Delivering More

Design Principles

Institute *for* Healthcare Improvement

MASS.

1st Edition

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The Delivering More project outlines a human-centred process to co-design ideal maternal care from the user perspective - with the aim of developing improved health facility designs that enable safe, respectful Maternal and Newborn Health (MNH) care provision and utilisation in traditionally underserved populations. With support from the Gates Foundation and the Elsa & Peter Soderberg Charitable Foundation, the project was led by the Institute for Healthcare Improvement (IHI), a not-for-profit organisation with a mission to improve health and health care worldwide. IHI partnered on the project with MASS Design Group — a nonprofit design, research, and engineering firm with extensive experience designing and implementing impact-driven health care infrastructure in LMICs.

Based on learnings from the immersions in Ethiopia and Bangladesh, we have developed a globally-applicable toolkit and a set of guiding principles for improving maternal and newborn facility design.

Project Lead

Institute for Healthcare Improvement

Project Partner

MASS.

About this Guide

This document contains overarching design guidance and recommendations for maternal and newborn care spaces. It seeks to empower designers, engineers, facility administrators, and implementing partners with the knowledge to champion impact-driven designs.

These design principles emerged out of a literature review, as well as direct engagement of mothers, family members, providers, and policymakers in Ethiopia, Kenya and Bangladesh. While local standards and guidelines differ across countries, these principles should apply across many global contexts.

The first section of this document, 'Design Insights by Space,' looks closely at key spaces and experiences along the continuum of childbirth care – from outpatient care, to arrival and assessment, labour, delivery, postpartum, newborn care, and family support spaces. A diagrammatic illustration is included for each of these spaces, along with descriptions of key design considerations and spatial adjacencies.

The second section, 'Unit Planning Considerations,' shows how those key spaces might come together at two different health facility scales: a community or sub-district-level health centre and district hospital. Space programmes and care flow diagrams have been included as reference points that should be used in combination with context-specific standards and facility norms to inform the design of user-centred and impact-driven maternal-newborn spaces.

Striving for Quality of Care

The design of the built environment can create tangible and resonant impacts. It can transform how people access and experience health services, amplify care delivery processes, and strengthen the social and economic fabric of communities. Investments in the built environment can also have less tangible, but symbolically transformative, effects: contributing to dialogues about dignity and equity, inspiring shifts in cultural values and attitudes, and catalysing changes in broader policies and sectors. Designing for quality of care is not only about supporting positive health outcomes, but recognizing that dignity and outcomes are inextricably intertwined.

Ensuring high quality, respectful, and dignified care necessitates a holistic approach to planning for each stage of the birth journey and acknowledging that space is essential to improving the quality of care for mothers and newborns. Health facilities across low- and middle-income countries (LMICs) are challenged to supply adequate space and privacy, as well as basic services like water and electricity. But we need to solve more than just these functional, technical needs if we are to improve the utilisation and quality of childbirth care. We need to design spaces that are respectful and grounded in community and place. Together, we must raise expectations and demand for health facilities that not only improve safety and survival as the bare minimum, but go beyond that to support the respectful and dignified childbirth experiences that families deserve.

PART 1

Design Insights by Space

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PART 2

Unit Planning Considerations

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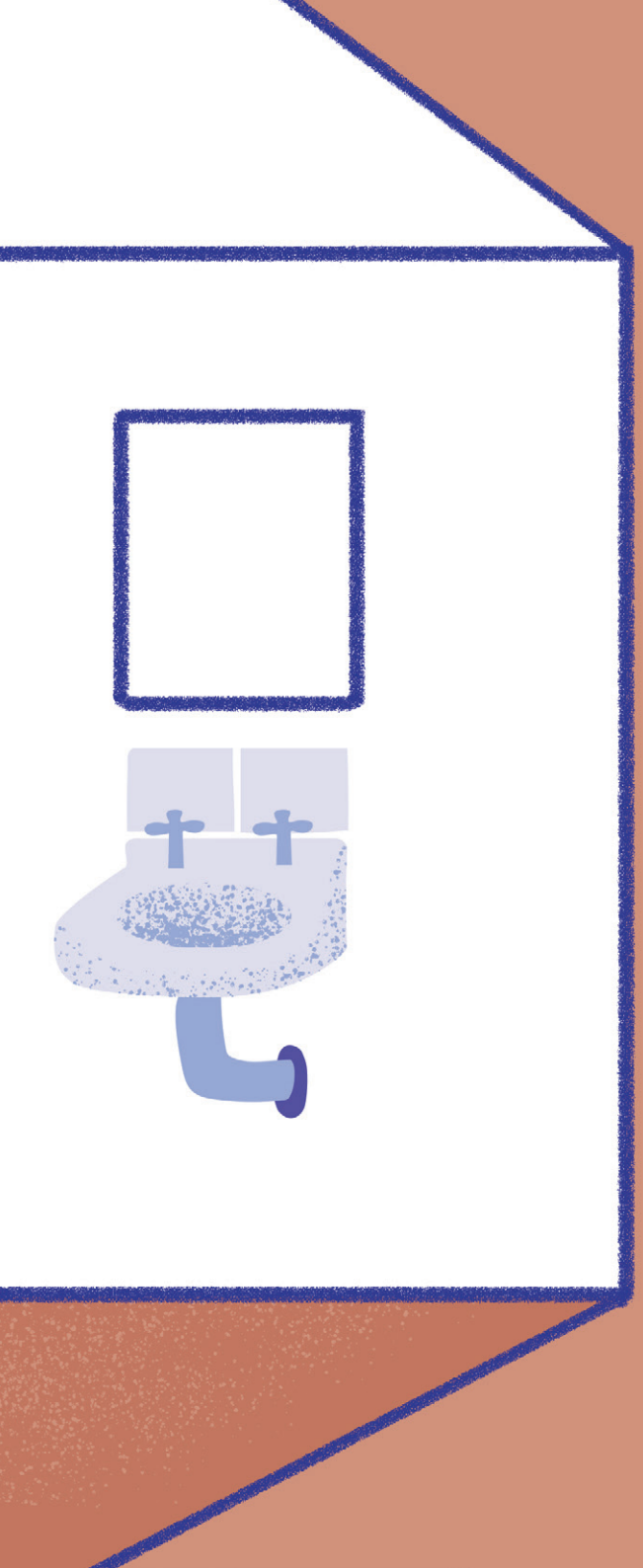
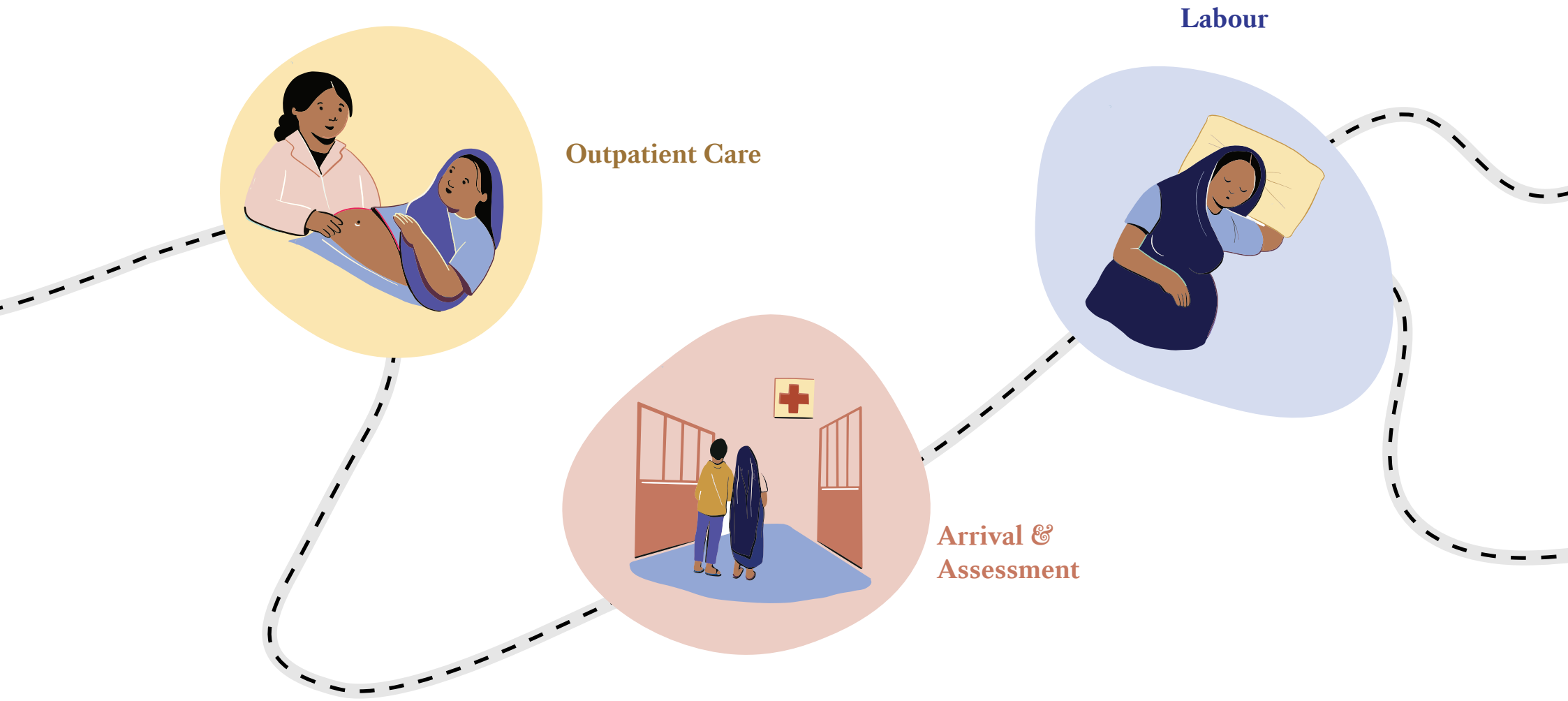


PART 1

Design Insights by Space

This section explains each stage of the birth journey from antenatal to postpartum care. We've included illustrations that convey potential layouts and features for each area.These should be understood as diagrammatic representations of design principles, which must be tailored to specific country standards as well as facility needs.

Detailed annotations have also been included, which call out important design considerations. 'The Basics' reiterate typical design features and parameters that are commonly acknowledged as best practice (yet not always achieved). 'Location Notes' includes notes and bubble diagrams articulating which key space adjacencies should be clustered together to improve patient and provider care flows. 'Key Insights' highlight important design features and considerations informed by both our research and user engagement (see the Primer for more information regarding our pilot project). While backed by evidence, these principles are less commonly acknowledged and documented in design standards and guidelines. We want to make sure that these features start to be better integrated and promoted in maternal-newborn spaces as they are essential to high-quality care.


Labour
Outpatient Care
Arrival &
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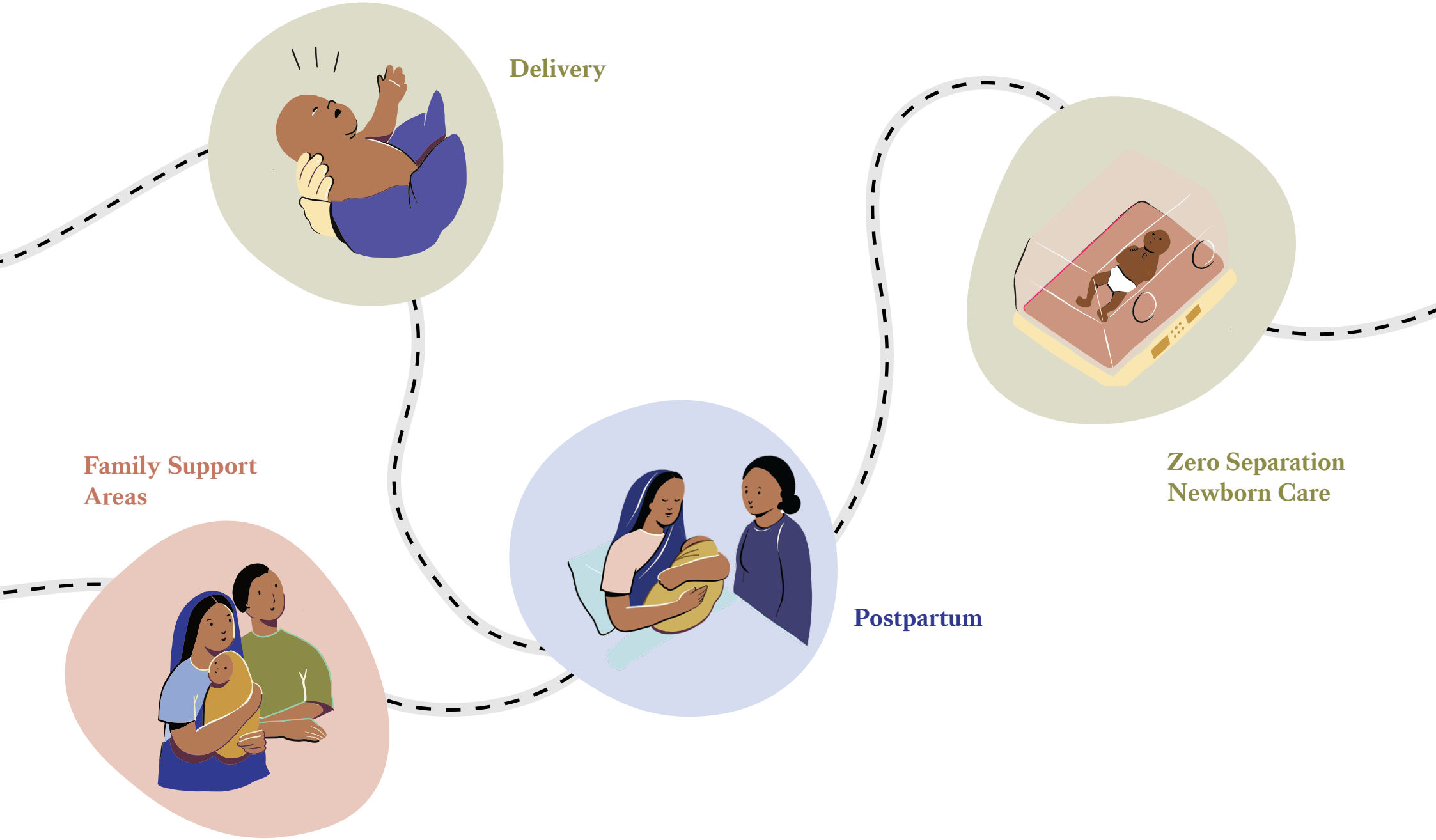

Delivery
Zero Separation
Newborn Care
Family Support
Areas
Postpartum

Outpatient Care

Outpatient care comprises both antenatal and postnatal services. Antenatal Care (ANC), sometimes called prenatal care, refers to the outpatient care that expecting mothers receive during their pregnancy and is the first point of contact they will have with health care facilities. Postnatal Care (PNC) refers to the outpatient care that recently-delivered mothers and newborns receive for the first 6 weeks following birth.

In medium- or large-scale facilities, routine ANC and PNC check-ups typically occur in consultation or examination rooms within the outpatient department. In smaller-scale facilities, maternal and newborn care outpatient programmes, including ANC and PNC, are sometimes located within the maternity/OBGYN area.

We know that first impressions can affect stakeholders' perception of and willingness to participate in care. When seeking ANC services, mothers must typically enter an environment they are not familiar with and have to find their way around the facility in order to locate outpatient services. They can also feel nervous during ANC visits, as clinical spaces can be unwelcoming and crowded, and they might not be well informed about the process. Similarly, poorly planned or overcrowded spaces can affect mothers' willingness to return to the facility for PNC check-ups. The following are some ways that improving outpatient care spaces can promote the continuum of care.

The Basics

1. **SPACE** — Consult rooms should provide adequate space for providers and patients to move around. The ANC/PNC room should be a dedicated space that is not used for other purposes or shared with other programmes.

2. **LAYOUT** — The room should include an examination bed, a desk for a care provider, and chairs for patients and companions. Storage should also be provided for document filing and equipment.

3. **PRIVACY** — Privacy is important to making mothers feel comfortable and respected. A window should be provided for natural light; but make sure that the size, location, and opening type considers patient privacy. Avoid orienting the foot of the exam bed toward a door, which can make mothers feel exposed. If that is unavoidable, then provide a curtain in front of the door.

4. **HAND-WASHING** — A hand-washing basin should be located close to the door for doctors and patients to wash their hands upon entering the room and prior to medical examinations.

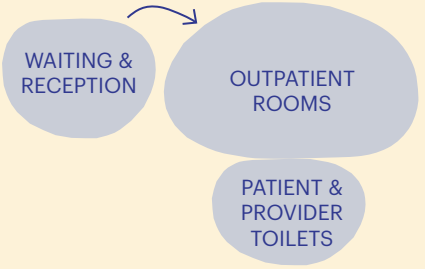
Location Notes

- To help make waiting safer and more palatable, make sure to provide comfortable, well-ventilated waiting areas. Try to avoid having patients wait in crowded interior corridors, as these can be poor for infection control. If the climate permits, consider semi-open waiting areas or outdoor waiting areas that are shaded from sun and rain. Seating should be provided for mothers awaiting care and their accompanying companions and family members (which can include adults, as well as children).

- Position toilets close to consult rooms for easy patient, companion, and provider access.

- The ANC room should be easy to locate within the OPD. The room should be clearly labeled, and providers at the reception desk or ticket counter should be ready to receive mothers and direct them to the ANC room.

- If the ANC is also used as a triage space for delivering mothers, make sure there is a short and clear route to labour and delivery spaces.

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Key Insights

5 **COMPANION SUPPORT**

Family members and companions should be welcomed and encouraged to participate in ANC visits. Make sure to provide seating for both mothers and companions, placed in a way that encourages them to be active participants in the care process. Inviting companions to listen to the baby's heartbeat or see the ultrasound can be an effective way to get them excited and involved.

6 **EDUCATIONAL MATERIALS**

Mothers want to be informed and treated with respect. Providers should explain what patients can expect during pregnancy and reassure mothers and companions about the birth journey ahead. Posters can be used as a visual aid to explain and promote health habits and practices during pregnancy.

7 **COMFORT**

Taking patients on a tour of labour, delivery, and postpartum spaces can also get them comfortable with what to expect when the baby comes, and encourage them to return for inpatient care. Consider the location of ANC spaces relative to the inpatient maternity area and plan how antenatal patients can be guided there on tours.

8 **FAMILIARITY**

Reducing clutter in the space and introducing 'homey' furniture or design elements can also make mothers feel more comfortable and boost their confidence in the care they'll receive.

Group Antenatal Care (G-ANC)

Group Antenatal Care (G-ANC) is a comprehensive, women-centred approach which incorporates clinical assessment, education, skills development, and peer support focused on better health outcomes within the mother-baby dyad. Many facilities that provide G-ANC also offer postnatal group care for mothers and babies.

Beyond conventional models of outpatient care - which involve one-on-one consultations between clients and healthcare providers - Group Care has been recognized as a promising service delivery model for improving the quality and access to Antenatal Care. It offers a more positive experience of care for clients and providers, which brings clients back for more visits, ultimately resulting in better health outcomes.

The World Health Organisation (WHO) recommends that pregnant women attend at least eight antenatal care visits with a trained healthcare provider. However in many contexts, women attend far fewer visits. G-ANC has the potential to demystify facility-based care, encouraging greater trust between mothers and clinicians, and thus increasing the attendance of antenatal and postpartum visits.

During G-ANC, cohorts of 8-12 pregnant women go through pregnancy checkups as a group (up to 15-20 women in some facilities). The groups comprise women of a similar gestational age, which allows women to tap into the experiences of their peers and creates a neutral, comfortable space for questions and conversation. Simultaneously, it allows healthcare providers to share information to a larger group at the same time.

G-ANC models generally register women at their first ANC visit and then meet 5-7 times throughout pregnancy. Each meeting or session includes group discussions where women learn from each other, guided by a healthcare provider. They complete self-assessments, taking their own weight and blood pressure. They each have a private physical examination by a healthcare provider which may include an ultrasound.

The ideal space for G-ANC includes a large, well-ventilated area for group meetings that provides audio and visual privacy from other people in the facility, as well as a private space for individual assessment and examination. G-ANC can be accommodated in a range of space types, including a tent, covered outdoor space, or a large indoor room such as a conference room. However, while these more improvised settings may be workable, they can sometimes reduce efficiency and continuity if they are uncomfortable or poorly arranged. For this reason, the preferred arrangement is a simple pavilion or dedicated group space with an adjacent consultation room. Ideally, physical examinations can be conducted in nearby existing consultation rooms. Postnatal group care meetings have similar needs.

Consider the following recommendations when adapting spaces to offer G-ANC and postnatal group care.

The Basics

1 **SPACE**

The open area for group activities should be designed with sufficient space for groups of 8-12 mothers. Companions are invited to attend G-ANC meetings and space allocation should consider these additional attendees. Space for the postnatal group meetings should accommodate mothers and newborns. A small assessment area should be provided with adequate space for providers and patients to move around, and also ensure audio and visual privacy.

2 **LAYOUT**

Provide comfortable and flexible seating for women and the providers to sit in a circle in the group area. A secured storage area should be dedicated to keep materials and equipment (such as blood pressure devices and body mass scales). A large table is useful for education materials, or setting up for child growth monitoring station. The assessment area should include an examination bed, a desk for the provider, and chairs for clients and companions. Storage should also be provided for document filing, educational supplies, medicines, and basic medical equipment.

3 **PRIVACY**

Audio and visual privacy is important to making mothers feel comfortable and respected. When taking place in a tent or freestanding pavilion, group care spaces should be designed to include privacy screens such as woven mats, curtains, wooden partitions, breeze block walls, or fencing. The assessment area should be located in a private and enclosed space, ideally curtained off within the group meeting space or nearby. As much as possible, soft surfaces should be included in the ceilings and along walls to reduce noise transmission and create a quiet, calm environment.

4 **COMFORT**

Design group care spaces with adequate openings to facilitate natural ventilation and passive cooling. Some settings women prefer to sit on the floor on cushions; in other places chairs are preferred. Many facilities are in warm climates and meeting spaces can feel hot. The space should be comfortable, and stay dry in the rainy season.

5 **HAND-WASHING**

Either a permanent or mobile hand-washing tank and basin should be located in the group meeting space and at the entrance of the assessment area for providers and clients to wash their hands upon entering the room and prior to medical examinations.


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Key Insights

6 **WAYFINDING & WAITING**
Provide adequate signage and wayfinding for women and their companions to easily locate the group care space. Where women might be waiting for care, provide adequate seating under shade.

7 **COMPANION SUPPORT**
Family members and companions are often invited to some group meetings, as they also can learn about important information and how to better support the women. Adequate seating should be provided for companions in the group meeting space and the assessment area.

8 **CHILDREN**
Many women find it difficult to attend ANC and G-ANC due to competing responsibilities. Older children that accompany their mother to G-ANC should have a safe space to sit and ideally quietly play while women participate in group care programs.

9 **EDUCATION MATERIAL**
Group care spaces can benefit from added visual aids and education materials around the room, cognizant that many women are nonliterate. These materials may include posters, self-assessment checklists, and visual cards with pertinent information such as birth stages and nutritional recommendations.

10 **SAFETY**
In postnatal care, groups will have babies and small children who may move around. Weighing and assessment areas for babies, as well as changing space should be considered for the safety of mobile children. A counter for PNC may include BP devices, a floor scale, baby scale, growth monitoring board and MUAC tapes.

Location Notes

- Ensure that the group care space is located in a private area within the medical facility campus. It may be beneficial for the pavilion to be located in close proximity to the maternity and newborn care programs to enable health care providers to move easily between blocks and provide a clear connection to the maternal and newborn health departments.
- The exam room should be within the group space and easily accessible.
- Position the Group care spaces close to toilets for easy patient, companion, and provider access.

Arrival & Assessment

Mothers arriving at facilities for birth can feel disoriented and anxious. Upon arrival, they should be able to navigate quickly and smoothly to the care they need. It is important to provide clear and intuitive wayfinding, and a welcoming space that makes families feel expected and reassured.

The registration and admission process differs between contexts and facility scales (see Part 2 - Unit Planning Recommendations). One common arrangement is a centralised registration area at the entrance to the facility. Another is to house the registration area in a ground-floor outpatient department, after which patients are sent to the inpatient maternity department. Patients typically approach a reception desk or ticket counter, and then they are assessed and triaged before being admitted. For a better and safer arrival experience, facilities should minimise waiting and queuing time, reduce crowding, and provide well-ventilated entry and waiting spaces. Make sure families have clear directions about where to go and explanations of how care processes will unfold.

During assessment, providers evaluate mothers' vital signs and labour progress. Mothers can feel vulnerable and may lean on companions for emotional and physical support. Because companions often act as intermediaries, and in some cases help to translate between providers and mothers, it is important that they be considered in the design of assessment spaces. Ideally, a designated room should be provided for assessment, but in space-limited facilities, assessment may take place in an Antenatal Care (ANC) room.

The Basics

1 **RECEPTION** Providers should be stationed at the entrance to health care facilities to ensure that they can receive mothers, family, and companions as they arrive. Arrange queues so as not to block circulation in the space, and ensure adequate ventilation.

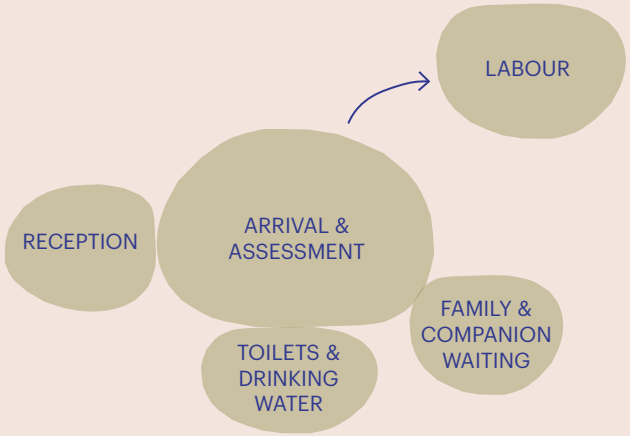
2 **TRIAGE** In a triage or assessment room, a provider will evaluate a mother to determine her stage of labour. The room should include an exam bed, a provider desk, and chairs for companions. Orient the bed and door in a way that ensures patient privacy. A hand-washing basin should be located close to the door, and storage should also be provided for document filing and equipment.

In order to reduce the bottlenecks at registration and admission, consider providing a dedicated room for triage and assessment (as opposed to using the same room for ANC, PNC, and triage, which results in mothers and companions waiting longer to receive care).

3 **EMERGENCY ADMISSION** Clear admission processes should be in place to get emergency patients to the care they need as quickly as possible. This includes planning a direct, unimpeded route between patient dropoff areas and labour/delivery spaces.

Location Notes

- Arrival/Assessment should be easy to navigate to from the central entry/registration area.
- Patients and companions mentioned that access to toilets and drinking water is extremely important within the OPD. At some facilities, toilets are located within consultation and observation rooms, meaning patients and companions who are awaiting service do not have access to a toilet. Health care facilities should place WCs and water dispensers/reservoirs proximate to the waiting areas.
- There should be a clear path to the labour ward from the assessment & triage area.

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Key Insights

4 **COMFORTABLE WAITING**

We know that a patient's experience of care is often influenced by their arrival, so improved waiting spaces can be essential to a positive first impression. Make sure that waiting spaces are well-ventilated, comfortable, and uncrowded.

- Better seating is an easy and inexpensive solution. In many typical facilities, seats are hard and uncomfortable and positioned in a way that does not allow family members to sit together or converse. Make sure to provide enough seats for patients, family, and companions at peak times; and position them in a way that will make waiting more palatable.
- Waiting areas must be designed for infection control. If the climate and context allows, design openings and windows to establish cross ventilation and passive cooling strategies. In tropical climates, it might be advantageous to position waiting spaces in shaded areas on the building exterior.
- Waiting patients and companions need access to toilets and drinking water. Sometimes, toilets are located within exam rooms, but WCs and potable water dispensers should also be placed proximate to waiting areas.

5 **WAYFINDING**

Floor layouts, building entries, and thresholds should be designed to ensure that moving from one programme to the next is an intuitive process. Wayfinding signage should be clear and visible to help mothers locate maternity programmes. Patients and other visitors may speak many dialects and might have limited literacy; therefore, wayfinding signage should leverage bold colors and iconography to help visually communicate information.

6 **EDUCATIONAL MATERIALS**

Diagrams and posters should be used to help communicate ideas to patients in a graphic and accessible way – from explaining stages of labour and what to expect, to hand-washing and other infection control practices.

7 **EARLY LABOUR ROOM**

Consider including an observation space for mothers who arrive too early in labour to be admitted immediately into the labour ward, but need a place to rest and be observed until their labour has progressed. Provide bedside seating for companions. (This is fundamentally different from a maternity waiting home, where mothers may stay for weeks prior to their due date.) The early labour ward should be located near the nurse station and labour ward.

Labour

Labour refers to the period of time before delivery, while a woman is in the latent stage of labour as her body prepares to give birth. During labour, mothers may feel vulnerable and in discomfort. They will need assistance and monitoring from health care providers and will also rely on family members or companions for support.

In many global contexts, labour takes place in shared wards, with delivery accommodated in a separate space. In some facilities, however, semi-private or private labour rooms may be provided for paying patients or those requiring isolation. Labour spaces should be placed in close proximity to delivery rooms and have direct oversight from health care providers.

In addition to patient beds, labour spaces should accommodate companions, spaces for walking and movement, as well as support equipment like yoga balls or Swedish bars. Research studies have shown that movement may shorten the duration of labour and help with pain relief, reducing the need for anesthesia and epidurals, and supporting better outcomes.

*** In some contexts, the term 'labour room' is used to refer to a delivery room; but here we are referring to a labour room as the space where the mother experiences the latent stage of labour, but not delivery.*

The Basics

1. **BEDS** — Provide an adequate number of beds for labouring mothers. Consider average vs peak scenarios and whether there are additional beds that can be used for overflow. Try to have a separate space for labouring mothers that is not mixed into a general female ward. Ideally, labour beds will also be in a different space than postpartum beds for privacy.

2. **SPACE** — Provide adequate space in the room around each bed for circulation.

3. **PROVIDER OVERSIGHT** — Labouring patients require constant care and monitoring, so providers must be positioned in close proximity to enable visibility and oversight. Consider placing a centralised nurse station next to the labour ward, visible through a glass window or door; or alternatively, embedding a small nurse outpost (e.g., a desk) within the labour ward for more immediate supervision.

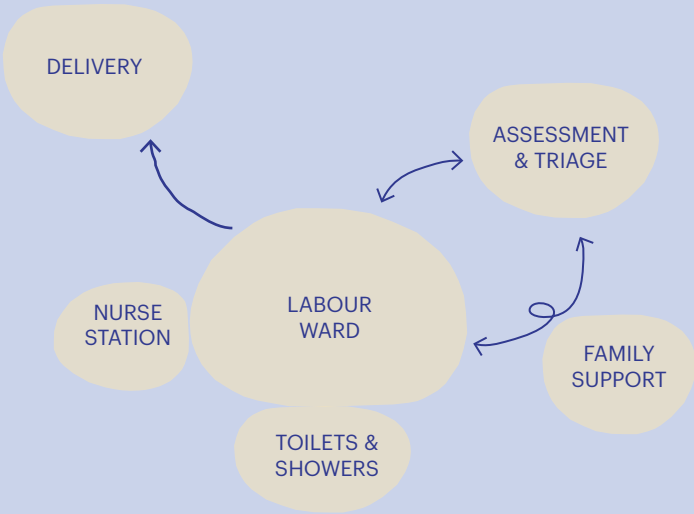
4. **PRIVACY** — Each patient bed should incorporate a privacy divider, such as a curtain. Keep in mind, however, that patient privacy needs to be balanced with provider oversight. Depending on the context, beds may also need mosquito netting.

5. **COMFORT** — Each bed should have visual access to an operable window with a view to the outside. Spaces should be designed to provide an appropriate degree of natural light, ventilation, and thermal comfort. Ceiling fans may also be provided to regulate interior room conditions.

6. **HAND-WASHING** — Place a hand-washing basin within each ward or room that is easily accessible to patients and providers.

Location Notes

- Locate the labour ward in close proximity to a nurse station and ideally maintain direct visibility between patients and providers.
- Provide clear and easy access between the labour ward and delivery room.
- Position toilets and showers close to the labour ward for easy patient and companion access.

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Key Insights

7 **LABOUR WALKING AREA**

Physical movement can help advance labour, as well as assist with pain management. Provide a dedicated, uncrowded, and private labour walking area featuring grab bars or handrails that mothers can lean on and benches for resting. In rural areas or sites with lots of space, consider locating a labour walking area outside as part of a landscaping strategy. In denser urban areas or highly developed sites, provide private labour walking areas on a balcony or within a designated corridor.

8 **LABOUR EQUIPMENT**

Labour support equipment (such as Swedish bars, labour slings, ropes, or birth balls) can also be used to support movement and pain management. Consider integrating a nook for labour support equipment directly within the labour ward.

9 **COMPANION SUPPORT**

Companions play an important role by supporting labouring patients both physically and emotionally, but are often not considered in the design of labour spaces. At a minimum, make sure to allocate space for one companion to sit next to each patient bed. If the space permits, also consider incorporating a bench alongside each patient bed for a companion to sleep next to mothers.

10 **PERSONAL STORAGE**

It is important for mothers and companions to have secure space to store their personal belongings. Storage areas can be provided bedside, in a nightstand, or integrated underneath the companion bed. Or, alternatively, a lockable cabinet placed elsewhere in the room.

11 **EDUCATIONAL MATERIALS**

To reassure mothers, provide posters explaining the progression of labour and what to expect in their care journey. Also consider including illustrations that provide information about labour positions or pain management strategies. These materials should be graphically clear and written in local languages.

12 **LABOUR TRACKING**

Consider providing a small whiteboard, clipboard, or notepad next to each bed to track the mother's labor progression. This can be an important way for providers to share information across staff shift changes and can also help keep mothers and companions informed so they feel included and empowered in her care.

13 **PLANTS**

Integrating plants and greenery can create a more pleasant, comfortable environment. Studies have also shown that a view of nature can help with pain management. Consider including planters in patios or balconies or landscaping outdoor spaces where possible.

Delivery

Delivery is the climax of the birth journey. While it can be an emotional and vulnerable experience, it is also a beautiful moment that should be celebrated and respected.

In many global contexts, delivery takes place in a designated delivery room located in the maternity department or in an operating room. Often, these spaces can be cluttered and lack basic privacy for mothers at a time when they feel most exposed and vulnerable. Delivery rooms can take many forms, including large open rooms with multiple beds and privacy dividers, smaller stalls or partitions within a shared delivery area, or semi-private or private rooms. More private configurations generally offer a better experience for patients. However, staffing considerations are also important, as more private rooms can make it more difficult for providers to monitor and care for multiple patients at once. Decisions about the layout of the delivery area should therefore balance the benefits of patient privacy with the need for adequate staff visibility and supervision. To ensure quality care, delivery spaces must go beyond the bare minimum of being safe, sanitary, and functional. They must also be designed for comfort and dignity.

The World Health Organization (WHO) frames birth position of choice as a fundamental aspect of a positive childbirth experience. Delivering in a bed, lying down, is not always what is best for the mother and baby. Mothers should have agency in choosing the position they are most comfortable in, supporting both their physical and emotional comfort. Additionally, upright birth positions can help reposition babies to support a safer birth, and gravity may help ease the birth process. To design spaces that support safe and respectful deliveries, consider the following recommendations.

The Basics

1. **BEDS** — Provide an adequate number of delivery beds in a designated delivery area. Consider average vs peak scenarios and whether there are additional beds that can be used for overflow. (For example, sometimes a triage or observation room can serve as an extra space for deliveries, but this should be limited to extreme circumstances.)

2. **SPACE** — Provide adequate space around each delivery bed for caregiving and movement. Make sure there is unobstructed space at the foot of the bed for providers to deliver the baby.

3. **PRIVACY** — If there are multiple delivery beds in a room, integrate partitions or curtains to create separate bays. To maintain visual privacy, never orient the foot of a delivery bed toward a door. If that is unavoidable, then provide a curtain in front of the door.

4. **COMFORT** — The delivery room should include an operable window with a view to the outside. (This can be a high or screened window to maintain privacy). The delivery room should also be designed to provide an appropriate degree of natural light, ventilation, and thermal comfort.

5. **HAND-WASHING** — Provide a centrally-located sink with reliable running water and adequate counter space. To ensure privacy and reduce falls, the delivery space should also give mothers direct access to a handicap-accessible toilet and shower without having to exit the delivery room.

Location Notes

- To accommodate visual and acoustic privacy, place the delivery room in a more private area within the MNH unit, away from highly crowded or trafficked areas.

- Ensure that the delivery room has close access to both labour and operating rooms (if available), without requiring patients to pass through public circulation or waiting areas.

- Plan a designated route to the delivery room for emergency scenarios in which mothers may arrive at the facility in late stage labour or need to be transferred out to a higher-level referral facility. Try to make this route as direct and obstacle-free as possible.

- Position support spaces like dirty/sluice and clean/storage rooms to be directly accessible from the delivery room. This will enable more efficient transfer of materials and supplies, saving staff time and effort, as well as uphold best practices for cleanliness and sanitation.

- If possible, it is also ideal to provide close access to the postpartum area to prevent newly-delivered mothers from having to traverse a lengthy or complicated route. However, this adjacency is less critical than the others listed above.


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Key Insights

6 **COMPANION SUPPORT**
Companions should be allowed into the delivery room to provide physical and emotional support to mothers. Allocate space for one companion to sit next to each delivery bed, preferably near the head of the bed.

7 **CHOICE OF BIRTH POSITION**
Integrate a designated space for alternative birth support equipment in the delivery room – for example, a nook or a corner that is dedicated for this purpose. Birth support equipment can include a birthing stool, birth ball, pole, sling, or wall bars. A bar can also be integrated directly over the delivery bed to allow for squatting. Make sure to know what birth positions local mothers prefer and select equipment accordingly. Staff training will be needed to advocate for these practices and to support mothers seeking alternative birth positions.

8 **EDUCATIONAL MATERIALS**
To make mothers aware that alternative birth positions are an option, display posters or illustrations showing possible birth positions and place birth support equipment in a location that can be easily seen by mothers.

9 **NEWBORN CARE**
Designated areas for newborn care and resuscitation should be incorporated in the design of the delivery room. In smaller, lower-volume facilities like health centres, delivery rooms typically include a "newborn corner." This can be as simple as a counter with a pad, where the newborn can be cared for immediately after birth. In larger, higher-volume facilities like hospitals, delivery rooms may include more technical resuscitation units or equipment. Whatever the facility type, newborn care areas should be placed within direct view of the delivery bed so the mother can see the baby at all times. It can be traumatic for the baby to be removed from the mother's sight without explanation of what is happening.

10 **SKIN-TO-SKIN**
The delivery space should be designed to support skin-to-skin contact between the mother and baby immediately after birth. Skin-to-skin care means drying and placing the newborn on the mother's bare chest, usually for an hour or until the first feed. Warm blankets or cloth can be placed over both mother and baby and lighting can be dimmed to allow for rest and recovery. Research shows that skin-to-skin contact encourages mother-baby bonding; better direct outcomes like temperature maintenance and more successful breastfeeding immediately after birth; as well as longer-term physical, emotional, and social development.

Postpartum Haemorrhage (PPH)

Addressing Postpartum Haemorrhage (PPH) is an urgent global priority for reducing maternal deaths. Characterized by excessive bleeding following childbirth, PPH remains the leading cause of maternal mortality worldwide, accounting for approximately 70,000 deaths annually[1].

PPH disproportionately affects women in low and middle income countries, where access to quality maternal healthcare is limited. Over 80% of maternal deaths from PPH occur in sub-Saharan Africa and South Asia[2]. To address these challenges, PPH care bundles have emerged as recognized, evidence-based approaches to managing PPH, especially in low-resource settings. These bundles provide cohesive guidance for prevention, early detection, and treatment. One notable example is the E-MOTIVE Bundle, implemented by Jhpiego in collaboration with Unitaid. This particular bundle has been trialed in Kenya, Tanzania, Nigeria, South Africa, Sri Lanka, and India, and is currently being scaled up globally.

PPH often occurs right after delivery of the baby, most commonly in the delivery room, operating room, or postpartum ward. PPH care bundles, such as the E-MOTIVE bundle, prioritize early detection, monitoring, and timely treatment through a package of coordinated actions. These typically include: routine use of a calibrated drape to measure blood loss, prompt administration of uterotonics, uterine massage, medication like tranexamic acid (TXA), Intravenous (IV) fluids, and escalation of care if bleeding continues.

For early detection, healthcare providers use a PPH drape, a special plastic sheet with a funnel, placed under the woman immediately after birth. This tool accurately measures blood loss, enabling providers to act quickly if bleeding is excessive and helping to avoid the common underestimation of blood loss that occurs with visual estimates alone.

Conversations with Jhpiego highlighted the numerous ways that spatial design can enhance the effectiveness of PPH practices. Based on these insights, the following recommendations outline key design considerations to better support clinicians and improve outcomes:

[1] World Health Organization. A Roadmap to Combat Postpartum Haemorrhage Between 2023 and 2030.

[2] World Health Organization. "Second Global Call for Data on Postpartum Haemorrhage."

Recommendations

1 BEDS

Ensure appropriate quantities and types of delivery beds. Beds should be adjustable and include either a foot cutout or space for a drape to hang. In lower-resource settings, manual beds may be used, while higher-tier facilities can consider hydraulic options. In some cases, the drape must remain in place for up to two hours as the mother remains in the delivery room or postpartum ward. Having an adequate number of beds enables healthcare providers to manage emergencies while also ensuring timely care for all mothers.

2 **LAYOUT**

Delivery beds should have at least two meters of clearance on all three sides to ensure adequate access for both routine and emergency care. Sufficient circulation space should accommodate wheelchairs, ensuring that clients who require mobility support can be wheeled up to the bed safely.

3 **CALL SYSTEM**

A reliable system is needed to alert staff quickly in the event of a PPH emergency. A bell or alarm that is easily activated at the head of each bed enables providers to call for help immediately. Alternatively, bells can be placed near the main entrance of each ward or beside the emergency trolley. Ideally, these alerts should be connected to the nurse station to ensure a rapid response.

If there are multiple delivery beds in a room, integrate partitions or curtains to create separate bays. To maintain visual privacy, never orient the foot of a delivery bed toward a door. If that is unavoidable, then provide a curtain in front of the door.

4 **EMERGENCY EQUIPMENT**

Each delivery room should have designated space for an emergency trolley or crash cart, equipped with all the equipment and resources needed to coordinate a rapid response. In delivery rooms with multiple beds, one shared trolley placed in a central and easily accessible location is typically sufficient. If the postpartum ward is located at a distance from the delivery room, a dedicated trolley may be needed for the postpartum ward.

5 **PROVIDER VISIBILITY**

Balancing patient privacy with the need for visibility and accessibility during emergencies is critical. In resource-constrained settings, ceiling-mounted curtain rails can offer a practical solution, allowing flexible partitions while maintaining provider access.

6 **VITAL MONITORING**

Reliable monitoring of vital signs every 15 minutes during the first two hours after delivery is essential. Ideally, this process should be automated, with clear data visible at the nurses' station, and adequate bedside space available for necessary equipment. In settings where automation is not feasible, healthcare providers should be trained on the importance of regularly monitoring and charting vital signs using a simple and visible tool such as a whiteboard. However, this approach requires strong staff engagement and consistent reinforcement from leadership to be effective.

7 **MEDICINE STORAGE**

Dedicate a specific shelf or cabinet for medications used in the managing PPH, including tranexamic acid (TXA). These medications must be stored separately from anesthetic drugs to prevent confusion, clearly labeled, and readily accessible during emergencies. Blood and blood products require secure, temperature-controlled storage, which should be located close to the point of care to ensure rapid availability. Both the delivery room and the operating room should have their own designated storage areas for critical supplies. A small refrigerator should also be available in the delivery room exclusively for storing oxytocin, and it should not be used for other medications such as HSC.

8 **WASTE MANAGE-MENT**

Provide clearly labeled, leak-proof containers for the disposal of used drapes and other medical waste. These containers should be located close to the ward but placed in a contained area to manage hygiene and odor effectively.

Postpartum

The hours immediately after birth are some of the most important for the near- and long-term health of newborns and mothers. Because this is the period when most adverse complications take place – like haemorrhaging and hypertension – the World Health Organization (WHO) guidelines for postpartum care recommend delaying discharge from the facility for a minimum of 24 hours.

Nonetheless, many health care facilities often struggle to keep women in postpartum care for more than a few hours after birth and a major factor for this is the quality of the built environment. Uncomfortable, crowded, and unsanitary spaces not only undermine the quality of care that providers are able to give, but expedite families' desire to return home sooner. On the contrary, respectful, comfortable, and culturally-responsive postpartum spaces may improve the quality, utilisation, and experience of care.

In many facilities, inpatient postpartum care takes place in shared wards; but in some facilities, semi-private or private rooms may be provided for paying patients or those requiring isolation. Postpartum spaces should be easily accessible from delivery and newborn care areas and have direct oversight from health care providers. In addition to patient beds, postpartum spaces should accommodate companions, integrate spaces for cultural and religious practices, and encourage mother-baby bonding.

The Basics

1. **BEDS** — Provide an adequate number of beds for the desired length of postpartum stay. The WHO recommends a minimum stay of 24 hours after an uncomplicated vaginal birth and 48 hours after a cesarean section. Provide a separate space for postpartum mothers, apart from the general female ward. Ideally, postpartum beds should also be separate from labour beds to ensure privacy and support mother-baby bonding.

2. **SPACE** — Provide adequate space in the room around each bed for circulation. In facilities that perform C-sections, it is preferable to have a dedicated ward or zone specifically for C-section patients.

3. **PROVIDER OVERSIGHT** — While the postpartum period may require less hands-on care than active labour, it is still a critical period when adverse events can occur. As a result, mothers need to be closely monitored. Position a nurse station in proximity to the postpartum area to enable provider visibility and oversight.

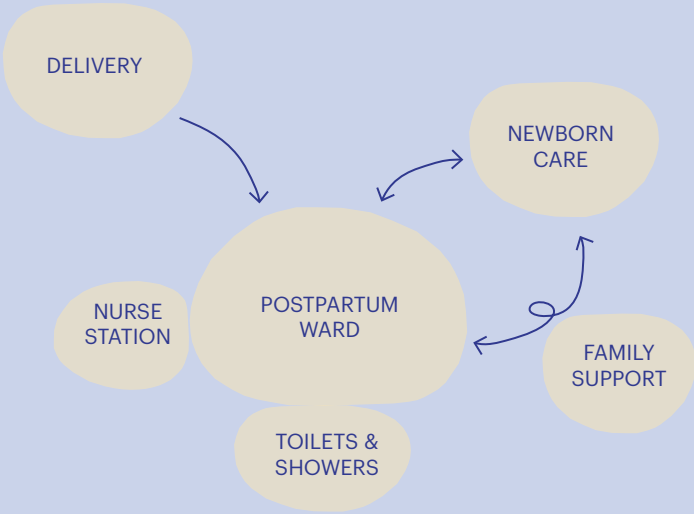
4. **PRIVACY** — Each patient bed should incorporate a privacy divider (such as a curtain or partial-height wall). Keep in mind, however, that patient privacy needs to be balanced with provider oversight. Each bed should also incorporate mosquito netting, if required in the context.

5. **COMFORT** — Each bed should have visual access to an operable window with a view to the outside. Spaces should be designed to provide an appropriate degree of natural light, ventilation, and thermal comfort. Ceiling fans may also be provided to regulate interior room conditions.

6. **HAND-WASHING** — Place a hand-washing basin within each ward or room that is easily accessible to patients and providers.

Location Notes

- Locate the postpartum ward in close proximity to a nurse station and ideally maintain direct visibility between patients and providers.
- Position toilets and showers close to the postpartum ward for easy patient and companion access, and try to offer at least one handicap-accessible WC for postpartum mothers, as recently delivered women may need extra help bathing or showering.
- Provide clear and easy access between the postpartum ward, delivery room, newborn care spaces, and family support areas.

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Key Insights

7 **COMPANION SUPPORT**
Companions play an important role by supporting postpartum patients both physically and emotionally, but are often not considered in the design of labour spaces. At a minimum, make sure to allocate space for one companion to sit next to each patient bed.Where possible, built-in benches can let companions sleep next to mothers, arranged to maintain clear access for staff. Where space is limited, chairs, floor mattresses, or foldable beds can be used, and should be easy to move or store to avoid obstructing care.

8 **NEWBORN CARE**
Evidence shows that keeping mothers and babies together is a best practice that leads to better outcomes. Rather than being placed in a separate nursery, healthy newborns should be kept with their mothers in postpartum areas.

9 **CULTURAL & RELIGIOUS PRACTICES**
Providing space for cultural and religious practices is critical to improving utilisation and longer postpartum stays, as well as ensuring a positive care experience. These practices will range widely across contexts, but may entail prayer, singing/chanting, or preparing and sharing traditional foods. Some of these practices may need to occur within the postpartum ward and be accommodated in a way that will be respectful of other patients, while others may need to take place outside the ward in shared waiting or outdoor areas.

10 **SOCIAL AREA**
Because mothers will stay in the postpartum space for a more extended period of time, including space to sit, eat, and converse with other mothers will support a more positive experience. If possible, incorporate a table or sitting area within the privacy of the postpartum ward. This will allow mothers to get out of bed and encourage community-building. This space could also be used for group education prior to discharge for topics like breastfeeding, infant care, and nutrition.

11 **PERSONAL STORAGE**
It is important for mothers and companions to have secure space to store their personal belongings. Storage areas can be provided bedside in a nightstand, integrated underneath the companion bed, or in a lockable cabinet placed elsewhere in the room.

12 **EDUCATIONAL MATERIALS**
To give mothers and companions more agency as part of the care team, provide posters explaining postpartum warning signs. Also consider including illustrations that provide information about breastfeeding or other recommended practices. These materials should be graphically clear and written in local languages.

13 **PLANTS**
Integrating plants and greenery can create a more pleasant, comfortable environment. Studies have also shown that views of nature can help with pain management. Consider including planters in patios or balconies, or landscaping outdoor spaces where possible.

Zero Separation Newborn Care

While healthy newborns should remain with their mothers in postpartum areas, small and sick newborns may require specialised and more prolonged care. At the hospital level, dedicated newborn care units should be provided as part of maternity services. The size of the unit and level of care will depend on the facility type, location, and referral level.

Newborn care units serve small and sick newborns (SSNs) who require treatment beyond routine postnatal care due to prematurity, low birth weight (LBW), or other complications. Best practices for the care of small and sick newborns include promoting Kangaroo Mother Care (KMC), breastfeeding, and family-centred care. These evidence-based approaches recognise that parents play a critical role as members of the care team. As such, newborn care spaces should be designed to encourage mothers and family members to remain with the newborn and actively participate in care.

Newborn units typically include one or more nursery wards containing several newborn cots. These spaces may range from small stabilisation rooms in lower-level facilities to multi-ward departments in larger referral hospitals. However, achieving high-quality newborn care also requires additional supporting spaces, including areas for KMC, donning and doffing, milk preparation, and milk expression and breastfeeding, as well as staff spaces such as nurses' stations, duty rooms, and break rooms.

** Depending on the context, newborn care units may be referred to as a Neonatal Intensive Care Unit (NICU) or a Special Care Newborn Unit (SCNU or SCANU).*

Zero Separation is a care model that prioritizes keeping mothers and newborns together throughout their stay in healthcare facilities—including during higher-intensity care.

Based on evidence that uninterrupted contact improves health outcomes for both, this approach challenges the common practice of separating small and sick newborns (SSNs) from their mothers in neonatal intensive care units (NICUs). Instead, it advocates for continuous proximity, regardless of the newborn's condition, and aligns with WHO and UNICEF recommendations for comprehensive, family-centered newborn care.

- **IMMEDIATE KANGAROO MOTHER CARE (iKMC)**
  iKMC introduces continuous skin-to-skin contact and exclusive breastfeeding immediately after birth—even before clinical stabilization. Designed for both stable and unstable newborns, it promotes early bonding, better temperature regulation, and timely initiation of breastfeeding.
  Evidence shows that it reduces the risk of hospital-acquired infections, strengthens immunity, supports growth, and alleviates stress for both mother and baby. For iKMC to be implemented effectively, mothers and newborns must remain together in the same room.
- **KANGAROO MOTHER CARE (KMC)**
  KMC is a widely adopted practice for stable newborns and involves ongoing skin-to-skin contact and exclusive breastfeeding,which can significantly improve the survival chances of premature or low birthweight babies.
- **MOTHER-NEWBORN INTENSIVE CARE UNIT (M-NICU)**
  When newborns require advanced medical support beyond Kangaroo Mother Care (KMC), the Zero Separation model remains central. In these cases, care is provided in a Mother-Newborn Intensive Care Unit (M-NICU), a specialized space where mothers and their SSNs receive care together. Within an M-NICU, mothers act as active caregivers and integral participants in the care continuum.

Although the term "mother" is commonly used for the person providing skin-to-skin contact, alternate caregivers or surrogates can also fulfill this role. The involvement of a family member can significantly alleviate emotional, physical, and psychological stress. These care surrogates are able to provide KMC even during a newborn's transfer from the Delivery Room or OR to the newborn unit. Facilities should ensure families have access to beds, food, and bathing and toilet facilities throughout the infant's hospital stay (WHO, 2022). Surrogates are crucial for maintaining continuous KMC and achieving Zero Separation, offering support when mothers need to eat, use the bathroom, or receive care.

1 **HAND-WASHING**

Each area within the newborn care unit should include a dedicated handwashing basin to support hygiene and infection prevention. In some settings, placing handwashing stations outside the wards may help reduce water spills and slippery floors, enhancing safety for healthcare providers, mothers, and companions. Stations should minimize spills and use non-touch mechanisms for water and soap to reduce contamination risks.

2 **TEMPERA-TURE**

Temperature must be carefully controlled for newborn safety. Newborn spaces should maintain air temperatures between 22–26°C (72–78°F) and relative humidity of 30–60%. Ensure uniform conditions, avoiding hot or cold spots, condensation, or direct drafts on newborn beds. Ventilation systems should suit the local climate and infrastructure. Where natural ventilation isn't feasible, mechanical systems (e.g., HVAC) are necessary. Note that while A/C units regulate temperature, most commercial models (like split units) lack HEPA filters and do not provide air exchange. Supplemental air cleaning systems are required for infection control.

3 **LIGHTING**

Provide natural daylight through glazed external windows to reduce heat gain/loss. Windows should be at least 0.6 meters from beds to prevent radiant heat loss. Use dimmable artificial lighting to create a comfortable environment. Task lighting should be installed at workstations, medicine prep zones, and handwashing areas, taking care to shield newborns' eyes from direct glare.

4 **PROVIDER SPACES**

Alongside a centralized nurse station, each ward should ideally have its own nurse outpost. Include duty rooms and changing rooms to support newborn care unit workflows and staff wellbeing.

5 **DELIVERY ROOM & OR**

These rooms should enable immediate skin-to-skin contact. Provide storage for KMC binders, diapers, caps, mittens, and socks. Layouts should include space to prepare mothers or surrogates to transfer newborns in KMC position. Store wheelchairs near exits for quick, safe transport of mothers and newborns.

6 **MILK PREPARATION**

Include a milk expression room with at least two comfortable seats for breastfeeding or pumping. A separate milk prep area should function like a small kitchen, supporting the cleaning of bottles, and preparation of formula or expressed breastmilk. It should include a refrigerator, sinks, counter space, and storage. While iKMC prioritizes direct breastfeeding, these spaces are vital for mothers who are ill, recovering, or temporarily separated from their infants.

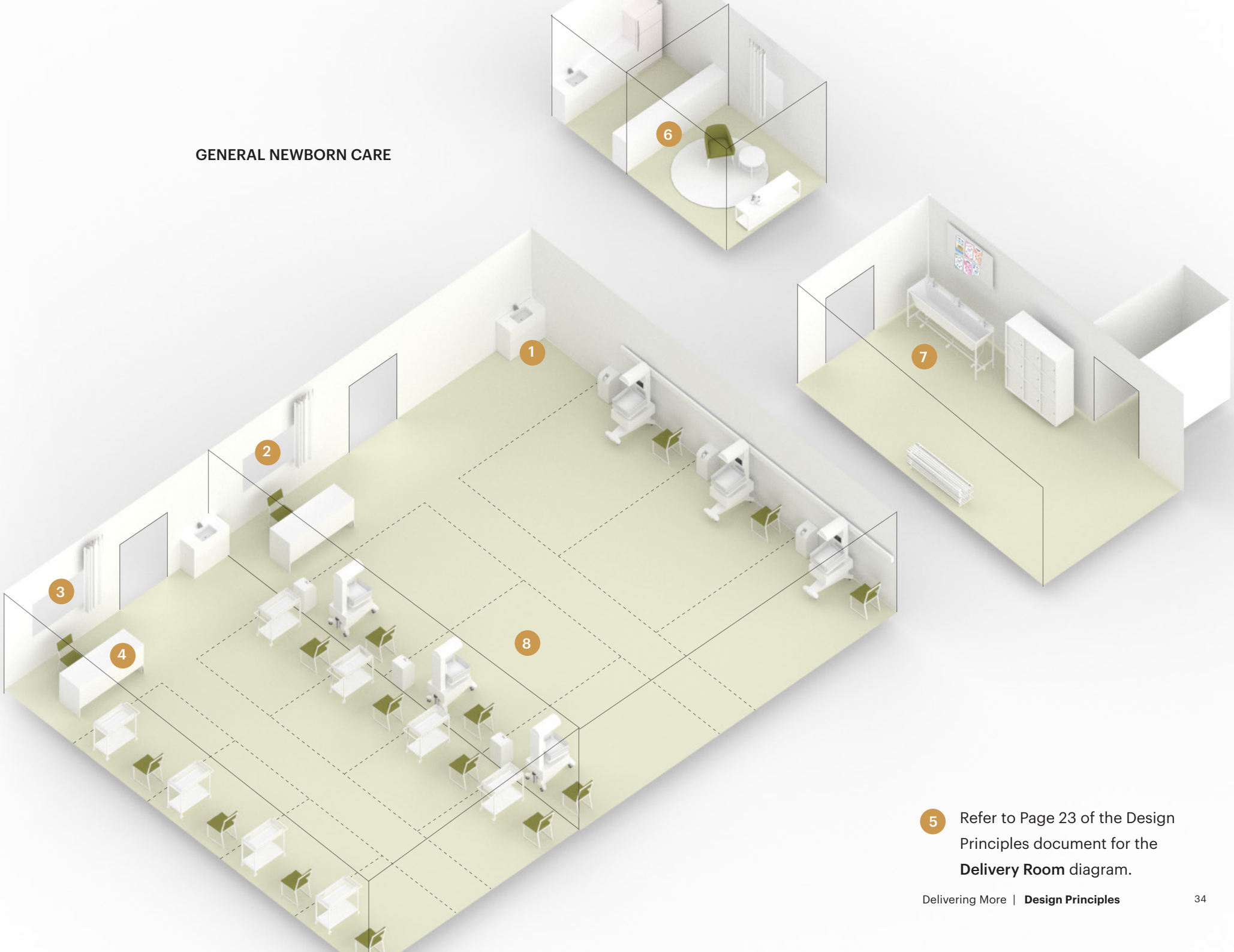
7 **DONNING/ DOFFING**

Designate a donning/doffing zone to separate clean and contaminated areas. Include a large handwashing sink, shoe racks, and lockers where mothers can store gowns and personal items before entering the newborn care unit.

8 **NEWBORN WARD LAYOUT**

Even in facilities with limited space where a dedicated M-NICU cannot be established, every effort should be made to provide a chair for mothers beside their newborns. General newborn care can be divided into low and high dependency wards. A low dependency ward may include simple bassinets, while a high dependency ward may include radiant warmers, incubators, CPAP machines, vital sign monitors, oxygen, and IVF, depending on the facility's capacity and needs. Each newborn care space should allocate between 5 and 16 m^2 per newborn, based on the level of care required. This ensures adequate room for clinical equipment and a caregiver's chair next to each incubator or radiant warmer, supporting Zero Separation practices and minimizing contact between beds.

GENERAL NEWBORN CARE



5 Refer to Page 23 of the Design Principles document for the **Delivery Room** diagram.

9 M-NICU LAYOUT

A M-NICU should be designed to adapt to varying needs and evolving care practices. The centre of the ward should be kept clear to provide sufficient space for healthcare providers to move freely and care for patients efficiently. M-NICU are generally recommended to include 8-12 beds; fewer beds may be operationally unviable, while more can become difficult to manage. This range balances the need for staff oversight with privacy and support for families. The exact number of beds should be determined by local health planners based on demand and capacity analysis.

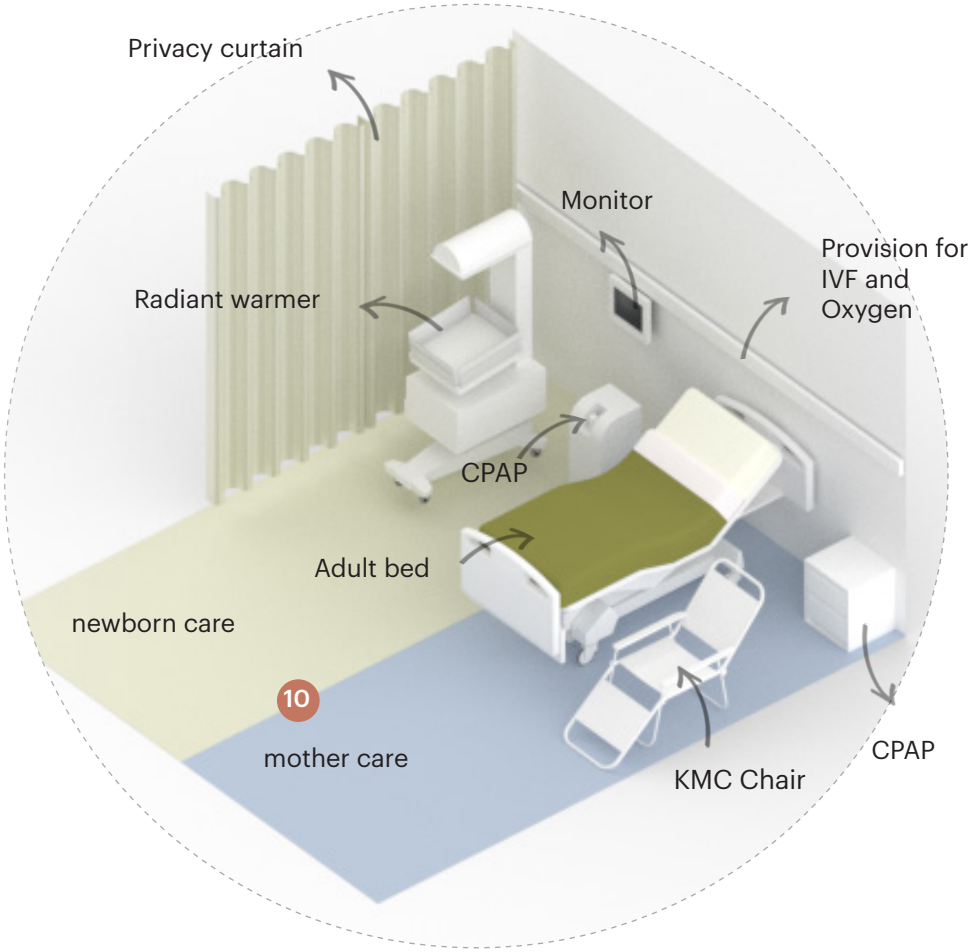
10 M-NICU BAY

Each mother-newborn pair should be provided 18-23 m², with roughly half the space dedicated to newborn care and the other half to mother care. Each bay should contain all necessary equipment including an adult bed with an adjustable backrest for skin-to-skin care, a continuous positive airway pressure (CPAP) machine, vitals monitor, a KMC chair, oxygen provision, and a radiant warmer—along with sufficient space for a provider to move and deliver care. If full rooming-in is not feasible due to space or operational constraints, a KMC chair should be provided at a minimum to ensure mothers can remain close to their newborns. These chairs reduce the burden of prolonged bed rest and offer flexibility.

11 EXAM AREA

An exam room within a newborn care unit is typically used to assess newborns and determine their acuity, particularly for incoming outborn patients. However, in many countries implementing the M-NICU model, recently delivered mothers often receive limited follow-up from obstetric providers, regardless of the type of delivery. For this reason, a dedicated space for maternal physical examinations is essential to ensure that mothers receive appropriate postpartum care.

M-NICU BAY



M-NICU WARD

12 POWER SUPPLY

Sufficient electrical outlets should be installed around the perimeter of newborn care wards, positioned according to the planned bed layout. General newborn care beds typically require 2-6 outlets each, while M-NICU bays generally need 6-8 outlets to support all essential equipment.

13 PERSONAL STORAGE

M-NICU mothers are provided with gowns. Ideally, lockers should be provided near the M-NICU entrance to allow mothers and surrogates to securely store gowns and personal belongings.

14 COOKING & DINING

This space allows mothers and surrogates to prepare food and take breaks away from the clinical environment. In many hospitals, it is a small indoor room. In facilities with larger campuses and single-story buildings, an indoor-outdoor space at the periphery of the M-NICU may be more appropriate.

15 COUNSELLING

A private counselling room is an important space required for sensitive conversations such as delivering difficult news. It can also serve many other purposes: such as conducting pre-discharge counselling, and educating families on M-NICU protocols, handwashing, and infection prevention.

16 SUPPORT SPACES

Newborn care units often lack essential support areas that are critical for maintaining quality of care. All newborn care units should provide nearby access to toilets and showers, spaces for cultural practices, dining areas, clinical storage, clean and dirty utility rooms, and a sterilisation room.

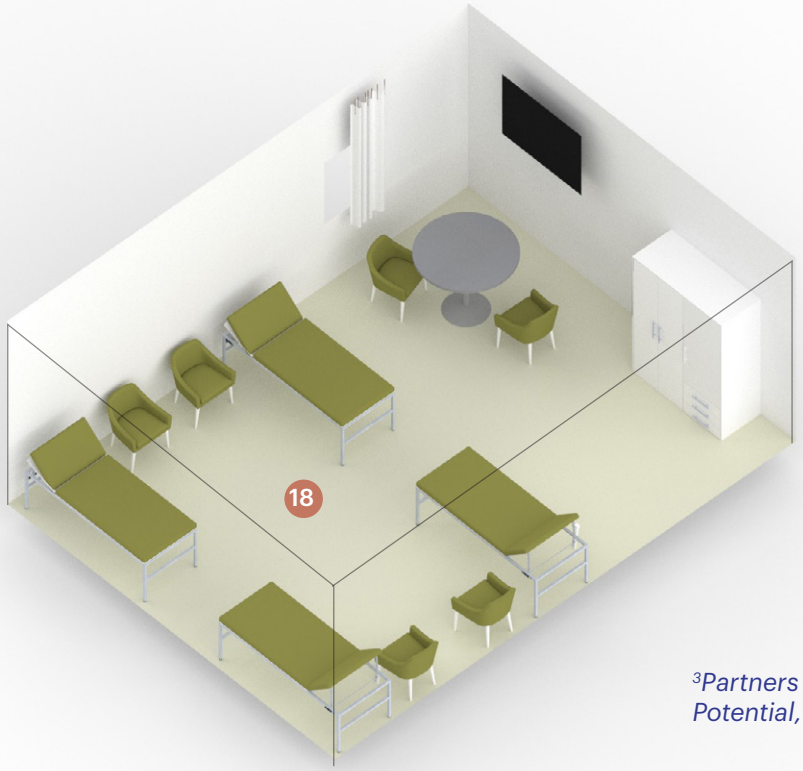
17 PRIVACY

Curtains should be installed between beds to provide privacy for mothers and surrogates. This is particularly important in cultural and religious contexts where modesty is prioritized, and when male surrogates are present in the ward.

SUPPORT & ANCILLARY SPACES

18 KMC

Named for the way kangaroos carry and nurse their young in a pouch, Kangaroo Mother Care (KMC) involves prolonged skin-to-skin contact between the mother (or a surrogate) and the newborn, along with breastfeeding when possible. KMC helps keep babies warm, stable, and regulated. It is highly adaptable and can be practiced alongside oxygen therapy, intravenous fluids, and even more intensive respiratory support[3]. A dedicated KMC space ensures that all mothers of preterm or low birth weight (LBW) newborns have the opportunity to engage in skin-to-skin care. The ward should include beds with adjustable reclining backrests, ergonomic reclining chairs, and storage for KMC aids. Ideally, the KMC ward should also include access to toilets, showers, and basic amenities like a television, refrigerator, cooking area, and laundry facilities to support maternal comfort and extended stays.

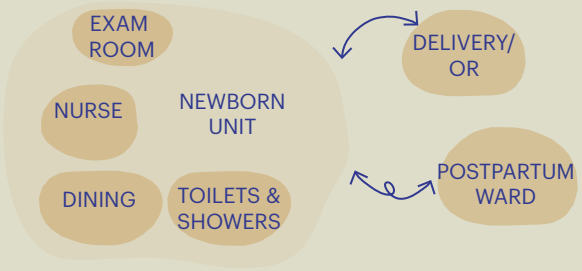


[3]*Partners of Human Potential, 2025*

Location Notes

Several programs should ideally be located adjacent to the Newborn Unit. However, designers, implementing partners, and facility teams should prioritize these adjacencies based on the specific constraints of each facility—while always centering infection control, care flows, and the comfort of newborns, mothers, and providers.

- The Newborn Care Unit should be located in close proximity to the delivery room and OR to allow safe and efficient transfer of small and sick newborns along with their mothers or surrogates immediately after birth. Shorter, protected routes reduce the risk of hypothermia.
- At facilities that admit outborn newborn patients, the layout should consider the ambulance drop-off location, ensuring a direct and efficient path for emergency deliveries and postpartum admissions to the newborn unit.
- Cooking and dining areas can be placed in the dirty zone outside the newborn unit; or alternatively within the clinical area, in a clearly demarcated clean zone, with separate entry and exit pathways. Strict hand hygiene and gowning should be enforced before entering any clinical area.
- Dedicated toilets and showers for mothers of small and sick newborns and their companions/surrogates should be located adjacent to the newborn unit, within the unit but clearly separated from clean care spaces. A separate, dedicated toilet should also be provided for clinical staff.
- Counselling and maternal exams spaces should be located near the M-NICU to support integrated, family-centered care.



Family Support Areas

Family members and companions play an essential role in childbirth by providing mothers with physical and emotional support. The WHO's 2018 publication, 'Intrapartum Care for a Positive Childbirth Experience,' states that all women have a right to a positive childbirth experience that includes support from a companion of choice.

Despite evidence demonstrating that companion support leads to better health outcomes for both mother and baby, companions' needs are often not prioritised in the design of health facilities. Within ward spaces, bedside seating is rarely provided for companions, leading to crowding and discomfort. Our engagement findings also highlighted the need for spaces for companion respite and rest, as well as spaces to perform cultural and religious practices.

While clinical spaces are usually described in national standards, family support spaces are often excluded. Here are some ways that designing for family members and companions as key stakeholders of the birth journey can promote respectful and quality care.

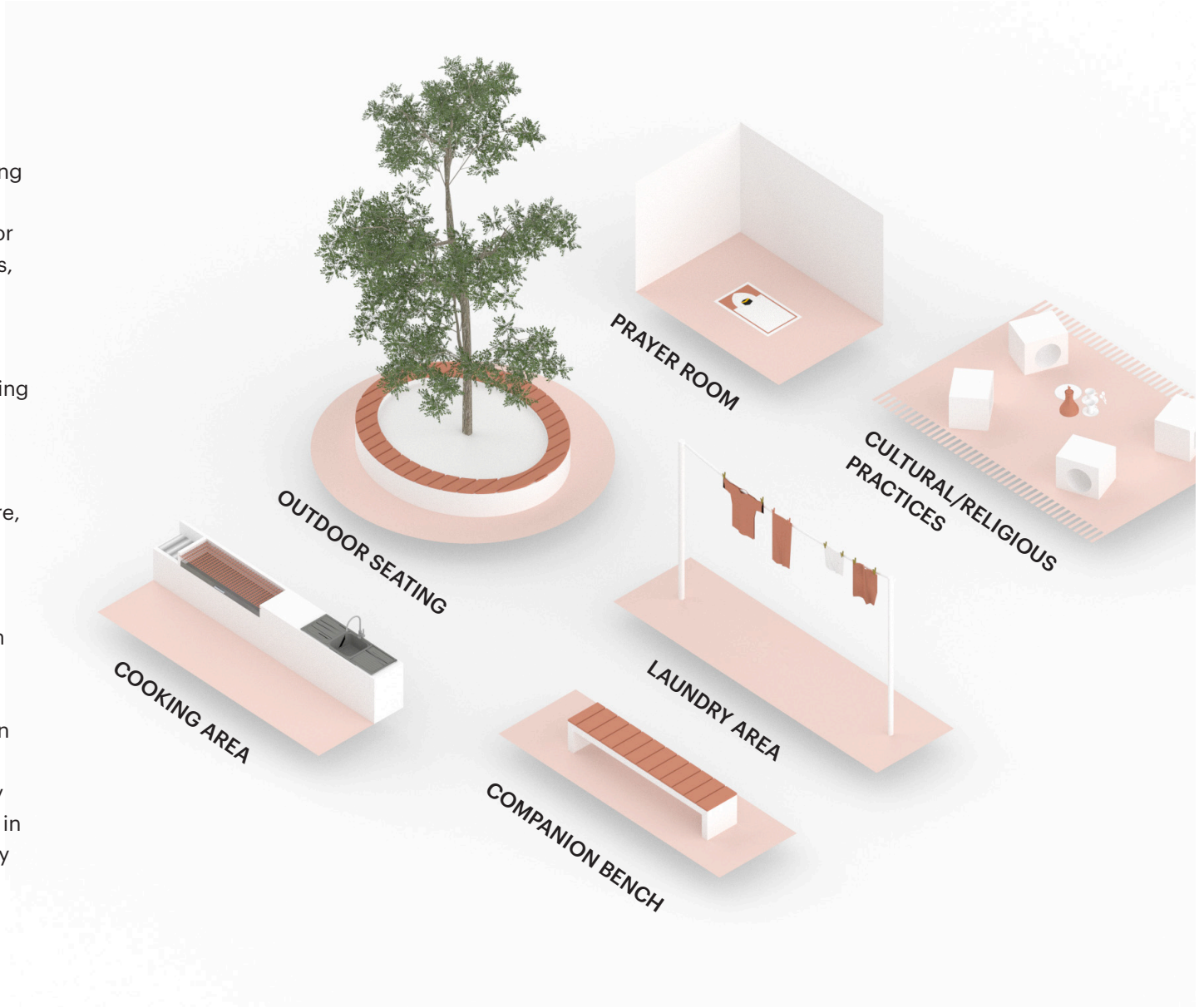
Key Insights

- In addition to space in wards next to the mother, also provide designated waiting and resting space for companions. This can be important to reduce crowding within patient care areas, as well as improve privacy and care. Some space should be located in the interior near the entrance to the unit or shared common areas, but outdoor covered or shaded areas should also be provided.

- Consider including benches that can double as sleeping areas at night.

- In some contexts, it is important to include space for prayer or religious practices. Depending on the culture, it may be necessary to provide separate female and male areas.

- Also consider providing laundry and cooking areas on site. Families often support mothers by cooking and doing laundry, but because these activities are not always planned for, they often end up happening in an informal way that contributes to disorganisation and crowding on site. In high rise urban facilities, this may be more difficult, but should definitely be considered in rural more open sites. Make sure the design of laundry and cooking facilities are culturally appropriate.



PART 2

Unit Planning Considerations

This section is aimed at showing how the previous design principles might be applied at different facility scales. We've focused on two facility types: health centres and district hospitals, as those are the most numerous and reach the most patients.

It is important to recognize that every facility design is unique and must be customized to specific care needs, cultural preferences, and environmental context. This document includes examples of space programmes and care flow diagrams, but these should be used as reference points and not standards that should be directly applied to other projects. You will need to use this information in combination with national standards and facility norms in your context to inform the design of user-centred and impact-driven maternal-newborn spaces.

Health Centre

A health centre (also known as a community health centre or health complex) is a smaller-scale facility which provides primary-level inpatient and outpatient care. In addition to primary health care services, health centres typically provide 24-hour maternity, accident, and emergency services and serve as the first point of contact for patients who will ultimately be referred to other facilities. Typically, they have procedure rooms, but not an operating theatre.

Health centres are usually staffed by physicians, midwives, and nurses. They serve low-risk patients and are located in both rural and urban areas, expanding health care access for populations who would otherwise have to travel far distances for services. They provide essential maternal and newborn care, including antenatal care, labour and delivery, essential newborn care, and postnatal care. Health centres range in size and capacity, but may see anywhere from 150 to 500 births annually.

Usually, MNH inpatient care at health centres will predominantly be low-risk vaginal births. Complicated cases will be referred out to other facilities. Some larger health centres may have a shared operating theatre that serves the entire facility, but c-sections are usually only performed in emergencies. Health centres do not typically have dedicated programmes to care for small and sick newborns, as these cases would also be referred to higher-level facilities. However, there should be dedicated resuscitation areas within the delivery room, and there may also be designated space for Kangaroo Mother Care.

Typical Space Programme

A space programme should be developed in collaboration with local implementing parties (such as the MoH) or through engagement with a health service planner. However, this basic programme describes some of the core spaces that should typically be included in a health centre maternity unit. Bed numbers should be tailored to a facility's delivery volume.

Area	*Programme*	*Quantity*	*Notes*
Inpatient Maternity			
PATIENT	**Assessment/Triage Room**	**1 consult/examination room**	This is a room where mothers are assessed before being admitted to care. To reduce bottlenecks at admission, it might be helpful to have a dedicated assessment/triage room. This is a standard consult room, including a patient examination table/bed and a provider desk.
	Labour Ward	**2-6 patient beds** ($7m^2$ minimum should be provided for each patient bed) **+ companion seating/beds**	A separate labour ward is strongly recommended so labouring patients are not mixed into a general female ward or sharing space with postpartum patients. Include seating for 1 companion next to each patient bed. If space permits, also include beds or benches for companions to sleep in the labour ward.
	Postpartum Ward	**2-6 patient beds** ($7m^2$ minimum should be provided for each patient bed) **+ companion seating/beds**	A separate postpartum ward is strongly recommended so postpartum patients are not mixed into a general female ward or sharing space with labouring patients. Include seating for 1 companion next to each patient bed. If space permits, also include beds or benches for companions to sleep in the postpartum ward.
	Delivery Room	**1-2 delivery beds** ($18m^2$ minimum should be provided for each delivery bed) **+ newborn resuscitation**	In addition to delivery beds, include space for alternative labour support equipment to provide mothers with a choice of birth positions. Newborn resuscitation areas should be provided within the delivery room.
	Patient WC	**2-6 toilets** **2-4 showers**	Patient toilets and showers should be directly accessible from labour and postpartum wards, as well as the delivery room. At least one toilet/shower should be handicap accessible.
STAFF	**Nurse Station**	**1 nurse station**	One centralised nurse station dedicated to maternity services should be sufficient for a health centre. However, depending on the unit layout and size, a small nurse outpost/ desk could also be embedded into the labour ward.
	Duty/On-Call Room	**1-2 beds**	Duty rooms (also called on-call or overnight duty rooms) allow providers to rest in close proximity to patients while they are on call or due to be.
	Staff Lounge	**1 staff lounge**	Space should be allocated for providers to change clothing and also take breaks. A staff lounge may include a table and kitchenette and be either designated to maternity providers or shared with other services.
	Staff WC	**1-2 toilets** **0-1 showers**	Separate staff WCs should be provided. Depending on the context, a separate toilet may need to be provided for male and female staff.

Area	*Programme*	*Quantity*	*Notes*
Inpatient Maternity			
SUPPORT	**Clean Store**	**1-2 clean store rooms**	Intended for storage of supplies and materials.
	Sterile Room	**1 sterile room**	Intended for cleansing of medical tools. Some health centres will have an autoclave for sanitizing equipment, but this most likely will be shared and not dedicated to MNH services.
	Sluice/Dirty Room	**1 dirty room**	Intended for disposal of medical waste and cleansing of medical tools.
	Electrical Plant Room	**0-1 electrical plant room**	This is a small storage space used to house electrical equipment serving the health centre. It should be accessible to staff only. Depending on how the maternity unit is laid out, it may or may not require a dedicated electrical room.
FAMILY/ COMPANION	**Family/Companion Waiting Area**	**Accommodating 5-24 people** ($2m^2$ minimum should be provided per person)	Family and companions are a critical part of the care team. It is important to have adequate space for family and companions in order to support a positive experience, as well as to keep the inpatient rooms from being overly crowded. This space should be well ventilated, with views to the exterior. If applicable, also consider including designated prayer or resting rooms for family members.
	Family/Companion WC	**1-2 toilets**	A dedicated WC should be provided near the waiting area for family/companion use. Depending on space availability and gender preferences, male and female companions may require separate toilets.
CIRCULATION/ EXTERIOR PROGRAMME	**Labour Walk**	N/A	Integrate a designated labour walking area into the unit. This can be a space or patio embedded within the labour ward; a private, uncluttered interior corridor; or an exterior courtyard or landscaped area.
	Exterior Areas	N/A	If possible, include dedicated, private patios or landscaped areas for patient and companion use. These will provide space for eating, resting, and mother-baby bonding. They may be outdoor or semi-outdoor.
	Laundry and Kitchen	**2-4 washing troughs** **1-2 stoves**	If possible, include a small laundry and kitchen area for companions. This should be located outdoors and will be more easily achievable in rural contexts or facilities with ample space. It may not be possible in urban or multistory facilities. Attention should be paid to contextual needs. It may not be necessary to provide fixed equipment like a gas stove; instead, a hearth could be designed for cooking on fire.
OR	**Operating Room (OR)**	**0-2 operating beds**	Most health centres do not have ORs. For those that do, ORs are typically shared and not dedicated to MNH services. As such, ORs will probably not be part of the formal MNH programme.

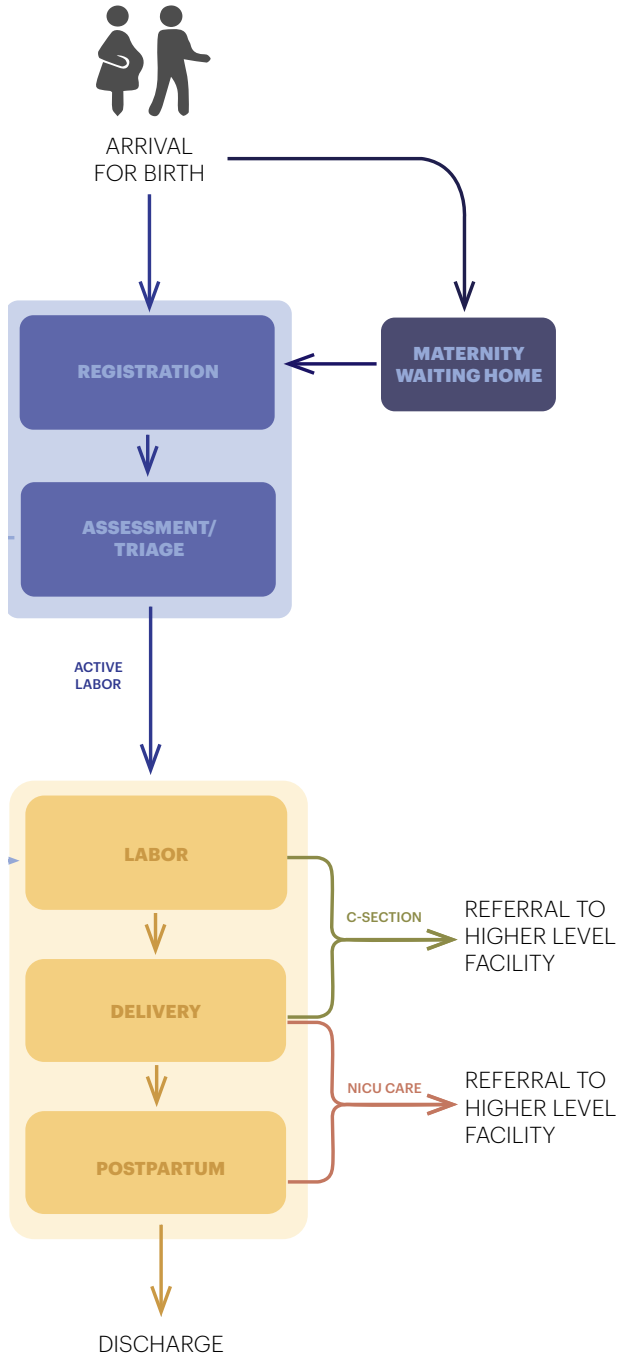
Area	*Programme*	*Quantity*	*Notes*
Additional Programme			
MATERNITY WAITING	**Maternity Waiting Home**	**2-4 washing troughs** **1-2 stoves**	Maternity Waiting Homes (MWHs) are not required, but are recommended, particularly in rural and hard-to-reach regions. Since mothers and companions may stay at the MWH for up to several weeks, the facility should be comfortable and include space for eating, socializing, and resting, as well as secure storage for belongings. If possible, incorporate beds or benches for companions to sleep on, as mothers may come to the facility with one or more attendants.
	WC	**1-2 toilets** **1-2 showers**	Maternity Waiting Homes should have their own dedicated toilets and showers. These should be well maintained and kept clean.
Outpatient Maternity			
	"After 5" (Pediatric Care) Treatment Room	**1 consult/examination room**	Standard consult room, including a patient examination table/bed and a provider desk.
	ANC/PNC Consult Room	**1-2 consult/examination room**	Standard consult room, including a patient examination table/bed and a provider desk.
	Immunization & Growth Monitoring Room	**1-2 consult/examination room**	Standard consult room, including a patient examination table/bed and a provider desk.
	Family Planning / Procedure Room	**1 procedure room**	The family planning and procedure room is used for consultations and examinations and is designed for outpatient procedures such as the insertion of an IUD or Comprehensive Abortive Care (CAC). It should be larger than the standard consult room to accommodate procedures.
	Milk Provision Room	**0-1 milk provision room**	Milk provision rooms are required in some countries to provide access to milk for mothers who may not be able to breastfeed. Breast milk is kept in cold storage, and mothers may collect milk during postpartum follow up visits.
	WC	**1-2 toilets**	For use by patients and family members utilising outpatient maternity services. It would be advisable to provide 1 female and 1 male toilet.
	Storage	**1 clean store room**	Intended for storage of supplies and materials.
	Staff WC	**1-2 toilets**	For staff use. (Could be shared with other programmes)

** Outpatient maternity programmes may either be co-located with the inpatient maternity programme or with other general outpatient services.*

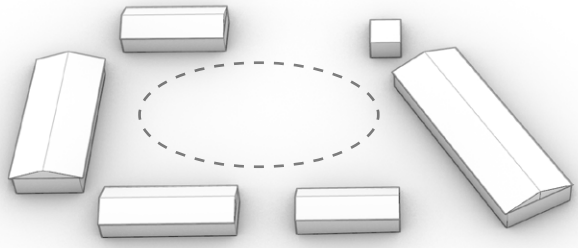
Ideal Care Flows & Space Adjacencies

While facility layouts will always need to be customized to local care practices and available infrastructure, the following bubble diagram can provide a starting point for considering care flows and space adjacencies for MNH care at health centres.

Bubble diagrams are simple illustrations that consist of bubbles (representing spaces) connected by lines to convey relationships between the spaces. They are used early on in the design process to inform space planning and organisation.



Typologies

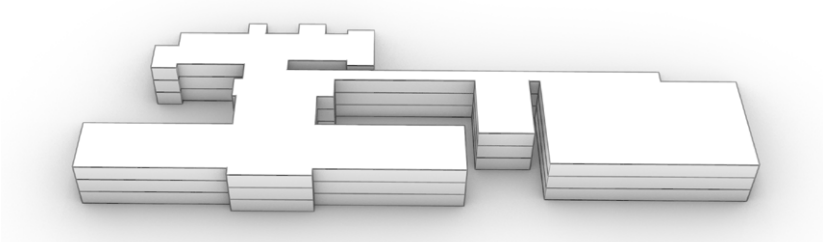


Type 1: Campus

In many settings – particularly rural or sparsely-populated areas – health centres consist of a series of small buildings on a site. Often, these are one-story, rectangular bar buildings, arrayed around a courtyard or along a circulation pathway. Utility infrastructure is typically limited, and as a result, such facilities may be challenged by unreliable access to water and electricity.

Typically, in this campus typology, inpatient maternity services (labour, delivery, and postpartum) are offered in a standalone building that is separate from other services. Outpatient maternity services may either be offered as part of general outpatient services or consolidated alongside inpatient maternal care.

If renovation of existing buildings is not possible or prudent, new construction may be an option if there is sufficient space on site. The benefit of such sites is that they offer an opportunity to spread out and integrate pleasant exterior or semi-exterior spaces that are important for positive care experiences (for example: family/companion waiting spaces, labour walking patios, and cooking and laundry areas).



Type 2: Multi-story

In other settings – particularly more urban or densely-populated areas – health centres consist of larger, multi-story building blocks. These may have been built at the same or different times and are often linked to permit movement between buildings. While utilities like water and electricity are usually more reliable in these settings, overcrowding is a common challenge. It is important to provide an adequate number of beds for mothers, as well as space for family members and companions. All spaces must be well ventilated and designed for thermal comfort, as well as infection control.

In this multi-story typology, inpatient maternity spaces such as labour and postpartum are sometimes embedded within general female inpatient areas. However, providing separate inpatient maternity spaces is strongly recommended to ensure quality of care and privacy for mothers. Outpatient maternity services are usually offered as part of general outpatient services on a ground floor.

If renovation of existing spaces is not possible or prudent, expansion or new construction may be an option if there is sufficient space on site. Vertical expansion can also be considered if the foundation was constructed to permit the load of additional floors.

District Hospital

A district hospital (also known as a general hospital or primary hospital) is a medium-scale facility which provides secondary-level inpatient and outpatient care. District hospitals serve a large catchment area and receive referrals from a network of community health centres. They operate 24/7 and are generally located in areas of higher population density when compared with health centres.

District hospitals are usually staffed by physicians, midwives, and nurses, as well as surgeons and anesthetists. They serve both low- and high-risk patients with non-specialist maternal and newborn care services, including antenatal care; labour and delivery; caesarean sections; postnatal care; small and sick newborn care; comprehensive emergency obstetric care; and laboratory, imaging and pharmacy services. District hospitals range in size and capacity, but may see anywhere from 1200 to 2000 births annually.

District hospitals will see both vaginal and c-section births. Depending on their size and capacity, district hospitals may have general operating theatres that serve the entire facility or operating theatres that are dedicated to the maternity unit. They should have a dedicated Neonatal Intensive Care Unit (NICU) for small and sick newborn care, in addition to resuscitation areas within the delivery room and space for Kangaroo Mother Care (KMC).

Typical Space Programme

A space programme should be developed in collaboration with local implementing partners (such as the MoH) or through engagement with a health service planner. This programme outlines the core spaces typically included in a district hospital maternity and newborn care unit and provides ranges for the size and capacity of care environments. These ranges should be adapted to the expected patient volume and service capacity of each facility.

Area	*Programme*	*Quantity*	*Notes*
Inpatient Maternity			
PATIENT	**Triage/Assessment**	**1-2 triage/assessment rooms**	An exam room with a bed for assessing admitted patients. Could also be used for observation.
	Early Labour Ward *(optional)*	**0-4 patient beds** (3.5m^2 minimum should be provided for each patient bed) **+ companion seating**	Consider including an observation space for mothers who arrive too early in labour to be admitted immediately into the labour ward, but need a place to rest and be observed until their labour has progressed. Provide bedside seating for companions. (This is fundamentally different from a maternity waiting home, where mothers may stay for weeks prior to their due date.) The early labour ward should be located near the nurse station and labour ward.
	High-risk Antenatal Ward *(optional)*	**0-4 patient beds** (7m^2 minimum should be provided for each patient bed) **+ companion seating/beds**	Consider including a separate inpatient ward for high-risk mothers admitted to the hospital during their pregnancy because of problems or complications. While mothers may stay for weeks in an antenatal ward, this is different from maternity waiting homes in that high-risk mothers will require continuous oversight and care from medical staff. The high-risk ward may be located near a nurse station and postpartum ward. To make mothers comfortable during their extended stay, provide accommodations for companions, as well as spaces to eat and socialize.
	Labour Ward	**6-16 patient beds** (7m^2 minimum should be provided for each patient bed) **+ companion seating/beds**	Separate labour wards are strongly recommended so labouring patients are not mixed into a general female ward or sharing space with postpartum patients. Include seating for one companion next to each patient bed. If space permits, also include beds or benches for companions to sleep in the labour ward.
	Postpartum Ward	**6-32 patient beds** (7m^2 minimum should be provided for each patient bed) **+ companion seating/beds**	Separate postpartum wards are strongly recommended so postpartum patients are not mixed into a general female ward or sharing space with labouring patients. Include seating for one companion next to each patient bed. If space permits, also include beds or benches for companions to sleep in the postpartum ward.
	Delivery Room	**2-5 delivery beds** (18m^2 minimum should be provided for each delivery bed) **+ newborn resuscitation**	In addition to delivery beds, include space for alternative labour support equipment to provide mothers with a choice of birth positions. Newborn resuscitation areas should be provided within the delivery room.
	Patient WC	**2-10 toilets** **2-4 showers**	Patient toilets and showers should be directly accessible from labour and postpartum wards, as well as the delivery room. At least one toilet/shower should be handicap accessible. Prioritise high-commode toilets.

Area	*Programme*	*Quantity*	*Notes*
Inpatient Maternity			
STAFF	**Nurse Station**	**1-2 nurse stations**	The number of required nurse stations will depend on the unit layout. If maternity services are split between floors or buildings, multiple nurse stations may be required to ensure proximity to labour, delivery, and postpartum patients. Consider embedding a small nurse outpost/desk into the labour ward for direct oversight.
	Duty/On-Call Room	**1-2 beds**	Duty rooms (also called on-call or overnight duty rooms) allow providers to rest in close proximity to patients while they are on call or due to be.
	Change Room	**1 change room**	Changing space for staff to change clothes. Consider providing separate areas for male and female providers, as well as secure lockers or storage space for personal belongings.
	Staff Lounge	**1 staff lounge**	Space should be allocated for providers to take breaks. A staff lounge may include a table and kitchenette and be either designated to maternity providers or shared with other services.
	Staff WC	**1-2 toilets** **0-1 showers**	A dedicated WC should be allocated for providers. Depending on space availability and gender preferences, male and female providers may require separate toilets. A shower can be considered for on-call providers staying in the duty room.
SUPPORT	**Clean Store**	**1-4 clean store rooms**	Intended for storage of supplies and materials.
	Sterile Room	**1 sterile room**	Intended for cleansing of medical tools. Some facilities will have an additional autoclave room for sanitizing equipment that is dedicated to MNH services.
	Sluice/Dirty Room	**1 dirty room**	Intended for disposal of medical waste and cleansing of medical tools.
	Electrical Plant Room	**1-2 electrical plant rooms**	This is a small storage space used to house electrical equipment serving the hospital. It should be accessible to staff only. Depending on how the maternity unit is laid out, electrical rooms may be dedicated to MNH or shared with other services.
FAMILY/ COMPANION	**Family/Companion Waiting Area**	**Accommodating 14-50 people** ($2m^2$ minimum should be provided per person)	Family and companions are a critical part of the care team. It is important to have adequate space for family and companions in order to support a positive experience, as well as to keep the inpatient rooms from being overly crowded. This space should be well ventilated, with views to the exterior. If applicable, also consider including designated prayer or resting rooms for family members.
	Family/Companion WC	**1-2 toilets**	A dedicated WC should be provided near the waiting area for family/companion use. Depending on space availability and gender preferences, male and female companions may require separate toilets.
OR	**Operating Room (OR)**	**1-2 operating beds**	District hospitals typically have general operating theatres that serve the entire facility. Because these ORs are not commonly exclusive to MNH care, they have not been included in this space programme. However, they should be planned to allow streamlined maternal care and should incorporate all the key support spaces necessary for an operating theatre programme (including anaesthesia, post-op recovery, and dirty and sterile rooms).

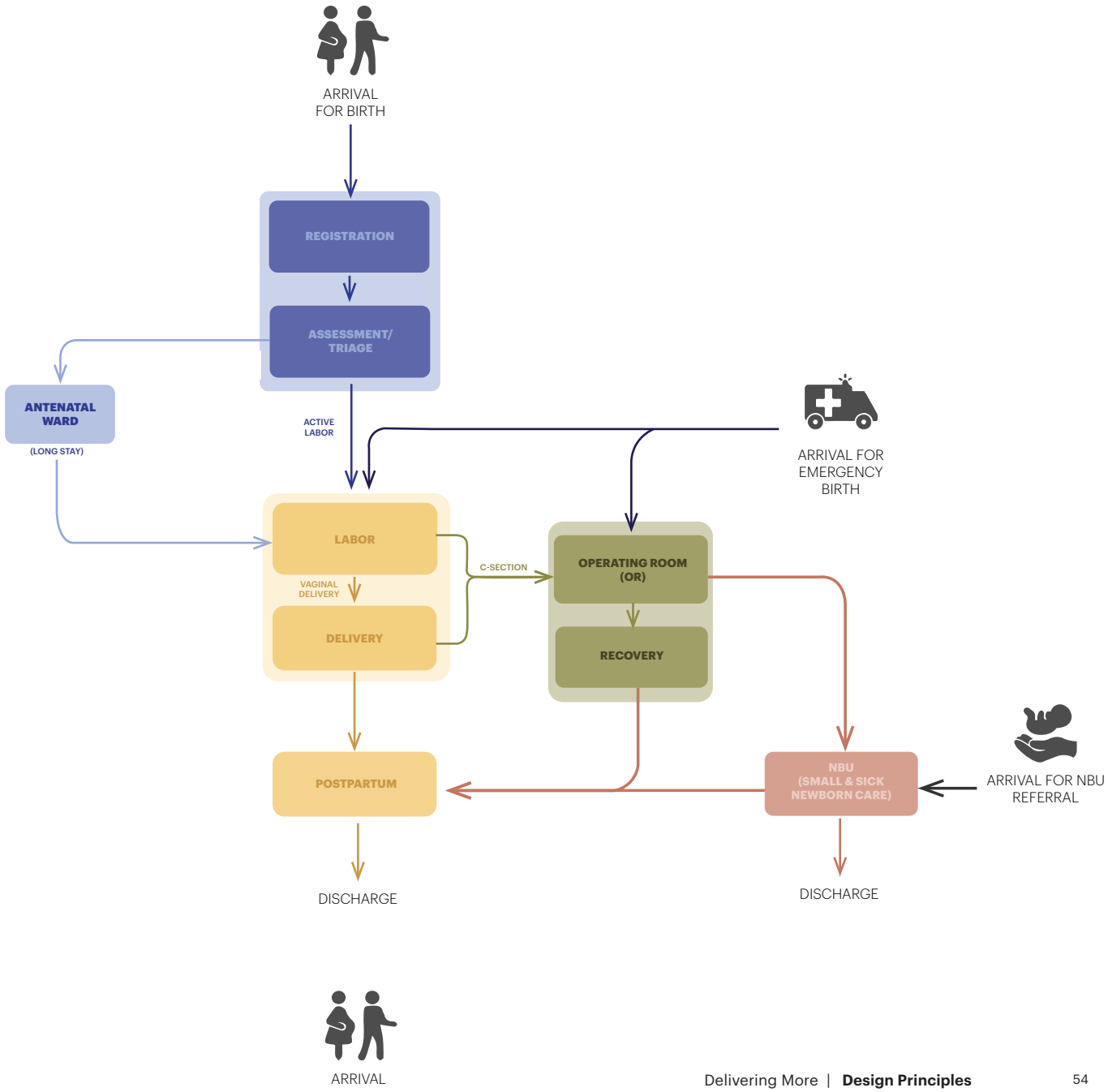
Area	*Programme*	*Quantity*	*Notes*
CIRCULATION/ EXTERIOR PROGRAMME	**Labour Walk**	N/A	Integrate a designated labour walking area into the unit. This can be a space or patio embedded within the labour ward; a private, uncluttered interior corridor; or an exterior courtyard or landscaped area.
	Exterior Areas	N/A	If possible, include dedicated, private patios or landscaped areas for patient and companion use. These will provide space for eating, resting, and mother-baby bonding. They may be outdoor or semi-outdoor.
	Laundry and Kitchen	**2-4 washing troughs** **1-2 stoves**	If possible, include a small laundry and kitchen area for companions. This should be located outdoors and will be more easily achievable in rural contexts or facilities with ample space. It may not be possible in urban or multistory facilities. Attention should be paid to contextual needs. It may not be necessary to provide fixed equipment like a gas stove; instead a hearth could be designed for cooking on fire.
Neonatal Intensive Care Unit (NICU)			
PATIENT	**Newborn Care Ward**	**8-14 newborn beds** (5-16m² should be provided for each newborn bed , based on the level of care required.) **+ nurse workstation** **+ mother seating**	General newborn care can be divided into low and high dependency areas. A low dependency ward may include simple bassinets, while a high dependency ward may include radiant warmers, incubators, CPAP machines, vital sign monitors, oxygen, and IVF, depending on the facility's capacity and needs. In addition to newborn beds, the NICU should also contain a nurse desk and bedside seating for mothers to remain proximate to babies.
	Mother Newborn Care Intensive Care Unit Ward *(optional)*	**8-12 mother and newborn beds** (18-23 m² should be provided for mother-newborn pair in wards which integrate space for mothers to sleep alongside their small & sick newborn.) **+ nurse workstation**	An M-NICU is specialised space where mothers and their SSNs receive care together. Each bay should contain all necessary equipment including an adult bed with an adjustable backrest for skin-to-skin care, a continuous positive airway pressure (CPAP) machine, vitals monitor, a KMC chair, oxygen provision, and a radiant warmer—along with sufficient space for a provider to move and deliver care.
	Kangaroo Mother Care (KMC)	**2-4 beds** (8-12m² should be provided for each bed)	Kangaroo Mother Care (KMC) beds should allow mothers to support skin-to-skin care for small and sick newborns for extended periods of time. If beds are unable to recline, consider providing additional reclining chairs.
	Exam Room	**1 exam room**	Should contain an exam table for assessing newborns, as well as a counter and sink.
	Milk Expression Room	**1 milk expression room**	A comfortable, private area for mothers to pump breast milk. Should include two chairs for mothers to sit, as well as a small side table for pumping equipment.
	Milk Prep Area	**1 milk prep area**	An area with counter space for milk/formula preparation and a refrigerator for milk storage.
	Patient WC	**1-4 toilets** **1-2 showers**	For use by NICU/KMC mothers and family members.
	Counselling Room	**1 counselling room**	A private counselling room is an important space required for sensitive conversations such as delivering difficult news. It can also serve many other purposes: such as conducting pre-discharge counselling, and educating families on M-NICU protocols, handwashing, and infection prevention.

Area	*Programme*	*Quantity*	*Notes*
Neonatal Intensive Care Unit (NICU)			
STAFF	**Don/Doff**	**1 don/doff area**	The don/doff area should contain a sink for hand-washing, as well as a bench and hooks or cubbies for changing shoes and clothing. Ideally, this would be a dedicated nook, but if space is limited, a sink and shelf could be provided at the entrance to the unit within the corridor.
	Nurse Station	**1 nurse station**	One centralised NICU nurse station should suffice. However, nurse desks should also be provided directly within each NICU ward for direct oversight.
	Duty/On-call Room	**1-2 beds**	Duty rooms (also called on-call or overnight duty rooms) allow providers to rest in close proximity to patients while they are on call or due to be.
	Staff Lounge	**1 staff lounge**	Space should be allocated for providers to take breaks. A staff lounge may include a table and kitchenette and be either designated to NICU providers or shared with other services.
	Staff WC	**1-2 toilets** **0-2 showers**	A dedicated WC should be allocated for providers. Depending on space availability and gender preferences, male and female providers may require separate toilets. A shower can be considered for on-call providers staying in the duty room.
SUPPORT	**Clean Store**	**1-2 clean store rooms**	Intended for storage of supplies and materials. Clean store rooms could also contain lockable storage for medicine.
	Sluice/Dirty Room	**1 dirty room**	Intended for disposal of medical waste and cleansing of medical tools.
	Laundry & Ironing Room	**1 laundry and ironing room**	Ironing also plays a key role in supporting infection prevention and control (IPC).
Outpatient Maternity			
OUTPATIENT MATERNITY	**After 5 (Pediatric Care) Treatment Room**	**1-2 consult rooms**	Standard consult room, including a patient examination table/bed and a provider desk.
	ANC/PNC Consult Room	**1-2 consult rooms**	Standard consult room, including a patient examination table/bed and a provider desk.
	Immunization & Growth Monitoring Room	**1-2 consult rooms**	Standard consult room, including a patient examination table/bed and a provider desk.
	Family Planning / Procedure Room	**1-2 procedure rooms**	The family planning and procedure room is used for consultations and examinations and is designed for outpatient procedures such as the insertion of an IUD or Comprehensive Abortive Care (CAC). It should be larger than the standard consult room to accommodate procedures.
	Milk Provision Room *(optional)*	**0-1 milk provision rooms**	Milk provision rooms are required in some countries to provide access to milk for mothers who may not be able to breastfeed. Breast milk is kept in cold storage, and mothers may collect milk during postpartum follow up visits.
	WC	**1-2 toilets**	For use by patients and family members utilising outpatient maternity services.
	Storage	**1 clean store room**	Intended for storage of supplies and materials.
	Staff WC	**1-2 toilets**	For staff use. *(Could be shared with other programmes)*

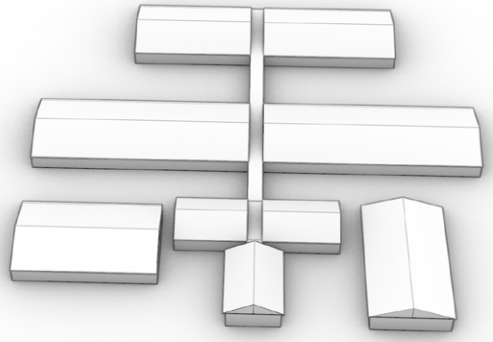
Ideal Care Flows & Space Adjacencies

While facility layouts will always need to be customized to local care practices and available infrastructure, the following bubble diagram can provide a starting point for considering care flows and space adjacencies for MNH care at district hospitals.

Bubble diagrams are simple illustrations that consist of bubbles (representing spaces) connected by lines to convey relationships between the spaces. They are used early on in the design process to inform space planning and organisation.



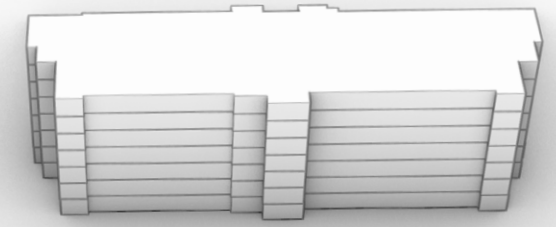
Typologies



Type 1: Campus

In some settings, district hospitals may consist of a series of mid-sized buildings on a site. Often, these are one-story, rectangular bar buildings, arrayed along a series of circulation pathways. Typically, in this campus typology, inpatient maternity services (labour, delivery, and postpartum) are offered in a standalone unit that is separate from other services. Outpatient maternity services are usually offered as part of general outpatient services.

If renovation of existing buildings is not possible or prudent, new construction may be an option if there is sufficient space on site. The benefit of such sites is that they offer an opportunity to spread out and integrate pleasant exterior or semi-exterior spaces that are important for positive care experiences (for example: family/companion waiting spaces, labour walking patios, and cooking and laundry areas). Sometimes, MNH services can be consolidated into a single building. However, if the MNH programme size will require multi-story construction (more costly to build than single-story) or result in a building that is out of scale for the site context, then consider distributing MNH services across a series of buildings. These buildings should be arranged closely together to permit streamlined care flows and accommodate site circulation and slopes.



Type 2: Multi-story

In other settings, district hospitals consist of larger, multi-story building blocks. These may have been built at the same or different times and are often linked to permit movement between buildings. Overcrowding is a common challenge, so it is important to provide an adequate number of beds for mothers, as well as space for family members and companions. All spaces must be well ventilated and designed for thermal comfort, as well as infection control.

In this multi-story typology, inpatient maternity spaces such as labour and postpartum are sometimes located alongside other general inpatient wards. However, providing separate inpatient maternity spaces is strongly recommended to ensure quality of care and privacy for mothers. Outpatient maternity services are usually offered as part of general outpatient services on a ground floor.

If renovation of existing spaces is not possible or prudent, expansion or new construction may be an option if there is sufficient space on site. Vertical expansion can also be considered if the foundation was constructed to permit the load of additional floors.

Appendix

We've included a series of references from international standards and guidelines that helped inform our design initiatives in Ethiopia and Bangladesh. While these excerpts are not extensive, nor directly applicable to all contexts, they do serve as a helpful guide and may be useful in programming discussions with local implementing partners.

Determining Bed Numbers

There isn't a simple, easy formula for determining bed numbers. Service planning requires discussion and careful consideration, taking several factors into account:

- Current bed numbers and patient volume
- Projected future patient volume and potential population growth
- Target length of time for postpartum stay
- Care model (i.e., Are labour, delivery, and postpartum care all in different spaces or do they take place in the same space? Is care provided in shared spaces or wards, or in private or semi-private rooms?)
- Staffing capacity and space availability
- Referral system and distance to other facilities
- Availability of overflow beds (i.e., how will patients be accommodated if all designated beds are occupied?)

The most efficient and applicable method of arriving at bed numbers would be to consult a health service planner or the Ministry of Health and other local implementing partners involved in facility planning and design. If this is not possible within the scope of your project, we have included resources which we found helpful during the design process.

Global Design References

While bed numbers must be determined taking all these factors into account, rules of thumb can still be a useful baseline to compare against. In our research, we came upon various global design standards that presented a spectrum of guidance for estimating bed numbers. These included: The new Indian Health Facility Guidelines (HFG-India) and Australasian Health Facility Guidelines (AusHFG) and Indian Ministry of Health & Family Welfare Guidelines.

We have included information from those documents here, but you'll need to judge what is most appropriate and relevant to your care context and consult with facility providers and administrators to determine the right number of beds for your facility.

Maternity inpatient bed number guidance from international standards

The New Indian Health Facility Guidelines (HFG-India)
For a facility with 1000 annual deliveries, recommends 24 inpatient beds (for postpartum and labour), 4 delivery beds, and a nursery.
See Part B - Health Facility Briefing & Design. Volume 1: Including Functional Planning Units

Australasian Health Facility Guidelines (AusHFG)
For a facility with 1500 annual deliveries, recommends 4 delivery beds.
See Part B - Health Facility Briefing & Planning HPU 510 - Maternity Unit

Indian Ministry of Health & Family Welfare Guidelines
For a facility with over 500 deliveries per annum, the Indian MoHFW guidelines provide a formula to calculate birth numbers:
No. of delivery beds = {(Projected deliveries in a year) * (Average length of stay)}/ ((365) * (Occupancy rate)}
See Guidelines for Standardisation of Labour Rooms at Delivery Points

Neonatal intensive care bed number guidance from international standards

South African Newborn Care Norms and Standards
For a facility with 1000 deliveries per annum, 3-4 beds are required to provide level 1 inpatient newborn care. An additional 2-3 beds per 1000 deliveries are required for higher-level care and 0.5 beds per 1000 deliveries for intensive or highly specialized care.
See Essential Newborn Care: Norms and Standards

Case Study

In our design for a primary hospital in Ethiopia, we had to strike a balance between what was ideal versus realistic.

Inpatient Beds

The current-state design at this primary hospital had a total of 16 maternity inpatient beds for labour and postpartum care and 3 beds for delivery – far too few beds for a facility which experiences around 2000 births per year. Of these 16 beds, 4 beds were placed along the corridor due to the lack of space. Due to the crowded conditions, mothers only stay at the facility for a few hours after giving birth, far short of the 24 hours of postpartum care recommended by the World Health Organization (WHO).

To accommodate the hospital's approximately 2000 annual births and support longer postpartum stays, we knew we needed to significantly increase the number of beds. According to "The New Indian Health Facility Guidelines (HFG-India)," the facility would need 48 maternity inpatient (for labour and postpartum care) and 8 delivery beds.

However, we knew that 48 total maternity inpatient and 8 delivery beds would be a big jump from the existing number of beds. After consulting with IHI and representatives from the Ethiopian Ministry of Health, the team decided to strive for 48 maternity inpatient beds, as we recognised the need to expand the facility to meet the needs of stakeholders. We allocated 16 beds for labour (⅓ of the total number of maternity inpatient beds) and 32 beds for postpartum care (⅔ of the total number of maternity inpatient beds). We landed on 5 delivery beds, which in this context should be sufficient to handle the birth volume of the facility.

Neonatal Care Beds

The hospital's existing NICU programme consisted of 6 newborn cots squeezed into two small rooms. However, the data showed that the facility cares for a high volume of small and sick newborns (approximately 144 babies a year).

According to the "South African Newborn Care Norms and Standards," we would require 10-14 newborn beds in order to provide level 1 essential newborn care. This was significantly more than the 6 existing newborn beds, and we recognised that a significant investment would be required to adequately expand the NICU at this primary hospital.

After consulting with IHI and representatives from the Ethiopian Ministry of Health, we landed on 11 newborn beds, which the team felt would adequately meet the needs of the facility while improving care experiences. In Ethiopia, newborn beds are typically split between a larger non-critical NICU and a smaller critical NICU. We arrived at 7 non-critical newborn beds and 4 critical newborn beds.

Because emerging research indicates the importance of keeping mothers and babies together, the non-critical ward has been designed to include 7 mother beds next to newborns.