

FETAL THERAPY THINK TANK



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Recommendations for Facility Design Guidelines – Fetal Care Center



Maternal-Fetal Operating Room
Cincinnati Children's Hospital Medical Center. Cincinnati, Ohio.
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Executive Summary

Maternal-Fetal Medicine offers a higher level of care for pregnant patients with complex fetal conditions that require specialized medical and surgical expertise. In this field, a rapidly growing subspecialty, Fetal Therapy, bridges sophisticated diagnostics—such as high-resolution imaging and genetic evaluation—with innovative treatment strategies focused on efficacy, surgical precision, maternal-fetal safety, and delivery planning. Fetal therapy involves multifaceted and seamless collaboration across obstetric and pediatric disciplines.

The optimal setting for fetal therapy is a comprehensive maternal-fetal surgery center that provides coordinated care for both mother and fetus. Given the high maternal mortality rate in the U.S., especially in complex pregnancies, these centers must prioritize maternal safety alongside advanced fetal interventions. When located within pediatric hospitals for immediate neonatal access, they also should be near adult medical and surgical services and a comprehensive obstetric service to address maternal complications.

This white paper identifies this setting as a Fetal Care Center (FCC) with a dedicated Special Delivery Unit (SDU), located within a pediatric hospital and proximate to adult services. This truly comprehensive FCC approach integrates fetal interventions, advanced imaging, inpatient and clinical care, and research capabilities in one integrated setting to ensure the highest level of safety and outcomes for both mother and baby.

FCCs in the U.S. vary widely in the range of services they provide, and currently, no widely accepted design standards specific to these centers exist. This white paper addresses that gap by presenting consensus-based **Recommendations for Facility Design Guidelines**, developed by participants in the Fetal Health Foundation’s Fetal Therapy Think Tank (FTTT).

Serving as a practical resource for planning physical spaces, these guidelines use the comprehensive FCC model as a foundational exemplar, adaptable to various scopes and scales of development. The recommendations span the following comprehensive core of clinical services and programs, which may be adopted in full or in selected components depending on each center’s mission, capacity, and stage of development.

Core Clinical Services and Programs:

- **Maternal-Fetal Medicine**
- **Fetal Treatment**
 - **Non-surgical**
 - **Surgical (surgical suite, procedure room)**
- **Newborn Care (NICU, newborn nursery, and/or mother-baby couplet care)**
- **Diagnostic Imaging (Ultrasound, Fetal Echo, MRI, etc.)**
- **Genetic Testing & Counseling**
- **Special Delivery Unit (with access to a hospital Obstetric Unit)**
- **Pediatric Surgery & Pediatric Surgical Sub-specialties**
- **Cardiology**
- **Urology**



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Background

During a series of its national consensus conferences, FTTT participants recognized an opportunity to develop a resource tool that supports design and increases planning guidelines and standardization of facilities in which an FCC can operate. A committee, referred to as the Design Coalition, was formed to develop a comprehensive Documentation of Recommendations that would complement existing codes and guidelines published by The Facility Guidelines Institute (FGI).

The FGI Codes (formerly called the Guidelines for Design and Construction), as further explained in the section titled Alignment with Existing Standards, pertain to areas such as outpatient centers, obstetric units, surgical suites, and imaging facilities. FTTT's Design Coalition developed this documentation for anyone involved in the planning and operation of FCCs, including healthcare and design professionals, regulators, patients, and others. It consolidates, modifies, and expands existing design guidelines to better align with design requirements for FCCs.

Committed to evidence- and experience-based design principles, Design Coalition members intentionally solicited input to document patient/family, clinical, and operational experiences from leading FCCs across the United States. These exemplary facilities provided criteria describing user experiences, evolving research, and scientific databases regarding these environments for maternal-fetal surgery and diagnostics.

Each recommended design guideline has been evaluated based on three basic tenets:

Clinical Competency
Application
Substantiation/Economic Viability

Process

The process included the use of research articles, surveys, existing facility reviews, and input from a wide range of reviewers. The Design Coalition identified the need for more research on environments since publications were sparse. More widespread analytic services (reporting outcomes at a minimum) would support benchmarking and standardization among FCCs, also.

The Design Coalition furthermore observed that existing comprehensive FCCs are tied to academic medical centers and/or health systems, including through physical proximity. These full-service facilities require leveraging the breadth and depth of skills, resources, patient volume, and research of academic medical centers and/or health systems. This Documentation of Recommendations is aimed at comprehensive FCCs, but guidelines are minimums and therefore still applicable to relevant spaces within FCCs that do not offer every type of space identified in the guidelines.

Uses of FCC Facility Design Guidelines

The facility design guidelines herein describe minimum space requirements for an FCC and support standardization and self-regulation. These guidelines also promote safe practices and methods in planning, design, and construction of environments for services and programs included in comprehensive FCCs. Other levels of FCCs exist in addition to those



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with comprehensive services. However, widely accepted definitions of levels of care and certification processes have not been developed.

Two terms are used throughout the guidelines to distinguish between a basic requirement for FCC spaces versus design recommendations that would not be a minimum. In alignment with typical regulatory codes and standards, the term “shall” denotes a requirement, while “should” denotes recommendations and considerations that extend beyond basic requirements. This document focuses on key spaces, inpatient and outpatient functions provided in FCCs, and does not provide specifications for any piece, performance specifications, or brand of equipment, furnishings, or technologies.

Decision-makers may determine that some of these minimum guidelines do not go far enough to support their vision and resources. Facility components that are beyond minimum standards are included in the explanatory text, such as the inclusion of private nesting rooms for families to use as “touch down” spaces during appointments, among other purposes. While a valuable concept, many FCCs provide patient and family space in ways other than nesting rooms. (This example is further explained in the document). Users can look for the phrase “where provided” that precedes the description of space like this example that is not mandated.



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Documentation of Recommendations



Nesting Room

*Ann & Robert H. Lurie Children's Hospital of Chicago
Chicago Institute for Fetal Health. Chicago, Illinois.
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Facility design guidelines provided in following sections are organized into 7 Categories:

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2) Administrative Office Suite	p. 10
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1)

General

Description of Care Models

Clinical Competency

FCCs are sought after to provide highly specialized care services for pregnant women with fetal anomalies that range from diagnostic services, pregnancy management, and prenatal consultation to maternal-fetal interventions and post-delivery neonatal care. Due to the complex nature of these clinical procedures, many FCCs are located adjacent to, or within a children’s hospital for immediate access to the Neonatal Intensive Care Unit (NICU) and Special Delivery Unit (SDU) where specialized care expert teams are readily available.

Other FCCs located in health systems with high-risk birth services are often the result of a partnership with separate children’s hospitals. The FCC’s outpatient clinic, the fetal ORs/delivery areas, and NICU may not all be geographically proximate to each other. While the model of co-location within a children’s hospital has clinical advantages, having to travel through the children’s hospital to get to their destination is a journey that can be emotionally difficult for these adult patients and their accompanying loved ones.

When co-located in or immediately adjacent to a children’s hospital, the FCC should have a separate entrance for its pregnant patients who often are under duress with fetal anomaly conditions. As adults navigating a complex and often emotional experience, these patients may value a more private and separate arrival environment from families and children. Moreover, during flu season and with COVID conditions, the separate entrance would substantially reduce the risk of exposure.

When the mother is in a different location or even another hospital for postnatal care, family separation issues are exacerbated. Regardless of the model, every effort should be made to keep families together after birth whenever clinically, operationally, and physically possible.

Workshops held with clinical members of the FTTT revealed an array of design and programmatic elements of an FCC that can impact and improve parental/family experience. These workshops helped inform the development of these guidelines.

Patient and family perspectives were solicited through an anonymous online survey based on their personal experiences in a fetal care setting. Responses were reviewed and are reflected throughout this document. Like all guidance, these guidelines will evolve over time, and we continue to request feedback at the end of this white paper. We invite patients and families, clinicians, designers, and policy leaders to share their insights, helping ensure the guidelines remain inclusive, constructive, and aligned with the values of safety, dignity, innovation, and family-centered care over time.

Application

Guidelines for general areas in this document apply to physical entrances, wayfinding, parking, security and waiting areas. Dedicated FCC waiting and reception spaces are recommended but may need to be combined with other spaces. When the FCC inpatient and outpatient waiting and reception spaces are shared with non-FCC services, provisions for privacy are recommended due to the sensitive nature of FCC visits and patient confidentiality.



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The following shall be provided:

Wayfinding: Create an identifiable entry and provide clear wayfinding with easy access for patients and families to reduce the stress of arrival. When diagnostic services for the FCC are in-hospital, provide clear wayfinding and the easiest journey for the patient to a potentially remote location.

Parking: Parking capacity and locations with pedestrian and vehicular access points shall comply with facility parking standards, whether local regulations, the organization’s rules, or the result of a facility or FCC parking/transportation evaluation. Drop-off for a mother in labor should not go to the children’s hospital’s emergency department. The FCC’s SDU needs to have access to these laboring patients. Designated parking spaces close to the FCC entrance should be considered for pregnant patients.

Security: Provide security measures that are consistent with the needs of the location for patients, families, staff, and visitors, including considerations for secured after-hours arrival and access, where and however needed, as well as creating the same level of infant security that is in NICU and/or locked unit, if needed in the FCC.

Lobby/Waiting: Include a lobby/waiting space with a hospitality feel to convey a feeling of welcome and provide an adult setting for care when the FCC is part of a children’s hospital.

- Where provided, waiting concepts include amenities such as Nesting Rooms that serve as a base for patients and families while in the FCC. They can come and go from these rooms in between appointments and can use them for consultation and all-day visits, nourishment, and private space for reflection/solace or regaining composure. The rooms have nearby or adjacent toilets. These rooms or traditional waiting spaces should include provisions for sibling play.
- Where provided, spaces should be allocated for the integration of art and the application of color and other positive distractions to help reduce anxiety.

Exemplary Facilities



Reception & Lobby

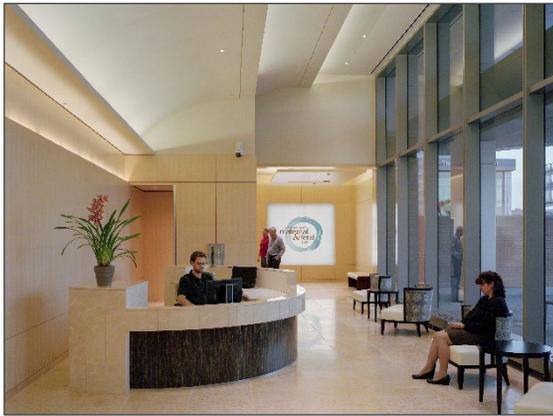
Nicklaus Children’s Hospital. Miami, Florida.
(Photo courtesy of NBBJ Architects)



Nesting Room

Ann & Robert H. Lurie Children’s Hospital of Chicago
Chicago Institute for Fetal Health. Chicago, Illinois.
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Exemplary Facilities



Reception and Lounge Areas—Colorado Institute for Maternal & Fetal Health, Colorado Fetal Care Center
Children's Hospital Colorado, Anschutz Medical Campus, Aurora, Colorado.
Copyright Stephen Cridland (Photo courtesy of ZGF Architects)

Evidence-based design strategies that can be considered for reference and/or inclusion. These FGI excerpts pertain to hospitals and are Appendix considerations but are not minimum hospital requirements. They are provided because of relevant considerations that apply to the “General” category in this document. Beginning in 2026, this type of information will be in the FGI Handbooks for Planning and Design rather than in the 2026 FGI Codes for Planning and Design.

Relevant Excerpts – 2022 FGI Guidelines for Design and Construction of Hospitals

“1.2.5 Environment of Care Requirements Appendix:

A1.2-5.1 Delivery of Care Model Concepts. Examples of delivery of care models include patient-focused care, family-centered care, and community-centered care. Information on the patient and family-centered care can be found at the Institute for Patient-and Family-Centered Care website.

1.2-5.4 Physical Environment Elements

A1.2-5.4.1 Light. Provision of natural light should be considered wherever possible in the design of the physical environment.

A1.2-5.4.2 Views of and access to nature. Siting and the organization of the building should respond to and prioritize unique natural views and other site features.

A1.2-5.4.3 Wayfinding. Hospital entry points should be clearly identified from all major circulation modes (e.g. roadways, bus stops, vehicular parking).

A1.2-5.4.4 User control of environment. During the functional programming process, opportunities for individual control over as many elements of the environment as possible and reasonable (e.g. temperature, lighting, sound, and privacy) should be evaluated.

A1.2-5.4.5 Privacy and confidentiality. Patient privacy is a right that has been established through the Health Insurance Portability and Accountability Act (HIPAA), which is intended to ensure that privacy of patient healthcare information is maintained in all health care settings.



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A1.2-5.4.1(d) Security. The physical environment should be designed to support the overall safety and security protocols of the institution.”

Substantiation

The patients and families using the FCC will greatly benefit from an uplifting and welcoming environment to reduce their stress and anxiety and raise their spirits. In settings where the Fetal Care Center is co-located with a children’s hospital, attention should be directed toward providing safe and comfortable experiences for adult patients. Research shows the benefits of a well-designed healthcare environment are worth the investment for improving care experience for patients, families, and staff.

Economic Viability

Benefit-Cost Analysis (added or neutral cost): Depending on the quality level of the design elements, finishes, lighting, and art, the cost to provide a welcoming and improved experience that reduces stress and anxiety for patients, families, and staff in the FCC will be neutral to additional expense.

Added Benefits:

- Patient/Staff Safety
- Patient Care
- Operational Efficiency

Added Capital Cost¹

Neutral Cost:

- Clinical Operations
- Facility Operations

¹ Loss leader operations can be compensated with downstream revenue in the children’s hospital.

2)

Administrative Office Suite

Description

**Clinical
Competency**

Spaces for administrative functions that support direct patient care ideally shall be provided within the FCC. The suite shall contain a mixture of private offices and open workstations as dictated by the functional narrative that describes the design. The FCC shall determine spaces that shall be required to be provided within the FCC as described herein or outside the FCC if the space is easily accessible to the FCC. Some spaces can be provided remotely to the FCC as dictated by the organization’s standards for office design.

**Exemplary
Facilities**



Shared Workspace at Nurses Station
Colorado Fetal Care Center. Aurora, Colorado.
Copyright Stephen Cridland (Photo courtesy of ZGF Architects)



Touchdown Spaces
Cincinnati Children’s Hospital Medical Center. Cincinnati, Ohio.
Copyright Ryan Kurtz (Photo courtesy of ZGF Architects)

Application

Spaces shall include but are not limited to:

Offices for physicians and other providers: Offices shall be private or shared in a manner that maintains patient confidentiality.

Offices for genetic counselors and social workers: Offices shall be private or shared if more than one of each function is present.

Workstations for sonographers separate from reading rooms: These spaces shall be private or shared by multiple sonographers.

Workstations for nurses and nurse coordinators shall be provided: Offices can be in shared offices or incorporated into larger administrative suites.

Workstations for administrative assistants shall be provided, where these positions exist: Workstations can be directly adjacent to the provider or manager they support or remote as dictated by the organization’s officing standards.

Offices or workstations for an FCC Manager: These spaces shall be provided accessible to the FCC, either within the facility or remotely.



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Offices or workstations for schedulers and insurance verifiers: These spaces shall be available to the FCC. They can be dedicated to the FCC or shared with other hospital functions in a remote location.

Workspace for others who provide care in the FCC: Workspace for others, such as psychotherapists, physical therapists, occupational therapists, bereavement counselors, and nutritionists, shall be provided based on the targeted utilization and types of these services provided within the FCC facility, which can often be met by utilizing “Nesting Rooms.”

Substantiation

As facilities across the country strive to create FCCs, providing administrative offices is vital to the successful operation of each FCC. By providing offices and workstations for use by the FCC staff, the institution will create operational efficiencies and collaborations that lead to enhanced patient care.

Economic Viability

Benefit-Cost Analysis (added or neutral cost): Depending on whether the physicians and staff already exist on the campus or are new hires in the creation of a new FCC, the amount of space required on the campus either will remain the same or will need to increase.

Added Benefits:

- Patient Care
- Operational Efficiency

Neutral Benefits:

- Patient/Staff Safety

Added or Neutral Capital Cost

Neutral Cost:

- Clinical Operations
- Facility Operations

3) Administrative Office Support Services

*Clinical
Competency*

(Not Applicable)

*Exemplary
Facilities*



Reading Room

*Cincinnati Children's Hospital Medical Center. Cincinnati, Ohio.
Copyright Ryan Kurtz (Photo courtesy of ZGF Architects)*



Collaboration Space

*Colorado Fetal Care Center. Aurora, Colorado.
Copyright Stephen Cridland (Photo courtesy of ZGF Architects)*

Application

Spaces shall include but are not limited to:

Supply Storage: A designated area or room shall be provided to store paper goods and supplies in support of administrative functions. This space shall be within the administrative suite or accessible by administrative staff, if shared with adjacent functions.

Copy/Workroom: An area or room to perform administrative work shall be provided within the administrative suite. This area can be a separate room or can be combined with storage functions. When confidential paper records need to be disposed of, HIPAA-compliant waste disposal equipment shall be provided.

Records Storage: Space for the storage and maintenance of patient records shall be provided within the facility. To maintain patient confidentiality of the records the space shall be within a secured area and access shall be restricted to authorized staff. This can be within the FCC or shared with the main hospital records storage. The space shall accommodate all media types, including electronic, and shall provide space for staff to scan patient information and maintain the records on HIPAA-compliant scanning equipment.

Staff Lounge: A space for staff meals and other breaks shall be provided. This space shall be private, restricted, and easily accessible to staff and providers. This space can be either dedicated to the FCC or shared with adjacent functions.

Staff Locker: A space for staff to store personal belongings shall be provided. This space shall be private, restricted, and easily accessible to staff and providers. This space can be either dedicated to the FCC or shared with adjacent departments.



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Staff Toilets: Toilets and handwashing sinks for staff use only shall be provided for staff within or adjacent to the FCC.

Collaboration Space: Space with video capabilities for providers and staff to review imaging and to discuss and work on diagnosis and care plans shall be provided. The space shall be easily accessible to clinic staff. To maintain confidentiality, the space shall be private and away from areas where the public is present. The space should provide workstations as well as combined meeting space. This can be separate or combined for use as a consultation space.

Reading Room: Space for the reading and interpretation of medical images shall be provided. The space and technology shall comply with section 2.2-3.5.18 in the 2022 FGI Guidelines for Design and Construction of Hospitals identified as “Image interpretation/reading room.” To view various disciplines and different diagnostic modalities such as MRI, US, and Echo simultaneously, the audio/visual design should accommodate multiple screens that can be grouped together. (Although it is important that Reading Rooms for Echo, US, and MRI to be in ‘close’ proximity to each other for collaboration and discussion of diagnosis, some Reading Rooms were replaced by technology that allows reading from multiple locations with effective virtual collaboration). Additional workstations for trainees should be considered.

Telemedicine Room: A small, enclosed room for the provider shall be provided

Touchdown Spaces: (allied health, remote workers): Workstations for the shared use of allied health workers as well as workers who do not permanently office within the FCC shall be provided. Workstations can be in an enclosed administrative suite or distributed throughout the clinical environment in response to the functional program.

Substantiation

In the creation of an FCC, there must be space for staff to be able to access supplies, maintain confidential records, and have space to store personal belongings and break from work. These spaces can be solely for the use of the FCC or can be shared with other departments depending on the operations of the institution.

Economic Viability

Benefit-Cost Analysis (added or neutral cost): Depending on if the space can be shared with other departments or must be built new solely for the use of the FCC.

Added Benefits:

- Operational Efficiency

Neutral Benefits:

- Patient/Staff Safety
- Patient Care

Added or Neutral Capital Cost

Neutral Cost:

- Clinical Operations
- Facility Operations

4)

Clinical Research and Analytics Services

Description

Clinical
Competency

Comprehensive FCCs participate in fetal medicine clinical research studies. Support space shall be provided within the FCC to support research and clinical study activities.

Exemplary
Facility



Research Storage
Cincinnati Children’s Hospital Medical Center.
Cincinnati, Ohio.
Copyright Ryan Kurtz
(Photo courtesy of ZGF Architects)

Application

Spaces shall include but are not limited to:

Research Storage: Dedicated locked storage shall be provided to house research-related regulatory documents, including subject-signed informed consent forms and protocol binders for relevant FCC studies. This storage shall be readily accessible to research study investigators and staff for record maintenance and compliance audits. *(If no dedicated storage space can be provided, this can be accomplished with a file cabinet or other means such as electronic equipment that meets compliance requirements and combined into Consultation Space below.)*

Consultation Space: Rooms such as a clinical consultation or exam room shall be available and easily accessible to the FCC research staff. The space shall be available to facilitate in-person research recruitment and enrollment activities. These interactions should occur in a private and well-lit environment where the potential subject can comfortably review research study protocols and complete the informed consent process.



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Administrative Offices: Dedicated office space for research staff, such as research coordinators and data analysts, should be provided in or near the FCC. Instead of dedicated offices, flexible touchdown spaces with privacy from non-study personnel can be provided.

Touchdown Spaces: Additional shared terminal space to accommodate transient research collaborators, such as medical student volunteers and clinical fellows, should be provided within the FCC. Office furnishings shall include ergonomic seating.

Freezer Space: Shall be located in the Soiled Utility. *(A 20-degree refrigerator space is required to store specimens, e.g. the placenta, before being taken to the Laboratory.)*

Laboratory and Biobank: Access to laboratory and biobank facilities shall be available to the FCC for the potential processing and storing of research study samples. These spaces can be within the FCC or easily accessible to it.

Substantiation

As more emphasis is placed on the FCC, the need to conduct quality clinical research becomes paramount to improving outcomes for both mother and child. Having proper facilities within an institution to facilitate this research will enable institutions to reach a higher level of care and create new and innovative care solutions.

Economic Viability

Benefit-Cost Analysis (added or neutral cost): Research protocols specific to fetal care will require independent space and therefore need to be added to the facility in which the FCC is housed.

Added Benefits:

- Patient/Staff Safety
- Patient Care
- Operational Efficiency

Added Capital Cost

Neutral Cost:

- Clinical Operations (resources to support operations)
- Facility Operations (depending on support operations)

5) Outpatient Clinic

Description

Clinical Competency

Spaces for Outpatient Clinic and Diagnostic and Treatment shall be provided as components of the FCC. These outpatient facilities should have safe, easy access to inpatient maternal/fetal services for births and NICU care. Certain key spaces for outpatient services shall be required within the FCC outpatient area as described herein.

Exemplary Facilities



Waiting Space/Family Lounge
Colorado Fetal Care Center. Aurora, Colorado.
Copyright Stephen Cridland (Photo courtesy of ZGF Architects)



Exam Corridor
Cincinnati Children's Hospital Medical Center. Cincinnati, Ohio.
Copyright Ryan Kurtz (Photo courtesy of ZGF Architects)



Exam Room
Cincinnati Children's Hospital Medical Center. Cincinnati, Ohio.
Copyright Ryan Kurtz (Photo courtesy of ZGF Architects)



Exam Room
Cincinnati Children's Hospital Medical Center. Cincinnati, Ohio.
Copyright Ryan Kurtz (Photo courtesy of ZGF Architects)

Application

Spaces shall include but are not limited to:

Waiting Room & Reception

FCC waiting and reception spaces are required but may be dedicated or may need to be combined with other maternal clinics, diagnostic and treatment spaces. When the FCC waiting



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and reception spaces are shared with other non-FCC services, provisions for privacy are recommended to provide privacy and confidentiality due to the sensitive nature of FCC visits.

Reception/Registration:

- The reception/registration area shall permit visual observation and contact with all traffic entering the unit.
- There should be visual connection between staff and the waiting area for safety.

Waiting Space:

- Waiting space shall be designed to reduce the stress and anxiety of patients by providing a welcoming, calming, and comfortable environment that accommodates different sizes of individuals.
- Waiting space should provide visual connection to daylight and outdoor landscape or greenery from the waiting space.
- Materials that mitigate noise such as sound-absorbing ceiling tiles and soft surfaces should be provided in the waiting space.

Family Lounge:

- Provide access to a lounge for family and visitors with appropriate seating, lighting, and acoustic separation from the clinical area. Access to nourishment, water, and coffee is recommended.
- The lounge shall be immediately accessible to the FCC and shall be sized as defined in the functional program.
- The lounge should be designed to minimize the impact of noise and activity on clinical areas and staff functions.
- A waiting room that meets the above criteria shall be permitted to serve as a family lounge.
- Where provided, nesting rooms should be designed to serve as a base for waiting between appointments, among other functions, and may impact the amount of waiting and lounge spaces needed.

Public Toilets:

- Toilets should be unisex, and handwashing sinks shall be provided within the FCC.

Clinical Spaces

Vital Signs / Weight / Measurements Space: These activities should be done in a private exam room, although they could be in an alcove upon entering the clinic. Space should be configured for confidentiality if an alcove design is necessary.

Exam Rooms: Dedicated rooms for patient examination. Rooms shall be sized similarly to a standard maternal examination room and meet the governing edition of the FGI Codes or Guidelines. When space resources are limited and separate space for exam consult, echos, and



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ultrasounds are unattainable, combined rooms shall be allowable. Other recommendations that should be considered when planning exam rooms include:

- Right size exam rooms to accommodate family members who accompany the mother/patient.
- Standardize exam room size and configuration to provide flexibility for changes in functions.
- Reduce movement with Touchdown Space. (*Care teams come to where the patient is located.*)
- Staff workspace sized and configured to support viewing of images and other work needs
- Doors shall be wide enough to accommodate gurneys.
- Dual function with Triage Room

Consult Rooms: Dedicated consult rooms outside of the exam room shall be provided as a “non-clinical” setting for a discussion on diagnosis and treatment options. When space resources are limited and a separate consult room space is unattainable, combined exam and consult rooms shall be allowable.

- Consult rooms shall be sized to accommodate multiple family and care team members.
- Consult rooms shall be used to support confidentiality and privacy for team and individual patient/family-physician conferences (HIPAA).
- Consult rooms may range in size from 160 square feet (4-6 people) to larger rooms of 200 square feet or more to accommodate groups of 10 -14 people. The larger rooms may also function as conference and classroom spaces, at larger FCCs.

Other recommendations that should be considered when planning consult rooms include:

- Include comfortable lounge-type seating, lighting, and color choice to create a setting that is relaxing and non-clinical in appearance and therefore more conducive to the sharing of difficult news.
- Art with nature themes is recommended.
- Daylight and views of nature and greenery are recommended.
- Telemedicine capability and access to Interpretive Services are recommended.
- Provide a “Nesting Room” that serves as a home base for the patient and family during an initial evaluation visit, where the clinical stay may take the greater portion of a day. Consult rooms could be assigned as nesting rooms.

Large Conference Room: Provide conference room with technology for consultation and education. It should be configured for remote consultation capability (virtual experience), translation services, and other video marker technology, such as a telestrator.

Small Conference Room for Provider Collaboration / Teamwork Space: Space needs to be dedicated that allows for FCC collaboration to optimize the treatment plan. This space needs to accommodate Care Navigators, MFMs, Pediatric Surgeons, Cardiologists, Nurses, Social Work, and Genetic Counselors at a minimum.



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Lab – Blood Draw Space: Dedicated space is recommended; blood draw can be done in the exam room²

Restrooms: Restrooms need to be provided for patients and staff, preferably separately. Patient restrooms need to be able to accommodate the collection of urine samples for analysis. Consider one for each US room.

Nurse Calls must be in every room where patient care will be provided.

Soiled Utility Rooms must meet ventilation requirements and cleaning protocols for Trophon equipment.

Substantiation As facilities across the country strive to create FCCs, the outpatient clinical services components are the basis of a successful program.

Economic Viability Benefit-Cost Analysis (added): Depending on if the physicians and staff already exist within a maternal program on the campus, the amount of space required on the campus will need to increase to provide procedural space and teamwork areas.

Added Benefits:

- Patient Care
- Operational Efficiency

Neutral Benefit: Patient/Staff Safety

Positive Cost: Clinical Operations

Added Cost:

- Capital
- Facility Operations

² Determine the type of POCT (point of care testing) Lab needed. Is POCT Lab just for processing and then sent to a lab? If POCT is being done in a dedicated space, meeting the governing edition of the FGI Codes and Guidelines needs to be provided. N.b. POCT will change with medical advances, and the space could be separate from blood draw or in the same room.

6) Diagnostic Imaging

Description

Clinical Competency

Spaces for Diagnostic Services shall be provided as components of the FCC. These imaging facilities should have safe, easy access to inpatient maternal/fetal services for births and NICU care. Certain key spaces for diagnostic imaging services shall be required within the FCC outpatient area as described herein.

Exemplary Facilities



Reading Room

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Ultrasound Room

Cincinnati Children's Hospital Medical Center. Cincinnati, Ohio.
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Application

Spaces shall include but are not limited to:

Imaging Rooms

Ultrasound: Meeting to governing edition of the FGI Codes and Guidelines, these private rooms perform ultrasound (US) with access to special tables for vaginal scanning. There should be special ventilation for the heat of US equipment. Big screen TVs should be provided for education and patient viewing, and technology should be wired for real-time review in the Reading Room.

Ultrasound Room

- The space shall be a minimum of 200 square feet.
- A screen on boom shall be installed above the patient during procedure for viewing (*also can be positioned for easy viewing for such procedures as Chorionic Villus Sampling or amniocentesis*)
- There should be a large screen for family viewing with telemedicine capabilities for family members who cannot attend exams (*E.g. Service members stationed overseas*).
- An electronic exam bed with stirrups shall be provided.
- There shall be a PC workstation for sonographers with an ergonomic chair.



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- Furniture for family members; a minimum of 3 chairs.
- A PC workstation with a stool shall be provided.
- Additional requirements for the room:
 - Storage for supplies/linens
 - Needle box
 - Trash and soiled linen receptacles under counter (a hole on counter with access to bins in cabinets below is preferred)

Fetal Echocardiography (Echo) Room: Meeting the governing edition of the FGI Codes and Guidelines, this private room provides fetal echos.

Telemetry Room: Meeting the governing edition of the FGI Codes and Guidelines, this room must be separate to meet HIPAA requirements.

Command Reading Room: This space shall accommodate PACS workstations and “super screens” above that show ongoing scans (in real-time). A technology system should be installed to interface with electronic medical records.

Additional Requirements: *Cabinetry or Storage Room* shall be provided for special equipment.

Restrooms: Restrooms need to be provided for patients and staff, preferably separately. Patient restrooms need to be able to accommodate the collection of urine samples for analysis. Consider one for each US room.

Nurse Calls must be in every room where patient care is provided.

Substantiation

As facilities across the country strive to create FCCs, diagnostic imaging services components are the basis of a successful program.

Economic Viability

Benefit-Cost Analysis (added): Depending on whether the physicians and staff already exist within a maternal program on the campus, the amount of space required on the campus will need to increase to provide procedural space and teamwork areas.

Added Benefits:

- Patient/Staff Safety
- Patient Care
- Operational Efficiency

Neutral Benefit: Facility Operations

Added Cost:

- Capital
- Clinical Operations

7) Patient Care and Procedures

Clinical Competency

Where provided, a Special Delivery Unit (SDU) is a separate service dedicated to the FCC and shall have two ORs: 1) C-Section/Standard OR and 2) Fetal Surgery with a resuscitation room shared between the two ORs. The SDU is typically distinguished from a hospital obstetric unit where all other births are accommodated. Ideally, the SDU should be in proximity to NICU and main OR suite (also close to elevators). The FCC’s SDU may provide rooms where births occur, such as Labor, Delivery, and Recovery Rooms and Labor, Delivery, Recovery, and Postpartum Rooms, and separate antepartum and postpartum rooms, if deemed appropriate.

Some FCCs within children’s hospitals admit their highest-risk obstetric patients to comprehensive obstetric centers rather than utilizing SDUs. However, another SDU model has been developed that provides intensive care services for both infant and mother during and after birth. This approach integrates high-risk obstetric care directly into SDUs located within children’s hospitals.



Special Delivery Unit (SDU) - Concept Plan
(Courtesy of NBBJ Architects)

Exemplary Facility



Fetal OR with adjacent Infant Resuscitation Area
Colorado Fetal Care Center. Aurora, Colorado.
Copyright Stephen Cridland
(Photo courtesy of ZGF Architects)

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Exemplary Facilities



Triage Room

Colorado Fetal Care Center. Aurora, Colorado.
Copyright Stephen Cridland (Photo courtesy of ZGF Architects)



Antepartum Room

Cincinnati Children's Hospital Medical Center. Cincinnati, Ohio.
Copyright Ryan Kurtz (Photo courtesy of ZGF Architects)



LDRP Room w/ Infant Resuscitation in use

Colorado Fetal Care Center. Aurora, Colorado.
Copyright Stephen Cridland (Photo courtesy of ZGF Architects)



Infant Resuscitation in LDRP

Connecticut Children's Medical Center. Hartford, Connecticut.
Copyright Halkin | Mason (Courtesy of CannonDesign)



Infant Resuscitation Area integrated in the Fetal OR

Cincinnati Children's Hospital Medical Center. Cincinnati, Ohio.
Copyright Ryan Kurtz (Photo courtesy of ZGF Architects)





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Application

Spaces shall include but are not limited to:

Special Delivery Unit (SDU) and Neonatal Intensive Care Unit (NICU) Programmatic Elements

Triage Room: Located in the SDU, the Triage room is for pregnant patients arriving who do not need the Emergency Department. The SDU's Triage Room should be large enough for a gurney location, space for a patient's companion and equipped with oxygen and suction. The quantity of triage spaces and rooms may vary by SDU based on needs and practices.

Antepartum and Postpartum Inpatient Rooms: Meeting FGI guidelines, these private inpatient rooms must have windows, a toilet, and a handwashing station. Where provided, antepartum rooms must have a minimum of 120 square feet and postpartum rooms must have a minimum of 150 square feet of clear floor areas. Additional space is recommended for a partner zone. The rooms can be shared with an existing OB service when a birthing center is adjacent to a children's hospital.

FGI Relevant Excerpt *"Guidelines for Design and Construction of Hospitals, 2022, Section 2.2-2.10.2 Antepartum and Postpartum Unit."*

Labor, Delivery, Recovery, and Postpartum (LDRP) and Labor, Delivery, Recovery (LDR) Room: LDRP and LDRs are private inpatient rooms, and each one must have an external window, a toilet with shower or tub, partner space, caregiver zone, and infant resuscitation space. They can be shared with an existing OB service when a birthing center is adjacent to a children's hospital. The minimum clear floor area of 325 square feet with a minimum wall width of 13 feet is required. Additional clearances and support space for these rooms are identified in the governing edition of the FGI Codes and Guidelines.

FGI Relevant Excerpt *"Guidelines for Design and Construction of Hospitals, 2022, Section 2.2-2.10.3 LDR and LDRP Rooms."*

Maternal Pre/Post Procedural Recovery: Meeting the FGI Codes or Guidelines, each Operating Room or Procedure Room must have a minimum of one recovery space, or two recovery spaces if used for cesarean births. While not explicitly addressed in the FGI Codes or Standards, these FCC guidelines permit LDR or LDRP rooms to function as the required recovery stations for fetal care operating rooms, provided they are directly accessible. For low birth volume SDUs, the functional program should accommodate deviations from the two-station minimum when appropriate.

FGI Relevant Excerpt *"Guidelines for Design and Construction of Hospitals, 2022, Sections 2.1-3.4.4 Phase 1 Post-Anesthetic Care Unit, 2.1-3.4.5 Phase II Recovery Room or Area and 2.2-2.10.11.11 Cesarean Delivery Suite."*

Maternal-Fetal Operating Room (OR): Operating Room shall be sized to meet the needs of both the mother and the child during a procedure, and shall be a minimum of 800 square feet

- Accommodating the maternal and fetal teams, minimum room size is essential. Two surgical teams may need to be able to work in this OR, often requiring space for two operations simultaneously (for resuscitation and exit procedures).



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- Space for neonatal resuscitation must be provided in the OR.
- Integrated imaging and fetal monitoring capabilities are required.
- Space shall be available for installation and configuration of two booms.
- A wide range of temperatures is required. (The operating room shall be designed to maintain space temperature up to 80°F. This requirement is higher than the ANSI/ASHRAE/ASHE Standard 170-2013 for space temperatures in operating rooms that require a range of between 68°F to 75°F.)

Minor Procedure Room (with Ultrasound functions): This space is needed to perform minor procedures such as amniocentesis, chorion villus samplings, and fetal blood sampling. It also may need to accommodate Ultrasound diagnostic functions. The procedure room will meet FGI guidelines, which mandate a minimum clear floor area of 130 square feet. If anesthesia is to be used, the required minimum clear floor area increases to 160 square feet.

FGI Relevant Excerpt “Guidelines for Design and Construction of Hospitals, 2022 2.2-3.4.2 Procedure Room.”

Neonate Resuscitation: Space shall be included for neonatal resuscitation in any room where fetal surgeries and births occur. An additional neonatal resuscitation area or room connected to the Maternal-Fetal OR may be provided to accommodate multiple neonates. Space shall be designed to include the use of lasers and other interventional equipment. This space needs to have video monitoring similar to trauma.

Neonatal Intensive Care Unit (NICU): Meeting the requirements of the governing edition of the FGI Codes and Guidelines, the NICU can be dedicated to the FCC or shared with campus program.³ The required clear floor area is a minimum of 180 square feet for a single-infant room and 150 square feet for multi-bed rooms. If a hospitalized mother and NICU patient share a room, the Neonatal Couplet Care Room must have at least 300 square feet of clear floor area. For neonatal couplet care combined with an LDRP room, the minimum required clear floor area increases to 435 square feet. Additional clearance and support space requirements are specified by FGI.

FGI Relevant Excerpt “Guidelines for Design and Construction of Hospitals, 2022, Section 2.2-2.9 Neonatal Intensive Care Unit.”

Additional Requirements

Operating Room for Fetal Procedures should have a minimum of three (3) screens on booms mounted near the surgical bed to allow for fetoscopic procedures.

Operating Room should include lighting solutions to allow better visualization of fetoscopic procedures by avoiding visual adaptation delay for surgeons caused by different light levels of task and ambient lighting.

Wayfinding Signage and Other Visual Cues are required for transporting patients from helipad, pediatric ED, or other arrival locations to FCC’s SDU.

³ FGI 2022 Hospital edition, “2.3-2.8.”



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Cabinetry or Storage Room shall be provided for special equipment.

Laser Space/ Storage: Dedicated laser storage within the center is preferred to ensure equipment is properly maintained and readily accessible. When possible, this storage can be integrated within the operating room.

Simulation Lab: Simulation Lab for research, education, and pre-procedure simulations is recommended but not required.

Other Support Space: Support space for patient care and procedural areas includes a wide array of needs such as clean and soiled workrooms, supply storage, and ancillary services such as medication safety zone, anesthesia, and access to blood bank, sterile processing and many other functions that are referenced in the FGI Codes and Guidelines.

FGI Relevant Excerpt “Guidelines for Design and Construction of Hospitals, 2022, Sections 2.2-2.10 Obstetrical Unit and 2.2-3.4 Surgical Services).”

Substantiation As facilities across the country strive to create FCCs, components of an SDU are the basis of a successful program.

Economic Viability Benefit-Cost Analysis (added): Added cost; depending on how much of the space can be shared with the OB department or shall be built new solely for the use of the FCC.

Added Benefits:

- Patient/Staff Safety
- Patient Care
- Operational Efficiency

Neutral Benefit: Facility Operations

Added Cost:

- Capital
- Clinical Operations



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Appendix

Alignment with Existing Standards

This evidence- and experience-based white paper has been peer reviewed by specialists including pediatric fetal surgeons, maternal-fetal medicine specialists, nurses, architects, operational consultants, hospital leadership, families, and others.

It aligns generally with the 2022 Facility Guidelines Institute (FGI) Guidelines for Design and Construction, with exceptions and additions noted. This white paper goes beyond FGI fundamentals to include emerging best practices and innovations tailored specifically to fetal care centers (FCCs). Like all such guidance, it will require regular updates as practices and technologies evolve.

FGI is an independent nonprofit organization that develops and maintains national codes for the design and construction of hospitals, outpatient facilities, and residential healthcare environments. While FGI provides minimum standards for many relevant areas (e.g., obstetric units, ORs, imaging), it does not currently include specific design guidance for FCCs.

Because FGI Codes and Guidelines are adopted differently across states—and some states use their own regulatory codes—up-to-date information can be difficult to track. FGI provides an interactive map showing how and where its codes are adopted: [Adoption Map - Facility Guidelines Institute \(fgiguide.com\)](https://www.fgiguide.com/Adoption-Map).

Conclusion & Next Steps

The development of these Facility Design Guidelines marks a significant step toward improving the environments in which Fetal Care Centers (FCCs) operate. By establishing a flexible but comprehensive framework rooted in clinical excellence, patient experience, and practical design, this document supports the delivery of safe, coordinated, and future-ready maternal-fetal care.

This document aims to support appropriate, safely built environments for fetal care services by providing comprehensive minimum guidelines specifically for facilities. These recommendations are intended to serve as a baseline, adaptable to the needs and capacities of a wide range of organizations — from large academic medical centers to smaller regional programs. As fetal therapy continues to evolve, so too must the physical spaces that support it.

We recognize that true excellence in care design requires input from those who live and work in these environments every day. We invite the following audiences to review and respond to these guidelines with feedback, suggestions, and shared experiences:

- Patients and families who have experienced care at FCCs
- Clinicians and care teams involved in maternal-fetal medicine and pediatric surgery
- Healthcare designers, architects, and planners
- Regulatory and policy leaders

Your insights will help ensure that the built environment continues to reflect the values of safety, dignity, innovation, and family-centered care. As future versions of these guidelines are developed, input from across disciplines and communities will remain essential.



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Resources

- **[Fetal Health Foundation – Fetal Therapy Think Tank \(FTTT\)](#)**
Convening national experts to guide the development of standardized FCC design guidelines.
- **[Facility Guidelines Institute \(FGI\)](#)**
Authoritative design codes for healthcare facilities, including outpatient clinics, obstetric units, imaging, and surgical spaces. See Appendix for applicable references.
- **Design Coalition**
A multidisciplinary committee formed under FTTT to create this Documentation of Recommendations based on facility reviews, stakeholder surveys, expert consultation, and current research.
- **Participating Academic Medical Centers and FCCs**
Exemplar facilities contributed operational insights and user experience data to inform best practices and realistic benchmarks for comprehensive maternal-fetal surgery centers.
- **Referenced Literature and Research Articles**
A curated selection of evidence-based studies and white papers reviewed during the development process (listed in the Bibliography).
- **Patient and Family Input**
Fetal Health Foundation / Fetal Therapy Think Tank Design Coalition. 2025. “Fetal Care Center Design Guidelines: Patient and Family Questionnaire.” Anonymous online survey of former patients and families of fetal centers was conducted on AllCounted.com (unpublished)

Clinical Leadership and Contributors

Dr. Timothy M. Crombleholme, Dr. Kenneth J. Moise, Jr., and Mary Beth Martin, who founded the Fetal Therapy Think Tank, have been instrumental in its creation and numerous meetings since 2016. Internationally recognized leaders in fetal care, Drs. Crombleholme and Moise provided expertise and oversaw the development of these fetal care center design guidelines and continued to provide valuable insight at key milestones throughout the process.

- **Timothy M. Crombleholme, MD, FACS, FAAP** – Director of the Fetal Care Center at Connecticut Children’s and Professor of Surgery in the Division of Pediatric and Thoracic Surgery. Faculty Appointment: Professor of Pediatrics, Surgery, & Obstetrics/Gynecology, University of Connecticut School of Medicine.
- **Kenneth J. Moise Jr., MD** – Board-certified maternal–fetal medicine specialist, Director of the Comprehensive Fetal Care Center at Dell Children’s Ascension. Faculty Appointment: Professor in the Department of Women’s Health at Dell Medical School.
- **Mary Beth Martin, BSN, MBA** – Executive Healthcare Consultant and Co-Author of “*Recommendations for Facility Design Guidelines – Fetal Care Center.*” (Refer to Martin’s biography on the next page 29.)



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Travis Leissner is a seasoned architect and strategist with over 30 years of experience leading the planning and design of healthcare and education environments. He has played a key role in shaping women’s and children’s hospitals, medical schools, and wellness-focused campuses both in the U.S. and internationally. A founding board member of the Fetal Health Foundation and co-founder of the Fetal Therapy Think Tank, Travis brings a unique blend of design expertise and mission-driven leadership. His portfolio includes landmark projects at Children’s Health Dallas, Winnie Palmer Hospital, Sidra Medicine, and the TCU School of Medicine. Travis also serves as the founding chair of ULI North Texas’s Health, Education & Life Sciences Council, vice-chair of Kids-University Board, and an advisor to Dallas College’s Interior Design program. Passionate about innovation and collaboration, he continues to advance environments that improve health, learning, and community outcomes.

Mary Beth Martin, BSN, MBA, Executive Healthcare Consultant

Mary Beth Martin brings over 35 years of experience in maternal-fetal medicine, beginning her career as a nurse and quickly becoming a leader in fetal intervention care. She has held executive roles at top children’s hospitals, including OHSU Doernbecher, Children’s Hospital Colorado, Children’s Hospital of Philadelphia, and Texas Children’s Hospital. MaryBeth has successfully planned and launched numerous high-risk maternal-fetal programs and advised on the design and operation of special delivery units and fetal surgery suites. Known for her strategic vision and clinical expertise, she has driven significant improvements in fetal health services, optimizing outcomes and expanding program reach. MaryBeth is a founding member of the Fetal Therapy Think Tank and serves on the board of the Fetal Health Foundation, actively contributing to research, education, and community partnerships that advance maternal and fetal care worldwide.

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Teri Oelrich is an experienced partner with a strong track record in architecture and planning. She brings expertise in business development, strategic planning, market analysis, and facility master planning, helping organizations shape their built environments for long-term success. Teri combines her deep technical knowledge with sharp business insight to guide projects from vision to reality. She’s known for her collaborative approach and strategic thinking, working closely with clients and teams to deliver thoughtful, well-planned solutions.

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Judy Smith brings over 30 years of expertise in strategic planning, operations, and facility design, with an exclusive focus on women and children’s health. As co-founder of a women-owned consulting firm, she led more than 1,000 successful health projects across the U.S. and internationally. Her leadership included a 30-year role on the FGI Health Guidelines Revision Committee, shaping national healthcare design standards. After retiring from full-time consulting, Judy served part-time as a facilitator for The Center for Health Design’s Pediatric Environment Network (PEN). She has earned multiple awards for her work in high-risk infant settings and design guidelines, and was recognized as a “Top Innovator” by NOVA EXEC. A prolific author and speaker, Judy’s career reflects her deep commitment to improving outcomes through thoughtful, evidence-based design.



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Acknowledgements

Fetal Health Foundation

- **Lonnie Somers**, co-founder of the Fetal Health Foundation, contributed organizational support and personal insight shaped by his family’s experience with twin-to-twin transfusion syndrome (TTTS).
- **Erika Wolf-Ferraco**, Executive Director of the Fetal Health Foundation, was the Content & Production Editor and assisted with obtaining patient and family input.

Design Coalition Team Members

In addition to the authors, early Design Coalition contributors included **Sue Ann Barton** (retired from ZGF) and **Chris Cortes**, The University of Texas MD Anderson Cancer Center (formerly of CannonDesign).

Fetal Care Center Images and Resources

Architectural firms **ZGF**, **NBBJ**, **HDR** and **CannonDesign** contributed images to illustrate design concepts for the documentation of recommendations.

Patients, Families and Fetal Care Centers

Essential input was obtained via surveys and phone interviews from former fetal care center patients and families and from professionals at existing fetal care centers throughout the United States.

Assistance & Feedback

For feedback submissions or to participate in future design discussions, please contact Travis Leissner at Travis.Leissner@hoeferwelker.com.

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