Oasis

Calm, Comfortable & Tranquil Design to Support High-risk Pregnancy



MS Interior Architecture + Design Michelle Rosenstein | Graduate Thesis Advisor: Nichole Mandjarov

Thank you to my parents, who supported me every step of the way during this process, especially doing the second half from home! I would also like to acknowledge my siblings, extended family and friends for always supporting my work and giving me words of encouragement.

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INTRODUCTION



"High risk pregnancy," suggests that in order to have a healthy and successful pregnancy and delivery, extra care is needed. During a high-risk pregnancy, expectant mothers and their families need extra care; a place to turn for their medical and mental needs. The current design surrounding pregnancy and childbirth suggests there is a specific need to address situations of high-risk pregnancy. The current design needs improvement geared towards revamping the birthing suite and incorporating its positive aspects into the spaces available to everyday patients, especially high-risk mothers and their families. This space must include more than just the functional spaces. There needs to be spaces for growth through community, where these women and families can come together and connect to discuss the experiences they are undergoing, compare notes about treatment options and engage in relaxation exercises. Research has shown that peer support has been proven to increase overall well-being when dealing with tough/traumatic experiences.

LITERATURE REVIEW



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Calm, Comfortable and Tranquil

Design to Support High-risk Pregnancy

Michelle Rosenstein

Thesis Literature Review

Graduate Thesis Interior Architecture & Design

Drexel University

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This thesis will explore how design can support emotional and physical needs, specifically during high-risk pregnancy. During a high-risk pregnancy, expectant mothers and their families need extra care; a place to turn for their medical and mental needs. This project will embrace and embody the qualities of calmness, comfort, and tranquility to allow families to feel supported, loved and hopeful in the care environment.

Introduction

The experience of birthing has evolved from women's bedrooms to sterile hospital rooms to fully-equipped birthing suites. Women continue to try to find better alternatives for the childbirth experience: birthing tubs, lighting, music, at home or in a healthcare setting with a doula², and those who have the means often opt for experiences that offer the luxuries of a first-class hotel. This search for better experiences suggests that an exploration of how the interior environment and design can affect the pregnancy experience would be beneficial. Women and their families need a place to turn to for medical and mental care, both inpatient and outpatient, that is designed to support needs during pregnancy and childbirth. By accommodating these needs and enhancing the birthplace experience through design elements, the space can be a safe haven relief for expectant mothers. In particular, this review of the literature and design surrounding pregnancy and childbirth suggests there is a specific need to address situations of high-risk pregnancy.

Overview of the High-Risk Pregnancy Experience

For some expectant parents, pregnancy comes with the difficult news that they are likely to have a high-risk pregnancy. The typical reaction is worry, frustration, and nervousness as this adds a degree of stress to what is already an emotional experience. "High risk pregnancy,"

¹ Jennifer Silvis, "Little Things: Designing for Labor, Delivery and Beyond," *Health Care Design Magazine*, 31 July 2015. https://www.healthcaredesignmagazine.com/projects/specialty-projects/kittle-things-designing-labor-delivery-and beyond/

² A doula is a trained professional who provides continuous physical, emotional and informational support to a mother before, during and shortly after childbirth to help her achieve the healthiest, most satisfying experience possible. https://www.dona.org/what-is-a-doula/.

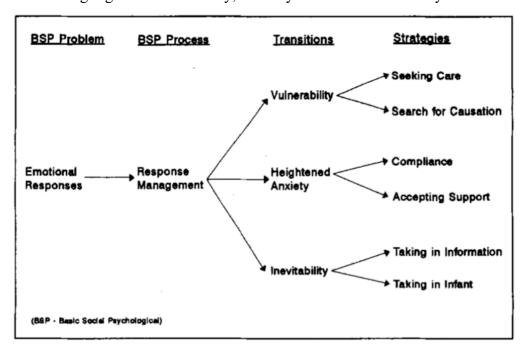
³ Liz Neporent, "Hospitals Offer First Class Deliveries to Those Who Can Afford It," *abcnewsgo.com* https://abcnews.go.com/Health/hospitals-offer-luxury-maternity-rooms-wealthy/story?id=17536894.

⁴J. A. Lothian, "Safe, healthy birth: what every pregnant woman needs to know," *The Journal of Perinatal Education*, (18)3, 48-54. Doi:10.1624/105812409X461225.

⁵ Ibid.

suggests that in order to have a healthy and successful pregnancy and delivery, extra care is needed.⁶ People who usually are classified with high risk pregnancies are teenagers, women over the age of 35, women who are over/under weight at the time of the pregnancy, women pregnant with multiples, women with high blood pressure, other health problems, or women who have had problems with a previous pregnancy. ⁷ This situation puts a woman and her family on an emotional rollercoaster, which can often manifest as depression, making it difficult to have a positive experience of pregnancy.⁸

An expectant mother at high risk is often cut off from social life. She is told she must stop working, do no heavy lifting, do minimal or no exercise, regular doctor visits/scans, and for some, only bed rest. This reduction in activity and responsibility can bring on depression, excessive weight gain from inactivity, and may affect the unborn baby.



⁶ https://www.nichd.nih.gov/health/topics/pregnancy/conditioninfo/high-risk

⁷ Ibid.

⁸ L.B. Rubarth et.al. "Women's Experience of Hospitalized Bed Rest During High Risk Pregnancy," *Journal of Obstetrics Gynecology and Neonatal Nursing*. 41(3)(May 2012):400

Deatrick describes the feelings of women in a high-risk pregnancy as lonely, bored, and powerless. ⁹They struggle with separation, emotional issues, and family troubles. They are worried about the survival of the infant, their own health outcomes, their healthcare, and their children at home. These women suffer through three stages of emotional response related to the progression of events. The first being vulnerability, which is realizing the pregnancy outcome will be of high-risk. The next phase is heightened anxiety, in which the birth mother comes to the conclusion that she can no longer partake in normal day to day activities, due to medical symptoms. The last phase is inevitability, through which the new mother realizes the situation and accepts it. Many times, this final phase is accompanied by taking in the newborn through the senses of touch and sight. In summarizing the mother's view, they feel that they are at war with their high-risk pregnancy. They are in a never-ending battle with their emotions, while fighting for the lives of their unborn child every day.¹⁰

A high-risk pregnancy ties the mother to her prenatal care. Generally, high risk pregnancies result in increased visits to the doctor, additional screenings, fetal monitoring, and at times home monitoring for signs and symptoms of complications. Often these pregnancies result in preterm births, c-sections, and or extended hospital stays before delivery. ¹¹ These women don't usually experience the "birth plan" with the overnight bag filled with lovely nightgowns, new slippers and body lotions from their home collections. Instead, they can be at the doctor one minute and told to get to labor and delivery at a moment's notice, even months before their due date. Others can wake up soaked in amniotic fluid rushed to the hospital triage section.

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⁹ G.C. McGain, and J.A. Deatrick, "The Experience of High-Risk Pregnancy," *JOGNN: Journal of Obstetric, Gynecologic and Neonatal Nursing*. 23(1994):5

¹⁰ Rubarth, "Women's Experience of Hospitalized Bed Rest During High Risk Pregnancy."

¹¹ McGain, and Deatrick, "The Experience of High Risk Preganancy,"7

These experiences are not joyful. They are frightening and can have awful results for both the mother and the unborn child. As one woman put it:

All I could think was: It's too soon. Too soon. It went on and on like a loop in my head. I called my husband, who met me at the hospital... no fancy face creams, silk kimono, or anything else everyone urged me to bring to ensure being ready for that first, "beautiful," birthing moment. Instead we grabbed a toothbrush at the nearby CVS and that was it.¹²

Healthcare Environments for Pregnancy and Birth

For most pregnant moms, their birthing stay is usually their first exposure to a hospital as an inpatient, but this is often not the case in high-risk situations. A high risk patient is often first exposed to the maternity healthcare environment through an emergency admission to the hospital followed by a long-term stay on bed rest. During this time, patients are monitored and hooked up to I.V.s with medications for their health as well as the health of the fetus. These hospital stays are focused on bed rest, trying to maintain the health of the baby and keeping the pregnancy intact for as long as possible. It is a time of high stress accompanied by the boredom of bed rest and usually a preterm delivery. This can be followed by Neonatal Intensive Care for the baby, surgeries, and extended hospital stays for the infant, and in some instances death. One website, High Risk Hope, contains numerous narratives which relate these experiences as well as the positive influence of this organization.

Current birthing suites and maternity units lack important design elements, especially features that provide support for mothers and high-risk pregnancies. These units are "missing many opportunities to create a calming ambience that supports the physiology of labor and

¹² Christene Barberich, "Birth Plan Blown to Bits," refinery29.com.

¹³ Silvis, *Little Things*: Designing for Labor, Delivery and Beyond.

¹⁴ https://www.highriskhope.org/patient-resources/patient-stories/

birth,"ⁱ¹⁵ and "fall short of what is needed to support the ongoing health and wellbeing."¹⁶ The current conditions are often loud, cold, and sad and depressing in their design. During birth a woman's body is invaded with intravenous drips, stirrups, cold metal instruments and gloved hands used to determine the status of the delivery.¹⁷ Birthing suites are often only provided for those who can pay extra, while those without means deliver in standard delivery rooms and then are relegated to single or double rooms that are average. ¹⁸ Many times, hospitals make the birthing process an in and out type of situation. Hospitals are always on the move to continue to open beds and have patient overflows.¹⁹

A number of people have advocated for a more holistic approach to the birthplace setting. In a recent workshop report entitled, "Birth Settings and Health Outcomes: State of the Science," it stated, "birthing centers and home births appears to be associated with fewer interventions and more favorable care practices. Birth center settings do not compromise any measured outcome and, in fact, favor several outcomes." Esther Sternberg, a doctor versed in health and wellness suggested that:

a person's physical environment can influence health via the body's stress response system and expressed hope that a greater understanding of the brain-immune connection can help designers build healthier, safer birth environments that support both mental and physical health of the mother, fetus, and child.²¹

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¹⁵ Bec Jenkinson, et. al, "BirthSpace: An Evidence-based Guide to Birth Environment Design," *Queensland Centre for Mothers and Babies*, 2014. Espace.library.uq.edu.au.

¹⁶ Maralyn Foureu, "Salutogenic Design for Birth," *Health and Well-being for Interior Architecture* (New York: Routledge) 108

¹⁷ Gertrud M. Ayerle, "Effects of the Birthing Room Environment on Vaginal Births and Client-Centered Outcomes for Women at Term Planning a Vaginal Birth:BE-UP, a multicenter randomized controlled trial," *Trials*, vol.19,1(Nov. 19, 2018):641.

¹⁸ "Hospital or Birthing Center," https://cookchildrens.org/newborn/childbirth/Pages/birthing-center-or-hospital.aspx.

^{19 &}quot;The Impact of Design on Clinical Care in Childbirth," MASS Design Group, 2017,

https://massdesigngroup.org/sites/default/files/file/2017/170223_Ariadne%20Report_Final.pdf.

²⁰ "An Update on Research Issues in the Assessment of Birth Settings: Workshop Summary: Birth Settings and Health Outcomes: State of the Science," nap.edu/read/18368/chap/5(2013):48.

²¹ Ibid.49

In one example, the St. Paul Birth Center, holistic concepts are accompanied by yoga, nutrition, and wellness set in relaxing exercise rooms, and relaxation rooms set with mood music, low lighting, or garden views. ²²

Healthcare Meets Hospitality

Hospitality design has long been concerned with feelings of comfort and a sense of home—healthcare is now also moving in that direction. ²³To make patients feel at home—and for pregnant women in particular—the design of the unit should provide the women with a supportive and comfortable environment. Design concepts in connection with a better maternity environment have encompassed more thoughtful sensory aspects, enhanced space requirements, hiding of clinical components, and additional spaces for interaction with families. ²⁴ A study was conducted in Denmark during 2013 which examined the benefits of sensory delivery rooms. In this study, the delivery rooms contained programmable calming lights with low irradiance and a wall-sized screen which broadcast soothing artwork and sound effects. The result was fewer c-sections and a decrease in labor inducing drugs. ²⁵ This result suggests that it could be beneficial to incorporate into the design calming agents which appeal to an individual's senses, such as relaxing scents of lavender, lemon, or jasmine, or a music selection which appeals to the individual patient. Displays of greenery, sunsets, or ocean scenes accompanied by calming sound effects would enhance this experience as well. CITE? Additionally, recognizing the importance

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²² https://themotherbabycenter.org/locations/st-paul/

²³ Silvis, "Little Things: Designing for Labor, Delivery and Beyond."

²⁴ Ibid.

²⁵ Tine Wronding, et. al, "The Aesthetic Nature of the Birthing Room Environment May Alter the Need for Obstetrical Interventions," *Scientific Reports* 9, 3030(2019) nature.com/articles/541598-018-36416-x.

of space in this process, the Facility Guidelines Institute's Guidelines for Design and Construction of Hospitals and Outpatient Facilities has set forth a minimum square feet for labor and delivery rooms plus a required amount of square feet for a patient bathroom with the intent of creating a more spacious experience. ²⁶ While standard hygiene and sterility are necessary in healthcare and a required part of the birthing process, providing for the comfort of the mother is essential to a good delivery. ²⁷ Having a birthing room feel as though it is a hotel room supports comfort and allows a woman to feel relaxed, providing more positive health outcomes. ²⁸ It is important to create an anxiety-reducing atmosphere, implementing an environment that feels like home, more residential then institutional. ²⁹

Facilities such as the St. Paul Birth Center have demonstrated that other components such as family rooms, gardens, chapels and quiet rooms are important for the family as a whole in the birthing process. CITE Roger Ulrich describes the results of a hospital garden benefitting pregnant women and describes their experiences. This garden gave women a sense of relief and a little bit of a community within the intimidating hospital and the overwhelming birth process. Seeing other pregnant mothers and their families and being able to relate made women feel more comfortable and confident in their birthing situation. Having these special features in design can help to make or break the birth experience and be a stress relief from the mental and physical trauma. Ulrich describes how this garden becomes a healer within itself, as a woman who went three days without the garden experienced depression and pain until back in the garden. Giving

June 2017.

²⁶ Silvis, "Little Things: Designing for Labor, Delivery and Beyond."

²⁷ Silvis, "Little Things: Designing for Labor, Delivery and Beyond."

²⁸ Jenkinson, et. al, "BirthSpace: An Evidence-based Guide to Birth Environment Design,"

²⁹ Gertrud M. Ayerle, et. al. "Effects of the Birthing Room Environment on Vaginal Births and Client-Centered Outcomes for Women at Term Planning a Vaginal Birth: BE-UP, a multicenter randomized controlled Trial."
³⁰ Ulrich, Roger, "The Impact of a Hospital Garden on Pregnant Women and Their Partners." The Nursing Center, 7

women a special outlook along with the birthing experience will go a long way. It is necessary to have programs in place to help the women cope, which can be done through design. Small details within the space to make it feel like a luxurious experience and produce positive results. CITE? According to Bec Jenkinson, "There is growing evidence that birth spaces can be designed to feel safe and calming, and that these are associated with reduced intervention rates, good clinical outcomes and positive birthing experiences for women."³¹

Design Considerations

In moving forward into the Thesis Project, it has been noted that the architecture and interiors of a space must support the people involved in order to achieve success, comfort, and a positive outcome. In this instance, the interior space must become an ultimate safe haven for potential new mothers. The current design needs improvement geared towards revamping the birthing suite and incorporating its positive aspects into the spaces available to everyday patients, especially high-risk mothers and their families. This space must include more than just the functional spaces. There needs to be spaces for growth through community, where these women and families can come together and connect to discuss the experiences they are undergoing, compare notes about treatment options and engage in relaxation exercises.³²

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³¹ Jenkinson, "BirthSpace: An Evidence-based Guide to Birth Environment Design, Queensland Centre for Mothers and Babies."

³² An example of this experience is the WakeMed North Family Health and Women's Hospital: "The new hospital combines advanced technology and exceptional providers with a hotel-like, environmentally friendly design, creating a tranquil space with large, private rooms alongside amenities tailored to women and families. Amenities and specialty offerings will include 24-hour room service dining; in-room massage therapy and eco-friendly spa products; flower service; in-room Wi-Fi and video connections for the family; specialized infant/family photography and a "welcome" gift bundle and a specialty women's gift shop."

The first aspect that should be addressed is designing for a relaxing environment.³³ One example of that is the St. Paul Birth Center in Minnesota. This is a separate facility that is collocated with a local hospital. It is strictly for expectant mothers and upon entrance looks like a high-end hotel lobby. It has a list of amenities which include a private bathroom, refrigerator, and pullout couch for your partner. Rooms include a birthing tub and a warming station for baby which will be used after delivery in the patient's room. Restaurants are located on site, as well as an interfaith chapel, and family relaxation rooms. There is also a room for postpartum women who have experienced still births.³⁴

Silvis, discusses more thoughtful design in her article, "Little Things: Designing for Labor, Delivery and Beyond." She points to the importance of designing a relaxing environment by masking the clinical devices behind attractive cabinetry, bathrooms with a barn door, interesting art, and other components that the pregnant women would appreciate.³⁵ In agreement with this concept is Jenkinson who contends that, "home-like environments consistently show improved clinical outcomes for women and babies."³⁶ Foureu, does not subscribe to the "whole environment" being important, but rather focuses on the space and place for birth.³⁷ She feels that this area should be the focus of the design and appeal to fostering the health and wellness of the mother and child.

This thesis will explore how settings like the St. Paul Birth Center concept can positively influence the experience of high-risk pregnancy. While high-risk pregnancy has many stressful aspects, including repeated prenatal visits, extensive testing, extended hospital stays, preterm

³³ Silvis, "Little Things: Designing for Labor, Delivery and Beyond."

³⁴ www.themotherbabycenter.org/locations/st-paul/dining-accommodations.

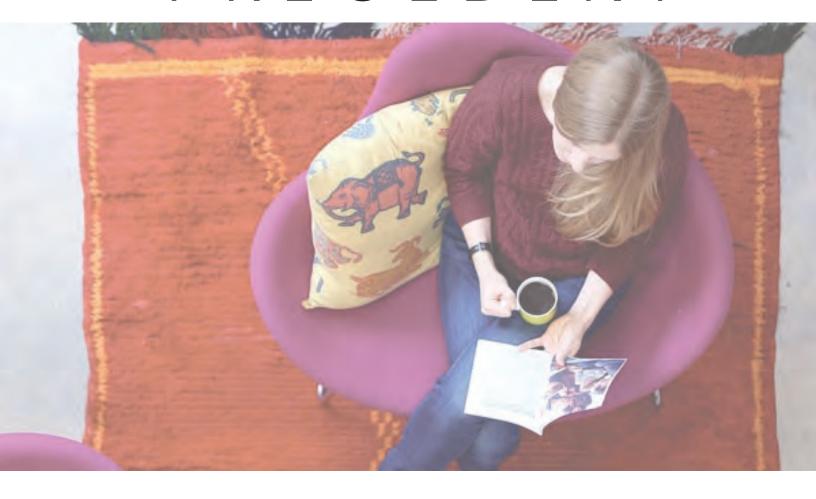
³⁵ Silvis, "Little Things: Designing for Labor, Delivery and Beyond."

³⁶ Jenkinson, "Birth Space: An Evidence Based Guide to Birth Environment Design."

³⁷ Foureu, Maralyn, "Salutogenic Design For Birth," Health and Well-being for Interior Architecture, (2017)110.

births, NICU stays and sometimes still births, a tranquil or calming design approach to these stressful experiences can better support these pregnancies.

PRECEDENT



Maggie's Centre by Norman Foster







EMOTIONAL SUPPORT



SOCIAL SUPPORT







Source: maggiescentres.org

The first Maggie's Centre opened in 1996, build around the belief that people should not "lose the joy of living in the fear of dying." The multiple centers provide free practical, emotional and social support to people with cancer and their families and friends. Activities include receiving advice about the benefits of eating well, spaces to talk with qualified experts for emotional support, places to meet others and places where you can self reflect. The Maggie's programs of support have been shown to strengthen the physical and emotion wellbeing of people with cancer and their families.



Maggie's Centre by Norman Foster is an interior that embraces the positive impact on well-being. This place is like an oasis, an escape from the everyday life and stresses of living with cancer. Through the attention to detail, the interior/exterior connection, and the quality of the design, this precedent captures the atmospheric qualities that inspire. The design creates an atmospheric quality that is calm, refined, tranquil, quiet, simple, honest and light. Through the design of the outdoor garden, the large scale open kitchen, and multiple private and public spaces, this interior supports the people who need it the most. People do not feel as though they need to put on a brave face here and it becomes a place where they forget for a while and feel normal. My thesis will embrace and embody these qualities in order to make women and their families feel supported, loved and hopeful through the design of the space.







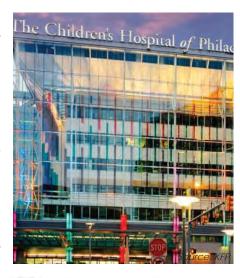


CASE STUDIES



The Children's Hospital of Philadelphia: Special Delivery Unit

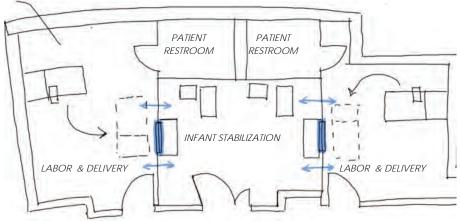
I was able to tour the SDU to understand the care for both patients and families. The SDU opened in 2008 and since then has delivered over 4,000 babies. While the mothers are typically healthy, babies born at CHOP usually undergo fetal surgery or need immediate specialized care or surgery after birth. The SDU is able to care for 13 women at once and support their families throughout the space.











The key design element that struck my eye was the unique "window," in each labor and delivery room. Once a woman births her child, the window is able to open up and have direct access to where her child is being treated. Each room has the clearance to allow the mothers bed to be rotated and butt up against the window. This allows for the mother and child to connect during this time. This feature is also key for families, as they do not need to neglect mother or child and can support both at once. This system is extremely important for both baby and mother wellbeing. This design element is so special to the SDU.

The overall unit had an organized flow in which a woman and her family would move from one place to the next. The finishes had a very warm feel, using soft wood and light blues and greens throughout the spaces. The patient rooms were extremely spacious, and the furniture took a good approach to hiding wires as well as were all on wheels. The unit lacked areas for families. There was only one waiting area which contained everyone, which was far away from most patient rooms. I also noticed that the nurse station was very set back from the patient rooms and when sitting at the station there was no direct access

Key Informat Interview

SDU Člinical Nurse Expert

What warrants a woman having to come to this space? How long do they usually stay?

When a woman comes here, normally she is healthy. It is her child that is not. The purpose of the SDU is that as soon as the child is born, he/she can be taken directly into care. Woman can come here for several reasons: to give birth when they are ready, for fetal surgery or for checkups. Because of those several reasons, there stays can typically vary.

How many occupants can the space hold?

There are 13 ante/post-natal beds on the unit.

What departments make up your facility?

There are several people involved in the birthing process. There are midwives, OB's, maternal fetal medicine experts, child life specialist, social workers, psychologists, fetal coordinators, ultrasound technicians, nurses, surgeons, clinical nurse specialist, nurse educator & a nutritionist. These people are just within our unit. Throughout the CHOP entity there are several different groups these women and their families utilize, like the finance department, security, cafeteria staff, maintenance staff, etc.

What type of workspaces do these employees require?

The types of spaces for staff on our unit consist of offices, nurse stations, break rooms/kitchenette. staff restrooms. The staff also need access to med rooms, exam rooms, viewing rooms, clean/soiled rooms, consult rooms. There are also types of patient rooms for both mothers, babies and family.

Explain the step by step process of someone checking into the unit.

When a woman comes, she will usually check in at the main hospital desk and then be escorted to our units waiting room. If she is coming for a regular checkup, she will first be escorted into an exam room for tests. From there she will be sent to the waiting area while we wait for the results. The waiting area has comfortable seating and we have a stand for coffee, water and bagels while people wait. We also have an area with toys and books for woman who may have children with them. There is also a staff member designated to wait with them while mothers can get checked out. Once the test results are finalized, we usually bring the woman and her family into the consult room which are extremely private. Once they have the information needed to move forward, they are checked out and plan their next appointment.

Are there any safety or security issues?

One thing that has always concerned me is that the nurse station is very far from the entrance doors. That always makes me nervous because no one has direct site access to the doors, not even patients.

In terms of design, how does your facility differ than other birthing units?

My favorite part about our facility is our window units. They make us so unique and special. In each labor and delivery room, there is a small window with a shade down. When you lift the window there is a frosted glass. The window is operable and when opened what a beautiful surprise! You open it to see your child being taken care of in the next room. Your child shares this room with its neighboring mother. Every time a mother sees this feature, they are so happy. A lot of times because these babies need urgent care, the mother cannot see her baby for more than a few minutes at first sight. With this window system, once the baby is stable, we can open the window in order for the family and mother to be able to see the child. This is always such a special moment. Our rooms are spacious enough that once the mother is stable, we can swing the bed around to be butt up against the window. This makes the mothers feel close to their child even though they are unable to be with them. This also allows family to be with both the child and mother at once, so neither has to feel alone.

If money were no object, what would the facility include or not include?

Some of the rooms we have are doubled, so I would want the facility to be all individual rooms. Right now, there is only one waiting space and it is only close to one wing of our unit. Lastly, I think it would be really great to be connected to a hotel in some way so that family members can get some rest in a nicer environment.

Lifecycle Womens Care: The Birth Center

The Birth Center at Lifecycle Woman Care provides a safe, comfortable, out-of-hospital birth experience that is a natural and empowering experience. Following the midwifery model of care, the facility is committed to supporting, educating and empowering an experience that is right for the woman and her family. The center is coming up on their 13,000 evidence based birth.



While the center focuses on their clients. their classes are open to the public (for those who can pay for them.) Their support groups are FREE and open to the public. The center stresses the support of all woman. They believe that having continuous support during pregnancy allows for better outcomes, shorter labor and a decrease of negative feelings. This support can come from family but also from staff, by giving you the time you deserve during your time at the center. They stress non-pharm relief methods, stressing movement and breathing as well as mindfulness meditation. In order to have a successful pregnancy, women need to have enough oxitocin, the design of the space can allow for this production, acting as a space like atmosphere. By using a holistic approach, stressing a nurturing environment, women feel safe, comfortable & supported.







Key Informat Interview

Program Coordinator

What warrants a woman having to come to this space? How long do they usually stay?

The Life Cycle Womens Care Center is a freestanding birth center. Women can come here from the moment they are pregnant until they deliver their child. The center focuses on natural births and partners with the hospital nearby when necessary. When women and their support come for checkups, they will typically be there for 30 minutes. During labor, they can be there for about 2 days leading up to delivery and once their child is delivered, they will leave the facility within 12 hours or be transferred to the hospital. While we do have our clients, the birth center classes, and support groups are open to the public. The support groups we offer are completely free in order to be accessible to every person. The class sessions are also offered for other supports, not just the parents. There are classes for grandparents, siblings, extended family, just for dads. It makes this experience well rounded for everyone.

How many occupants can the space hold?

There are 3 birthing suits, 4 general exam rooms, a classroom space, dining room, living room, kitchen as well as offices and a conference space.

What departments make up your facility?

The facility is made up on certified nurse midwives, nurse practitioners, registered nurses, as well as admin.

Explain the step by step process of someone checking into the unit.

When a woman comes here, there are three reasons she would be coming. The first reason is just for a general exam, in which she checks in, heads to the exam room, then the consult room and heads home. This appointment will usually be about 30-45 minutes. The other reason to be coming to the center is for a class. The birth center offers multiple educational opportunities to learn about so many aspects of the pregnancy experience. The final reason to be coming to the center would be for the delivery. In this case you would come when you begin early labor and remain there until your child is delivered. In some cases, women may have to be transferred to the hospital before, after or during delivery.

In terms of design, how does your facility differ than other birthing units?

The facility is small and intimate, your nurses know you throughout the whole process. We have rooms that reflect a real home dining and living room. The environment feels like you are in the comfort of your own home. Compared to hospital environments, our space is warm, open and comfortable, rather than a cold and sterile hospital. We are run on a Midwife Model of Care, meaning that this is unlike hospital facilities. We stress the freedom of movement, and no women gets hooked up to wires. This freedom of movement allows women to feel their birth in places like the garden, giving them a different experience.

PROGRAM



PROGRAM PROPOSAL:

A hospital off site offering inpatient and outpatient care for high-risk pregnancy patients and their network. The space will consist of patient care with a stress on community and peer support, making this process a journey, and improving patient and family wellbeing during pregnancy.

PROGRAM GOALS:

The overall goal of the program is to create an environment that allows for HEALING both PHYSICALLY & MENTALLY fosters OPEN, HONEST & REAL connections promotes feelings of CALM, COMFORTABLE & TRANQUIL encourages SUPPORT of one another

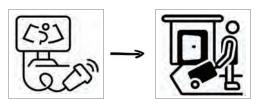
USER ANALYSIS

TYPES OF PATIENTS

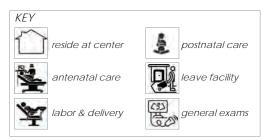
LIVE IN PATIENTS | Extreme high-risk | Require constant care/monitoring Length of stay: ranges from 1 month to 9 months + postnatal care



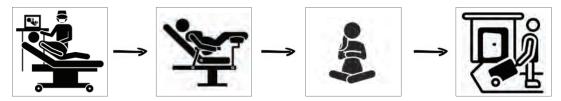
OUTPATIENTS | Average high-risk | Require weekly or biweekly care/monitoring Length of stay: 1 day a week until ready to deliver



outpatients become inpatients when ready to deliver



INPATIENTS | Average high-risk | Ready to deliver/be induced for labor Length of stay: 1 week maximum for antenatal care + labor & delivery + postnatal care



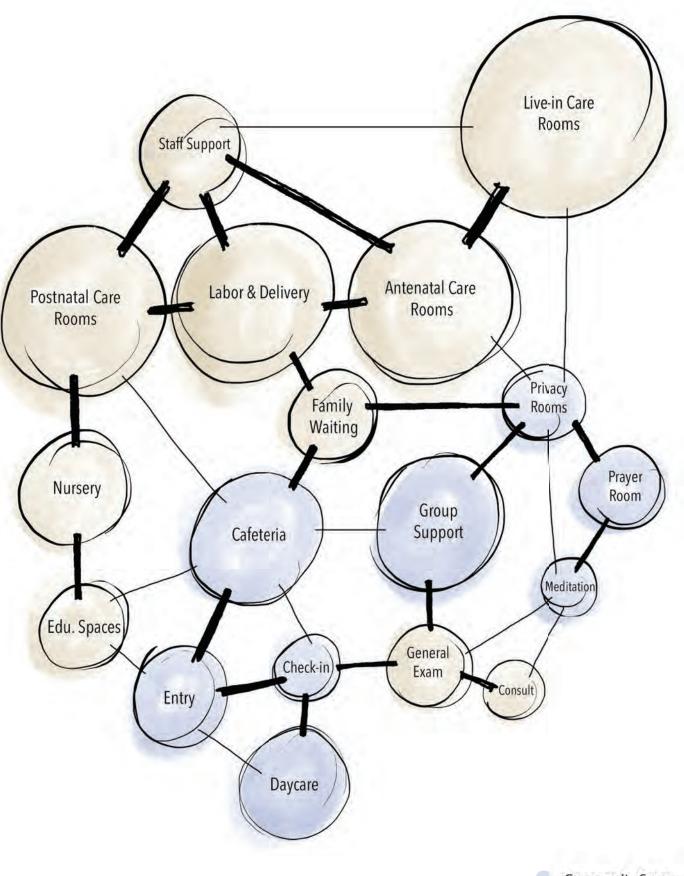
Types of Users to Design for:



PROGRAM SQUARE FOOTAGE

PATIENT SPACE	NSF	QUANTITY	TOTAL SQFT
Antenatal Rooms	380	8	3040
Postnatal Rooms	380	8	3040
General Nursery	480	1	480
Formula/Feeding	150	1	150
Labor & Delivery Suites	420	4	1680
General Treatment Rooms	120	8	960
Live-In Guest Rooms	800	8	6400
Consult Rooms	150	2	300
FAMILY SPACE	NSF	QUANTITY	TOTAL SQFT
Waiting Spaces	100	3	300
Daycare	700	1	700
Lounge	200	3	600
Kitchenette	200	1	200
Counseling	150	1	150
COMMUNITY SPACE	NSF	QUANTITY	TOTAL SQFT
Entry / Check-in	200	1	200
Private Support	100	5	500
Group Support	500	1	500
Cafeteria / Dining	500	1	500
Educational Spaces	300	1	300
Prayer Room	150	1	150
Meditation Room	80	2	160
Seminar / Event Space	600	1	600
STAFF SPACE	NSF	QUANTITY	TOTAL SQFT
Offices	100	8	800
Lounge	300	1	300
Locker Room	300	1	300
On-call Rooms	150	1	750
Nurse Stations	120	5	600
Kitchenette	120	1	120
Touchdowns	50	8	400
Conference Room	250	1	250
OTHER	NSF	QUANTITY	TOTAL SQFT
Clean Rooms	100	3	300
Soiled Rooms	100	3	300
General Storage	200	7	1400
Laundry Services	200	1	200
Linen Storage	200	1	200
Housekeeping	200	1	200
Restrooms	70	12	840
Med Rooms	100	3	300
			

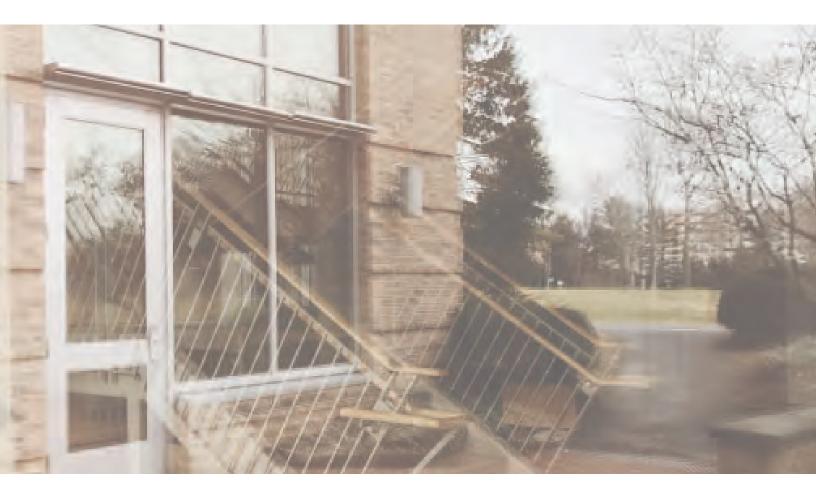
TOTAL SPACE	TOTAL SQFT
Total	28,170
+ 35% Circulation	9,859
TOTAL SQFT	38,029



Community Spaces

Patient Spaces

SITE ANALYSIS



SITE REQUIREMENTS:

adjacent to a HOSPITAL
accessible by PUBLIC TRANSPORTATION
recessed in NATURE
NOT seen as an INSTITUTION



Wynnewood, Pennsylvania is one of many neighborhoods along the historic Pennsylvania Main Line and is home to institutions such as the Lankenau Hospital and Friends' Central School. In the 1920's, Wynnewood architecture took a turn to a country style because it became a space outside the city people were drawn to. These country style homes and buildings became a sense of refuge, being made with stone and wood. The roofs of most buildings in Wynnewood really drive this idea home, being gable or hipped roofs with traditional shingles. Today, most of Wynnewood remains in that country style of architecture but tying in the modern. My site, the Fannie Cox Center at the Friends' Central School embodies that. Its two pitched roof structures being interconnected by a curtain wall facade allows for a beautiful blend of ideas.



Having an adjacent hospital is key to this thesis project. Lankenau Medical Center is an acute care hospital and medical complex located just outside the western city limits of Philadelphia on a 93-acre campus in Wynnewood, Pennsylvania. The center is right across the way from the Fannie Cox Center. The hospital became part of Main Line Health in 1985. Lankenau Medical Center is devoted to the health and well-being of the community, with a founding mission to serve all those in need. Its continued dedication to service, compassionate patient care, and superior clinical programs make Lankenau a destination hospital. The hospitals small maternity unit fosters this same idea. Their highly skilled caring team is fully capable to address high-risk concerns for both mothers and babies.

FANNIE COX CENTER

1101 CITY AVENUE | WYNNEWOOD, PA 19096



Friends' Central School is a Quaker school which educates students from nursery through grade 12. The school was founded in 1845 and today it has an enrollment of more than 800 students from Nursery to grade 12. The school encompasses three divisions: Lower School (nursery through 5th grades), Middle School (6th through 8th) and Upper School (9th through 12th). The Middle and Upper Schools share their campus, and the Lower School occupies its own site. Quaker values such as community, service, equality and integrity are all incorporated into student life. Located on the middle/upper school campus is the Fannie Cox Center. Completed in 2003, the classrooms were designed to maximize natural light and provide both classroom and lab space. Also, in the space are the reading room, seminar room and lecture hall, providing areas for students and faculty to coexist outside the classroom in both a formal and informal setting.

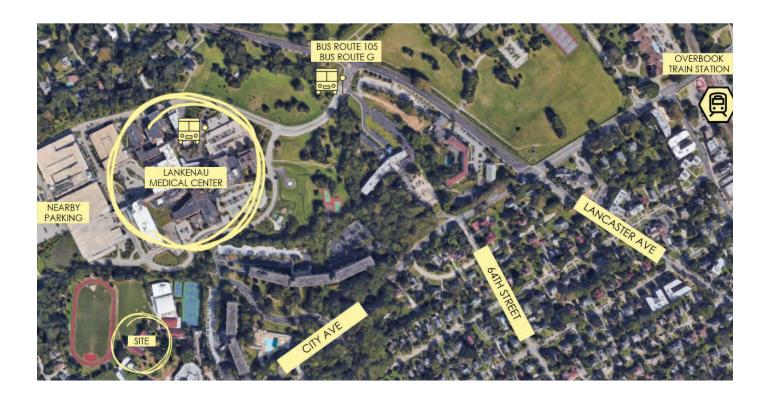






To fulfill the connection between site and hospital, I am proposing the addition of a street & walk through connecting the two places, to be further developed. This will allow for a meaingful procession rather than a drive on a highway. This addition will serve as direct access to either location in a time efficient and significant manner.





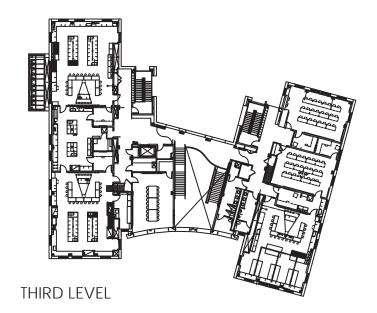


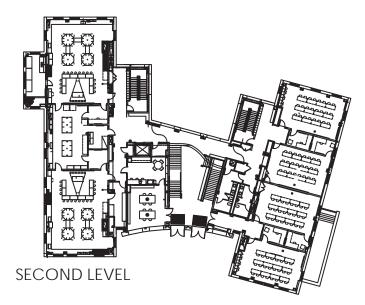
The site is accessible by public transportation stops of the Overbrook Station as well as the 69th Street Transportation Center. The partnering hospital also provides nearby parking, all in which leads the user directly to the site.

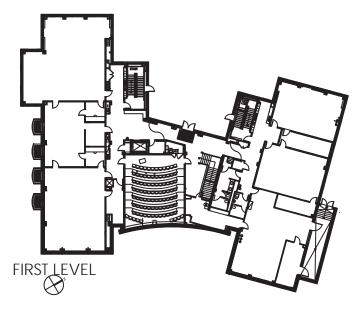


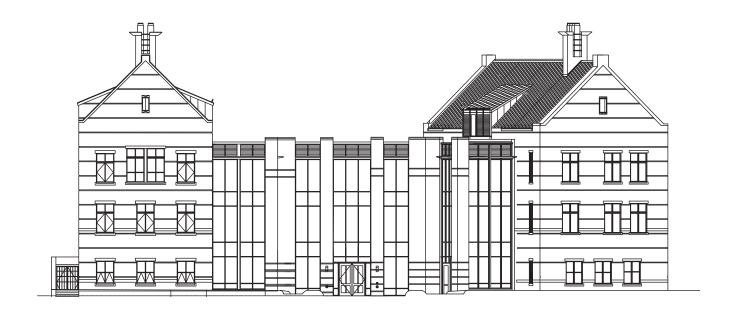
he sun study allowed for the understanding of where the natrual light will be itting the building. Because of the grand curtain wall on the north and south che building, as well as numnerous windows along west and east, natural ligh flood in. The diagram includes photos of the building to allow for an inderstanding of window conditions. It also includes surrounding landscape to cknowleadge how nature plays its part in lighting and shading the building.

SITE DOCUMENTATION









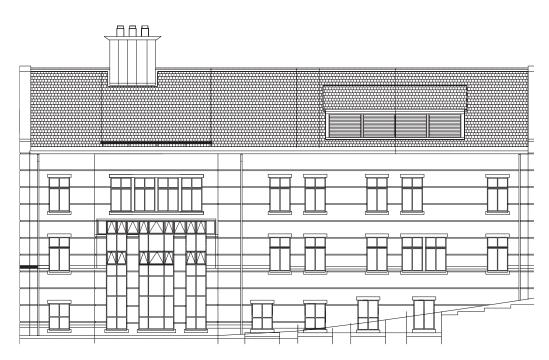
NORTH ELEVATION



SOUTH ELEVATION



EAST ELEVATION



WEST ELEVATION

SITE PHOTOS

Progression from HOSPITAL to SITE







North Facade - Proposed Entrance







East Facade - to understand slope



West Facade - bottom level receives daylight



South Facade - existing 2nd floor entrance



Our Common Connection, is a facility for the high-risk pregnant woman, her network and the staff in which care for her. The center empowers her and allows her to feel a sense of safety and hope in a situation that can be fearful and uncertain.

DESIGN INTENT



EFFECTS

WORSENING MENTAL HEALTH

ONLINE SUPPORT IN LIEU OF PHYSICAL MEETING

SOCIAL ISOLATION

POOR ADJACENCIES

LOW SELF ESTEEM / SELF CONFIDENCE

IT CAN BE UNCOMFORTABLE TO TALK ABOUT

STRESS ON THE PREGNANCY

THE FOCAL PROBLEM

CURRENT BIRTH CENTERS DO NOT ADDRESS SUPPORT TO THE HIGH-RISK PREGNANT WOMAN + HER NETWORK

SEPERATION OF WOMAN + HER LOVED ONES

SOUND ISOLATION

INSTITUTIONAL ENVIROMENT CAN BE INTIMIDATING

NO DESIGNATED SPACE FOR GROUPS ON MATERNITY UNITS

LACK OF VISUAL CONNECTION

RECOVERY ROOMS
ARE OFTEN
OVERCROWDED

BLURRED LINES
BETWEEN PREGNANT
& HR PREGNANT

SIZE OF PATIENT SPACES

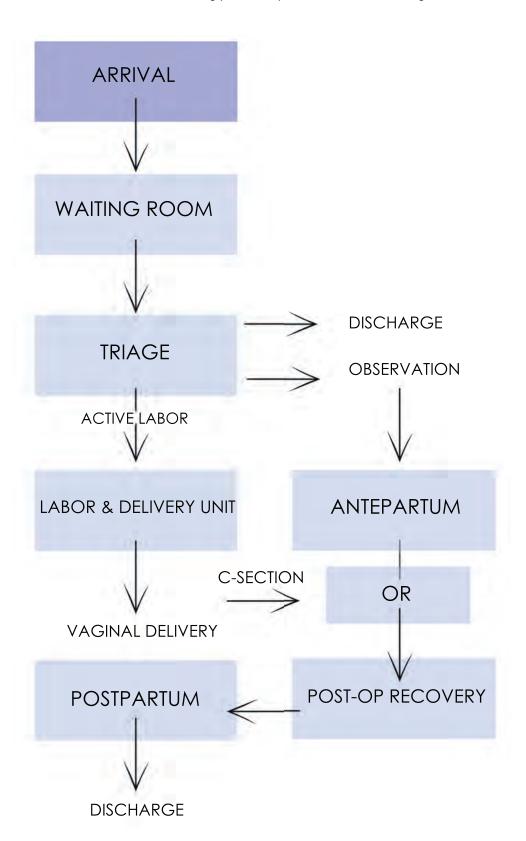
CAUSES

DESIGN DEVELOPMENT

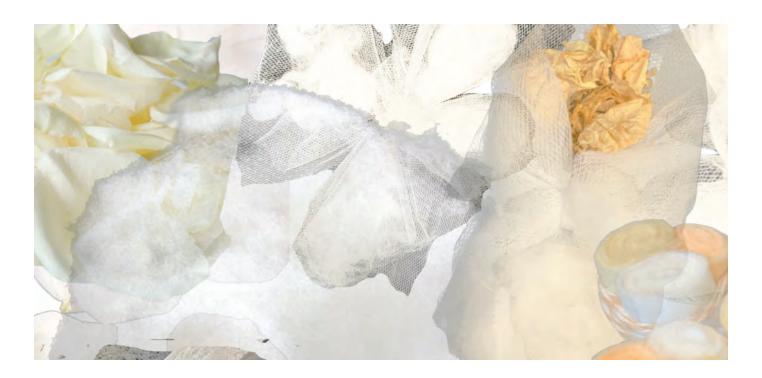


DESIGN PROBE 1 : SCALE

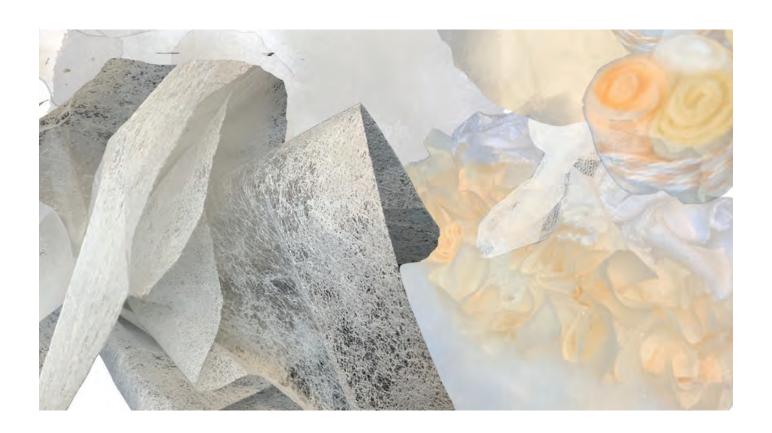
The goal of design probe 1 was to grasp the process a women goes through during labor and delivery. It is important to understand the steps from start to finish to help create adjacencies as well as master the types of spaces in the facility.



DESIGN PROBE 2: MATERIAL EXPLORATION



By continuing material exploration, the goal was to create forms that explore the meaning of calm, comfortable and tranquil. The models focus on using soft materials to create form, rather than applying soft materials to an existing form. Using soft structure represents the idea of support, focusing on light, soft and organic forms.



DESIGN PROBE 3: EXPERIENCE

Staten Island Hospital, Labor & Delivery Nurse

What is your place of work, your position and how long have you been working there? Explain a brief day in the life.

I worked at Staten Island Hospital as a Labor and Delivery Nurse Practitioner for 5 years. During a normal day, multiple different cases would come through the door. There would be women who went into labor, scheduled c-sections, women who came in induced labor, as well as the unexpected patients who had pregnancy issues.

Using 5 words, how would you describe the atmosphere you work in? (Both patient and staff areas.) Crazy, eventful, team oriented, crowded and loud.

Do you think the design of the space caters to the patients, their family and the staff? Why or why not It does not. The space is extremely crowded, outdated and not user friendly.

Is there something you would add, change or take away from the spaces?

I find there is a lot of useless storage in patient rooms and that space can be utilized for things like comfy couches or more counter space.

How would you describe the words tranquility, calm, and comfortable?

Those words are not part of the labor and delivery unit. They could be, but not here. It is extremely hectic, especially because it is always overcrowded with both patients and staff.

Do you think the space you & your patients occupy promotes those words and definitions? If not those spaces, is there anywhere in the hospital that you have these feelings?

The the I&d unit never feels that way. The chapel is the one place I go and can take a deep breathe. It is a place where I can sit back for a second and escape the overwhelming feeling on the unit. While I love my job, it can get to you sometimes when things get tough. The chapel is my escape.

Does the design of the space help you to do your job efficiently?

There are issues all the time. Nothing is ever there when you need it. Like, if you need an extra IV bag, you have to take a walk to get it, rather than it being something convenient to get. Now blankets, you open any closet and about 12 will fall out at you.

Can you explain an experience where the design helped you do/ not do your job?

The good thing about the unit is there are all single rooms. While they are small, each women has her own room from the time she enters until the time she leaves. There is something missing though. There is nothing cozy about the spaces, they all feel the same – sterile, cold, white, sad. They don't help with how the women may be feeling. Given, this is just at my hospital. When I was at a hospital in lowa, when my adoptive daughter was being delivered, the experience was amazing and the design helped to facilitate that. There were large comfy couches, the space felt warm and welcoming. As a nurse, I was in awe of where all the wires were, the way the staff functioned and how easy it had looked.

Observing the patient, how do you feel they view the space?

I would say all of the patients feel the same. No one would ever go out of their way to come to this l&d unit because there is nothing pleasant about it, in terms of design.

Additional comments?

Something that has always concerned me is the lack of privacy in the unit. When we have news to give, it is in the room with the mother, and boy are the walls thin. It can be unfortunate at times, especially when family is here to visit and we have to do an exam or talk with the mother. Something that I would say I enjoy about the space is that all of the spaces we need (exam rooms, birthing units, c-section rooms, etc.,) are all in the same place and are accessible very easily.

Children's Hospital of Philadelphia, NICU Nurse

What is your place of work, your position and how long have you been working there? Explain a brief day in the life.

I am a registered nurse in the Neonatal Intensive Care Unit. I have been working there for 7 months. On a typical day, I am assigned to two patients, although it can be anywhere from 1-3 depending on how sick they are. Every day involves getting report, setting up my day, figuring out when meds are due and when care should be given, etc. However, the events of the day can be very unpredictable. Some days you just have the normal business of caring for two patients, but other days you may have a patient that gets sicker and needs many tests, labs, and sometimes even bedside surgeries or procedures. No two days are the same!

Using 5 words, how would you describe the atmosphere you work in? (Both patient and staff areas.) Collaborative, open, exciting, stressful, team-oriented

Do you think the design of the space caters to the patients, their family and the staff? Why or why not? On my side of the NICU (there are a few sides), there are 4 big rooms. In each room, there are anywhere from 4-8 bedspots. Each bedspot is divided into a room with three walls, and then they all open into the center of the room. The nurses have desks in the middle of the room that look into their patients' rooms. This is helpful for me as a nurse because I can always have eyes on my patient and their monitor. However, it does not leave much privacy for the parents of the babies who may want more of a private space. I think it caters to the patients and their family because they have the comfort of knowing the nurse is always there and watching, but it may be uncomfortable as well because they do not have privacy of any kind. And remember, these babies can be here for months.

Is there something you would add, change or take away from the spaces?

Based off of what I just said, I would maybe suggest more privacy of the rooms. However, there is another department in the NICU on a different side that has rooms with doors and more privacy. While the nurses on that side might say they like it, I have gotten used to a more open concept. Whenever I have to work on the other side with the closed rooms, I get afraid that I cant hear my patient's alarms or monitor well, and don't like that I can see them as well, even though the doors and walls are clear. I am not sure which is better.

How would you describe the words tranquility, calm, and comfortable?

They are words that make you feel at ease. They describe a feeling you would want to have when living in a space.

Do you think the space you & your patients occupy promotes those words and definitions? If not those spaces, is there anywhere in the hospital that you have these feelings?

I don't think so because the layout and rooms have not been updated in awhile, so it doesn't have that relaxing feel. The departments which CHOP has redone recently definitely promote these words, as much as a hospital room can. As a Jewish woman, the chapel is a place that even I can experience these words because of the atmosphere.

Does the design of the space help you to do your job efficiently?

Yes in the fact that I can always have eyes on my patients. Sometimes the rooms can be cramped which makes it hard when the patient has a lot of machines.

Can you explain an experience where the design helped you do/ not do your job?

In terms of small rooms, there have been times where it was really hard to get around the machinery like ventilators, IV pumps, etc quickly. It can also feel very cluttered. The design helps me do my job by being able to react quickly to my patient's situation and also be able to help other nurses with their patients because we all can see each other's patients.

Observing the patient, how do you feel they view the space?

I think it can be hard for babies that are really sensitive to sound to calm down. Depending on the

High-risk Pregnancy Patient

How far along were you when you found out your were of high-risk?

I was about 34 weeks.

Did you have weekly appointments during this time? Where did you go for them?

I was able to be at home on bed rest leading up to the pregnancy. I did have to go to the hospital 2x a week for checkups.

Who was your support system during this time? Did you ever feel alone or isolated?

I had my long term boyfriend as well as my sisters and mother in law who were there every step of the way. Because they were of constant support, I never felt alone during this time.

Did you ever attend or look into attending support groups?

I would have liked to attend a group like this, but I didn't see it as an option. I did turn to instagram and found accounts and support of people going through a similar situation.

What kind of emotions were you feeling during this time? Were you able to have a positive attitude? I was feeling extremely sad, guilty and scared. I really wasn't able to be fully positive until after I saw my baby. I kind of had that fake it til you make it type of attitude because of how worried I was feeling. I tried to trick my mind into being positive.

What was your experience during labor & delivery? How did you feel there?

I was pretty unhappy during my pregnancy experience. I had my first child at Penn so that is what I am comparing my second child at Jefferson to. From the moment I arrived to be induced, they had me hooked up to wires in a very small, tight room. I was in this room for over 12 hours. This room gave me emergency department vibes. It was cold, really loud, and you could see the chaos going on out in the hallway. There wasn't even a TV to help distract me. My family had to be in a cooridor as a "waiting area," because there wasn't enough room for them with me. When I had my first daughter at Penn is was an extremely different experience. The room to begin was huge! It was such a good environment to have my child. It was quiet, peaceful, there was ample room for several family members. I felt so safe and happy there.

How long after your delivery did you stay in the hospital? Do you wish it was longer/shorter?

I stayed for 2 nights after my baby was born. I was happy to leave because the environment made me very unhappy.

Did you ever have a sense of calmness, comfort or tranquility during your stay? Did you feel safe/supported?

I wouldn't say I felt those things during my time at the hospital. I was extremely anxious and uncomfortable there. The way in which the facility used my time there felt very much like a business transaction rather than being based on my feelings.

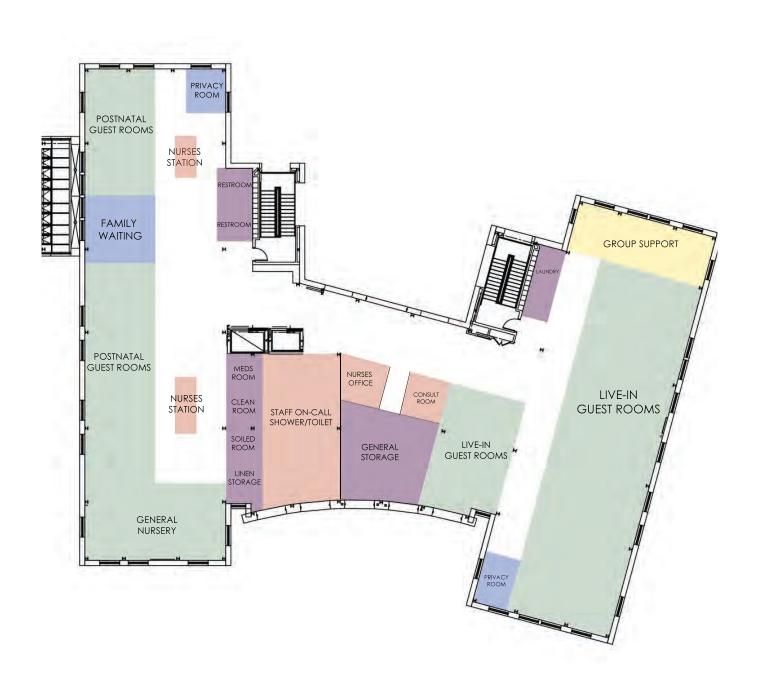
FIRST FLOOR BLOCKING DIAGRAM



SECOND FLOOR BLOCKING DIAGRAM



THIRD FLOOR BLOCKING DIAGRAM

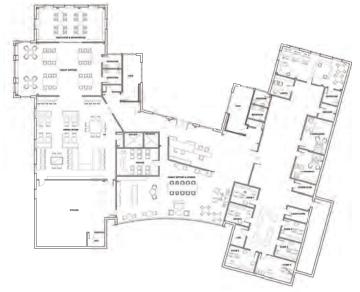


INITIAL SKETCHING + UNDERSTANDING

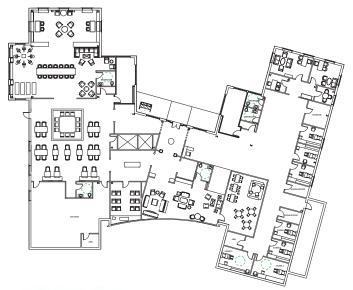




FIRST FLOOR PLAN PROCESS



MARCH 2020

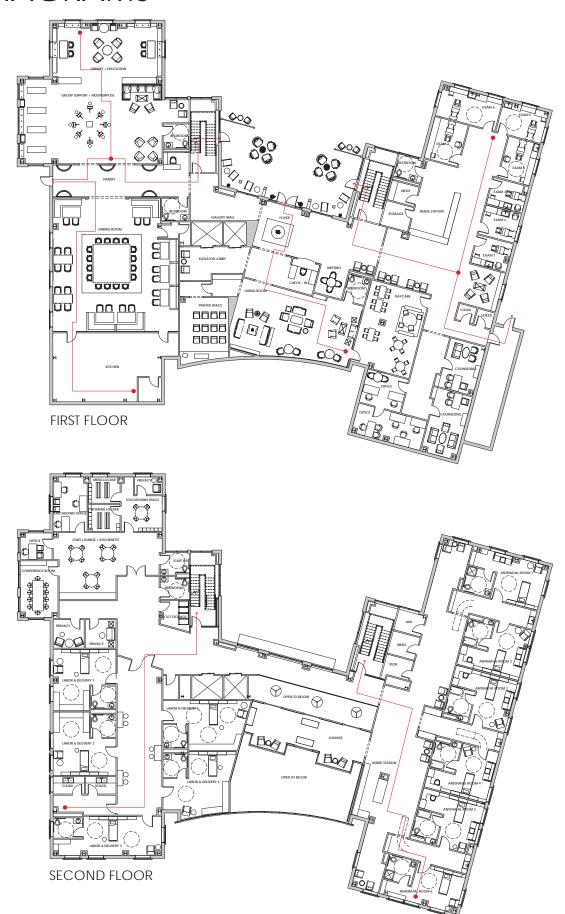


APRIL 2020



JUNE 2020

EXIT DIAGRAMS



WAY FINDING PROCESS

Each of the guest spaces are represented through a different colorway. This colorway is carried out through the entrance to the floor, to each individual room through an accent wall, flooring patterns and upholstered and vinyl finishes. Through the four different color ways, guests are able to orient themselves within the guest suites.



GENERAL EXAM SUITES





LABOR + DELIVERY SUITES





ANTENATAL SUITES



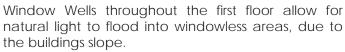


POSTNATAL SUITES



SUSTAINABILITY FEATURES







Curtain wall on north and south facades to allow for natural lighting in public spaces on all three floors.



Materials that are environmentally friendly and have a long life span allow for strength in sustainability.



Flexible design allows for spaces to be more adaptable, meaning they are easily maintained and less likely to change.

ARTWORK





Denise Amses is a Philadelphia artist who engages with natural and geometric forms, plant and biological structures, and the imagery of the cosmos. Through her work, her goal is to awaken people to their surroundings. Through her exploration of visual materiality, light and place, her art resonates with beauty, history and poetry, with the ability to transform awareness through space. The artwork allows for a calming, relief and a sense of beauty in every space throughout the center.





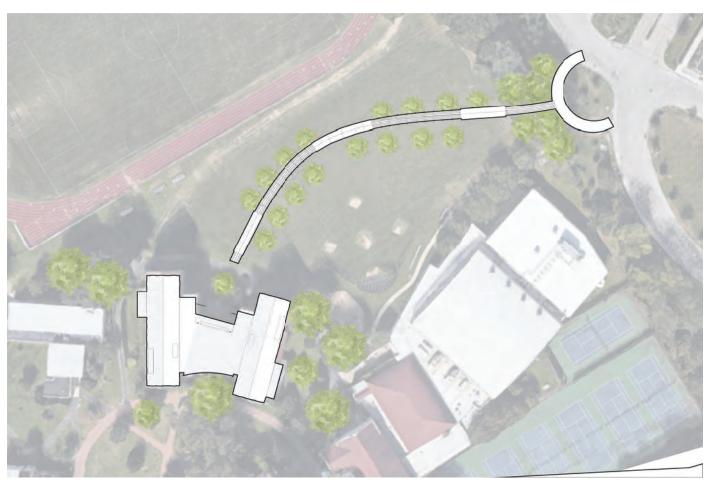




FINAL DESIGN



EXTERIOR PROCESSION



Receiving care at the center starts from the second you arrive. The creation of this procession allows for the a journey to start as you pull up to the building, as well as strengthens the connection between site and hospital.



As you pull up to the center, you approach what could look to be the entrance to a grand home. Through the use of warm colors, natural materials and the ability to sit along, the space comes down to a human scale as you embark on this journey.



Throughout the procession becomes another experience, filled with life with planters and seating. Clustered with greenery, the procession acts as the portal to the building.



The porch serves as a space where women can foster connection with one another, while being immersed in the nature around them. This is done through multiple seating groups and a lively atmosphere. The addition of a structure brings down the scale of the building as you enter in.

FIRST FLOOR PLAN



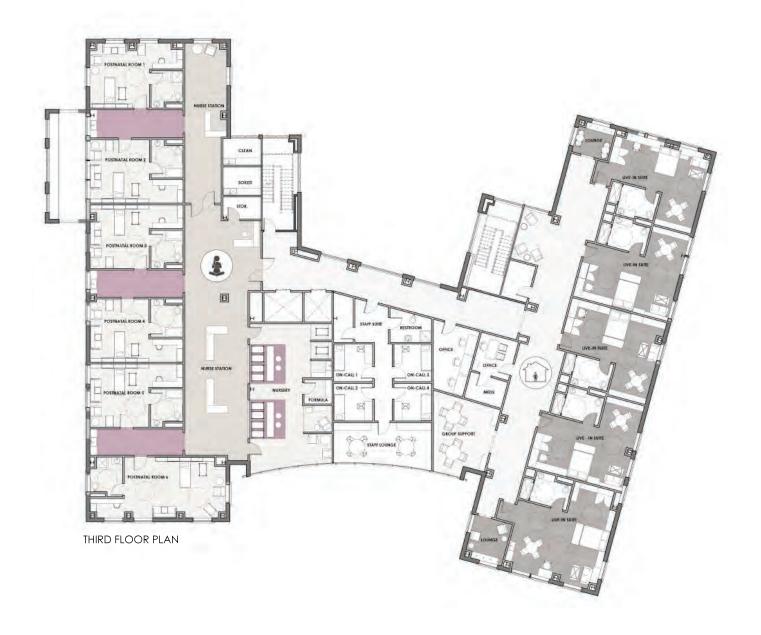
The first floor hold the community spaces as well as the general exam rooms and staff spaces. As you enter, you arrive at the foyer in which you can check in with the receptionist. From there, there are 3 different portals to be immersed in. The transition of each of these spaces is done through the idea of an archway to guide you into a new space. If you are here for your weekly check up, you can enter into the general exam suite. You will see the icons repeated in the floor plans in guest spaces. On the opposite side of the floor houses the group support space, the library and the dining room. The two are separated by a grab and go pantry. This area can also act as an event space for fundraisers and galas. The profits could go right back into the center, for those whose insurance may not cover birth. Heading straight back is the living room, which can act as a space of waiting, for the guest and their support groups. Attached to the living room is the daycare, so that guests with previous children can drop them off as they spend their time at the center. Off of the living room in the prayer space, which has a small vestibule.

SECOND FLOOR PLAN



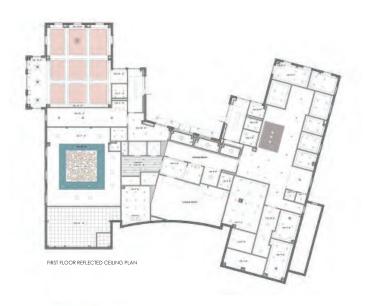
The second floor plan divides up the guest spaces into antenatal suites, which is when a woman is in early stages of labor. Two rooms share a foyer before entering, until they arrive at their door. This idea reinforces the sense of community. Off of the antenatal floor is a second floor lounge space. This space can act as an area for family to take a pause, having balconies on either side overlooking the living room and the entry. A bridge space connects the early labor rooms to the labor and delivery rooms. The labor and delivery suites each have their own private rooms in which there is ample space for the staff. The labor and delivery suites are the stage in the process in which the woman gives birth to the child. In this wing are two privacy rooms, to be utilized by staff and family. This floor also houses room for staff, with locker rooms, offices, a conference and a staff lounge and kitchenette.

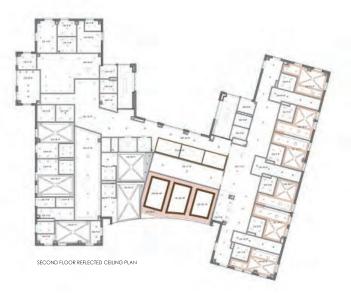
THIRD FLOOR PLAN



The third floor houses the postpartum suites, which are the rooms for recovery. This suite connects one side of the postpartum rooms and the nursery. This way the family and support can be connect and together throughout this stage. The nursery has a window in front to see in, as well as rooms separated by curtains for privacy. There is a space for breastfeeding practice as well as a space along the window to sit and enjoy time with your nursery child. The other side of the postpartum floor houses two postpartum suites that are separated from the nursery. This is incase there is a woman who has gone through a difficult situation during her delivery phase. Connecting the post rooms with the live in rooms is a staff suite in which holds on call rooms, a smaller lounge and a staff shower. The live in suites are designed to be like studio apartments, breaking up into a bedroom, a small kitchenette, a living space and a restroom. As these guests could be living here for a long period of time, their space they has multiple areas in which they can spend time outside of their rooms each day. There are two lounges, with window seats and lounge seating, as well as a smaller group support setting for these guests.

REFLECTED CEILING PLANS







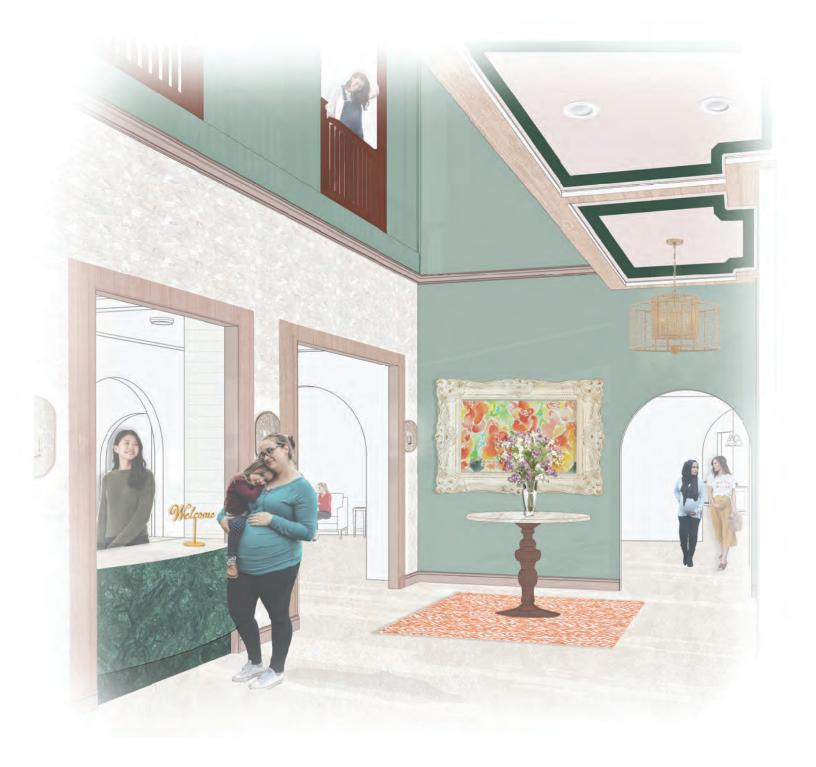
SECTIONS



The section diagrams show the stacking of the east and west side of the building. The east side houses the general exam suites and counseling rooms on the first floor, the general exam suites on the second floor, and the live-in suites on the third floor. This side of the building becomes the more "quiet," side. The west section stacks the communal spaces on the first floor, the labor and delivery suites on the second floor and the postpartum and nursery suites on the third floor.



FOYER



The foyer is the space that every person will see, every time they arrive. They will be greeted by the receptionist which will help direct them to their next destination.

LIVING ROOM



The living room has immediate access to the daycare, in order to make drop off secure, safe and accessible for families. In the living room, guests can play board games, watch the television, sit by the fire and also be able to look up the balcony space above. This living room space can act as a waiting room for support and families, a space for pause between group sessions and become apart of a daily routine in the woman's experience.

GROUP SUPPORT / MULTIPURPOSE ROOM



The group support and multipurpose space acts as an area where women can come together to participate in multiple activities. There are weekly schedules that rotate between art therapy sessions, yoga / meditation, and group support / mindfulness groups.

The library acts as a room for the individual, with built in seating along the perimeter as well as smaller seating groups.





DINING ROOM



The dining room acts as a lively space that caters to everyone at the center. There are multiple options for seating, as the perimeter is surrounded by built in booths. The focal point in this room becomes the center table and focal ceiling that sits on an inset tile.

SECOND FLOOR SPACES



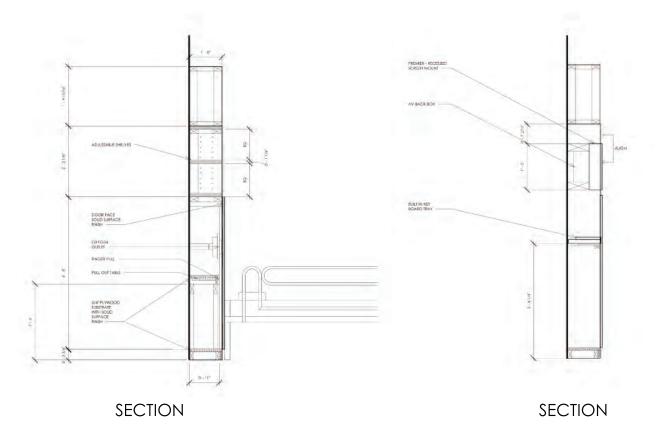
The second floor lounge space becomes an area in which family, friends and support can wait, can take a pause and interact with others in similar situations. When the woman is ready to deliver, she will cross the bridge from antenatal into the labor and delivery suites. This becomes the moment when everything can change for her. This connection between bridge and atrium allows the woman to wave off to her support, or others in the lounge, cheering her on as she goes. These spaces are meant to tie together, through the soft finishes and pop of darker wood.



HEADWALL DETAIL



AXONOMETRIC



FURNITURE + FINISH SELECTIONS













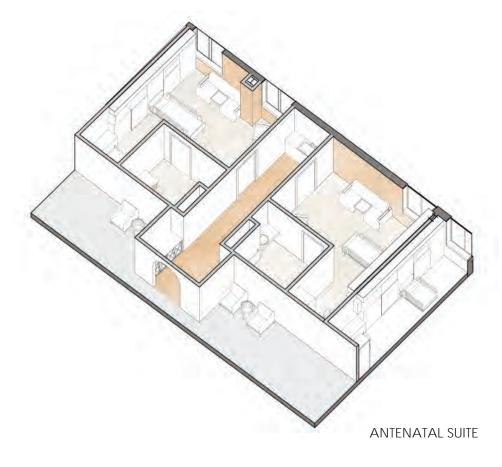




GUEST ROOMS

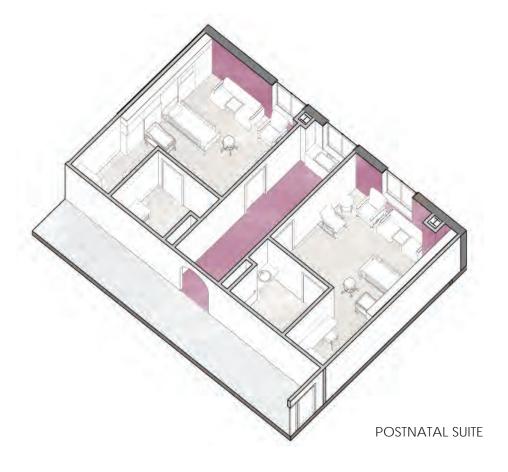








LABOR + DELIVERY SUITE





As the woman heads out, the same way she entered in, she are ready to start this next journey. This facility gave her the experience she needs to advocate for her own health, as well as cultivated a climate of security, safety and hope during an experience like no other. No matter the situation, this woman can say she had an experience in which she felt loved and supported through her birth process.

BIBLIOGRAPHY



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