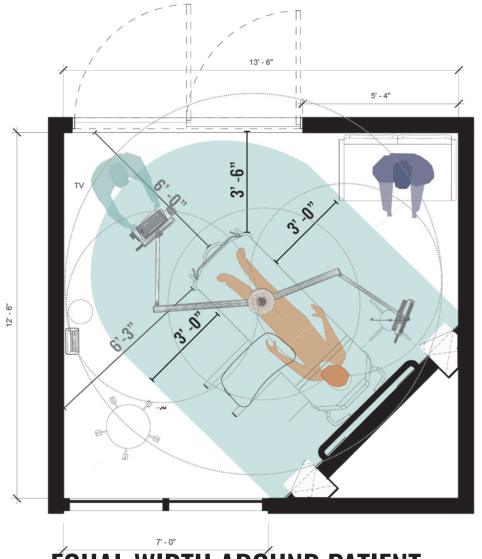
SIZE AND LOCATION



EASE OF PATIENT ACCESS



MOBILITY



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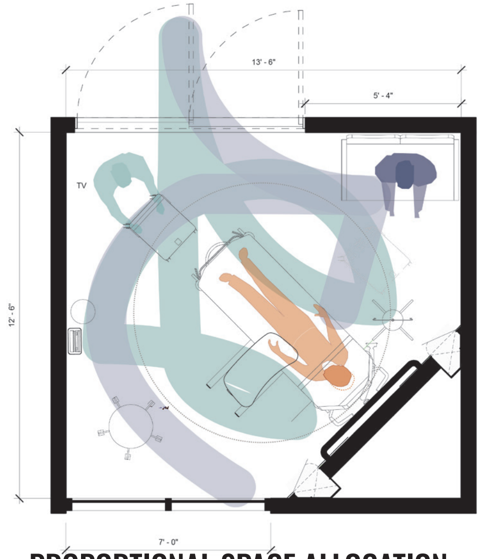

PROPORTIONAL SPACE ALLOCATION
TO SUPPORT UNOBSTRUCTED FLOW

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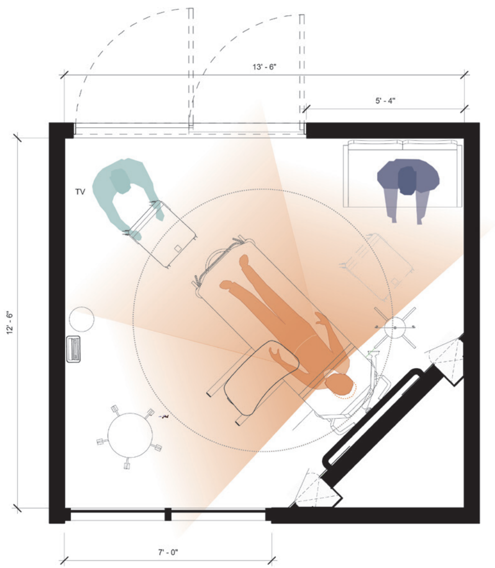
MODIFIED DESIGN | 150 SQ. FT.

VISIBILITY



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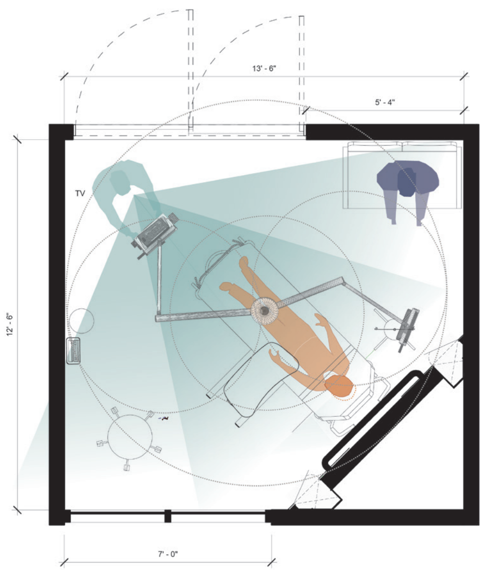

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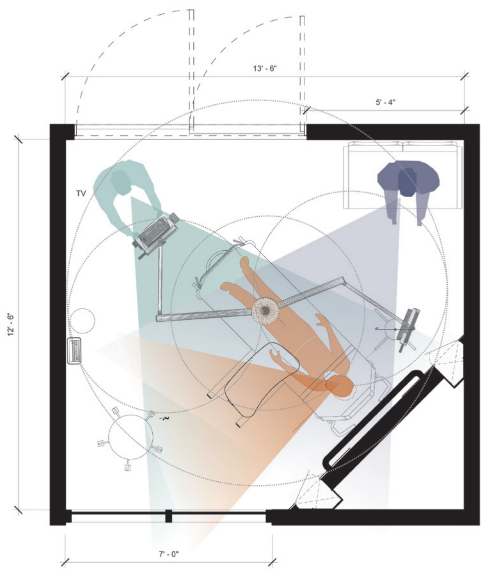
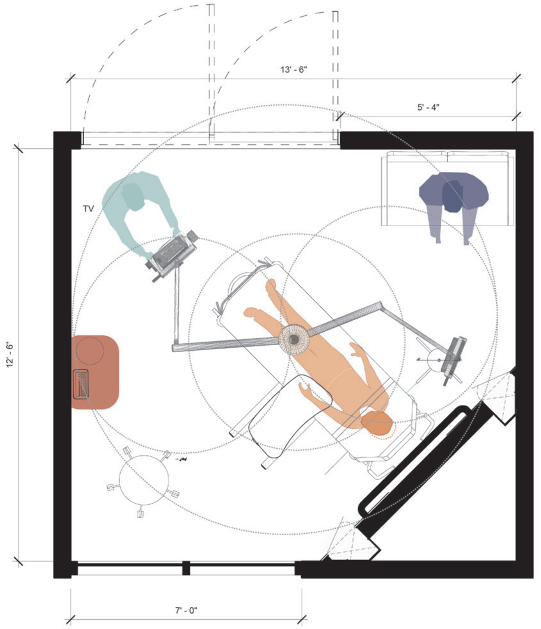


VIEW TO THE OUTSIDE

05

MODIFIED DESIGN | 150 SQ. FT

EQUIPMENT



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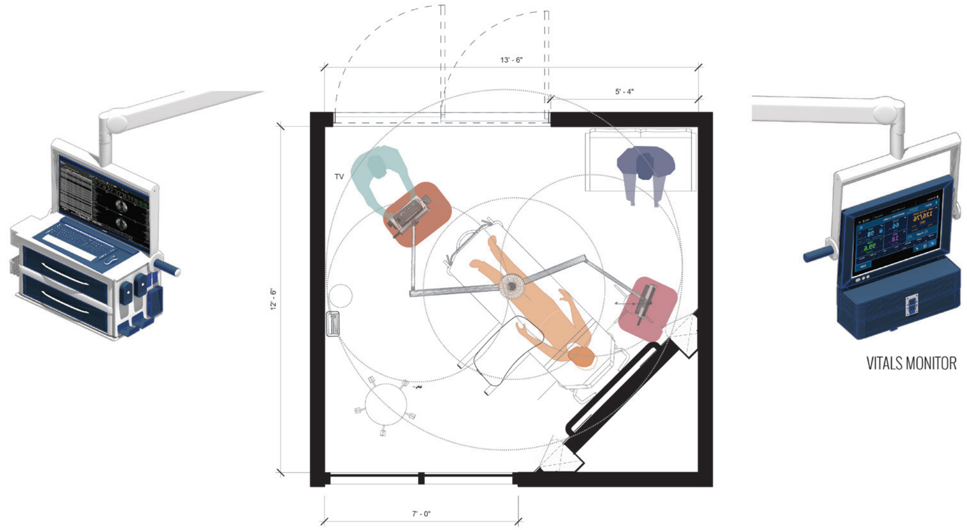

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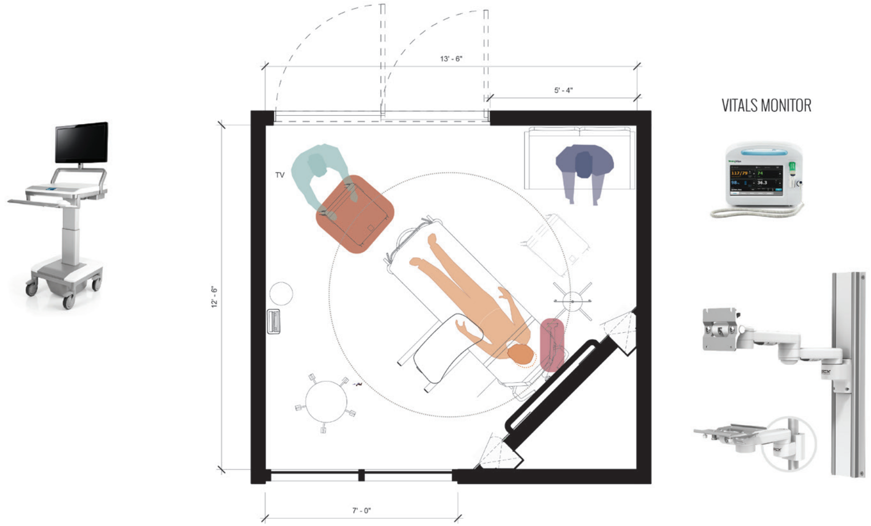

COMPUTER WOWs **MOBILITY**

NEXT STEPS

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NEXT STEPS

ONE Development of VR mock-up

Spring 2018-Summer 2018

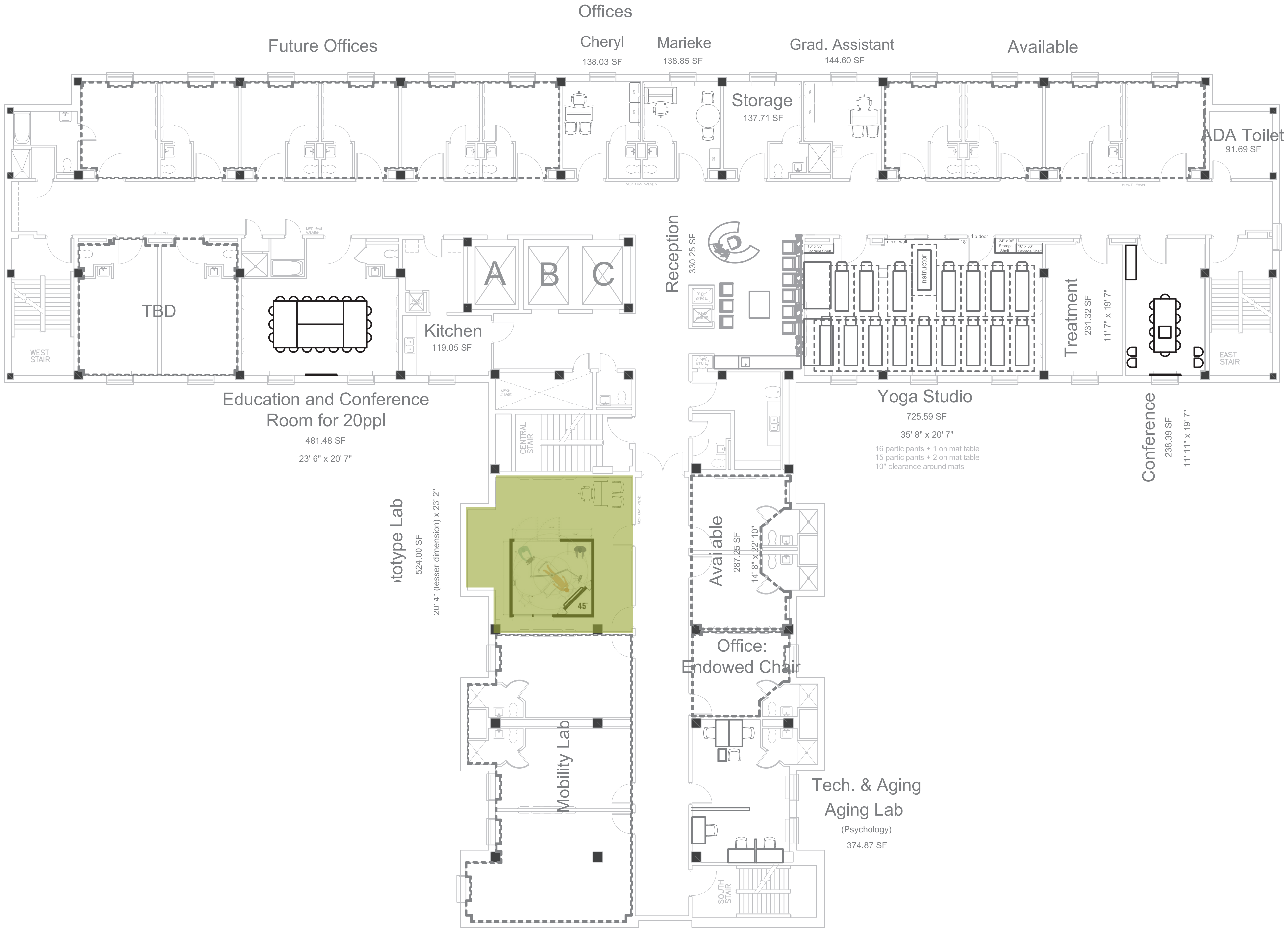
TWO Development of Physical mock-up

Fall 2019

Mock-up space under development at Oconee Memorial H

THREE Testing of physical mock-up

Spring 2020



THANK YOU !

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doi:10.1177/193758671300600206

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Time for Questions and Comments

???-!!!

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CES Reminder

The URL to the webinar survey **https://www.research.net/r/AAH1906** will be emailed to the individual who registered your site.

The survey closes on **Friday, July 12, 2019** at 12:30am ET.

For questions, please email knowledgecommunities@aia.org

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Upcoming Webinars

Date	Series	Topic
8/20	Case Study Series	Guided by Transformation: Building a Framework for a Behavioral Health Ideas
9/10	Master Studio Series	Sports & Rehabilitative Medicine
10/8	Outside the Box Series	The Impact of Art on Wellness

Dates & topics are subject to change