

HOSPITAL CARE OF THE LATE PRETERM INFANT

After birth, late preterm infants need to be monitored in the hospital. Healthcare providers can observe late preterm babies in different hospital settings. These include the:

- Mother's Hospital Room,
- Newborn Nursery,
- Special Care Nursery (SCN), or
- Neonatal Intensive Care Unit (NICU).

Some hospitals may also transfer late preterm infants to another hospital for further care.

Clinicians will educate families about the hospital environment and the various roles of different care providers so that parents are more comfortable in this new setting. This chapter provides a description of different types of clinicians in the hospital, the system of monitoring late preterm infants, and the approach to making medical decisions. This chapter also provides some tips for parents about how they can be actively involved in their baby's care in the SCN/NICU.

Observation in the Hospital

Some hospitals initially observe all late preterm infants in the Postpartum Room or Newborn Nursery. If a late preterm baby is demonstrating signs of immaturity, the baby can either remain in the Postpartum Room/Nursery or be transferred to the hospital's

SCN/NICU, depending on the infant's medical needs. For example, if a baby has a significant yellow change in skin color (see Jaundice Chapter), the infant may be able to stay in the Postpartum Room/Nursery for treatment. Alternatively, if a late preterm infant is having issues with breathing, the baby will likely be admitted to the SCN/NICU. For those babies who need additional support but are born in hospitals that do not have a SCN/NICU, transfer to a different hospital may be necessary.

Some hospitals require that all late preterm infants be admitted directly after birth to the SCN/NICU for a short period of observation. Those babies who are behaving maturely can then be transferred to the Postpartum Room or Newborn Nursery after this period of observation. Those infants who require further support will need to remain in the SCN/NICU for days to weeks, depending on the needs of the baby. Sometimes a baby may be transferred to a SCN/NICU in a hospital that is closer to the parent's home. When a baby is acting mature and the mother has been discharged from the hospital, the infant can be discharged directly from the SCN/NICU to home.

The layout of SCNs/NICUs can be very different. Some intensive care units consist of one large open room with babies spaced several feet apart from each other. Other units consist of separated areas that allow for 1 to 4 infants per space. After a mother has been discharged from the hospital, a small number of hospitals have the capacity to allow parents to sleep in or near the intensive care unit or SCN for a short period of time.

Role of Hospital Clinicians

In the hospital, there are many different types of clinicians who can care for preterm babies. A postpartum or nursery nurse will provide care to a baby who is being observed in the Postpartum Room or Newborn Nursery. Nurses might have assistants, known as *Patient Care Assistants* (PCA) or *Nursing Assistants* (NA), who measure vital signs and help to feed babies. *Lactation specialists* are also available to provide breastfeeding support to mothers.

Depending on the specific hospital system, several different types of doctors can manage babies in the Postpartum Room or Nursery, including a:

- *Family Practitioner or Pediatrician* = This physician may be the baby's doctor after discharge or may be caring for the baby only during the hospital stay.
- *Neonatology Attending*, also known as a *Neonatologist* = This physician is a pediatrician who specializes in caring for infants.
- *Neonatology Fellow* = This physician is a Pediatrician who is receiving additional training to become a neonatologist.
- *Pediatric Resident* = This physician is training to be a Pediatrician.

If a baby is observed in the SCN/NICU, a neonatologist is responsible for making medical decisions about the infant. This neonatologist may also work with a neonatology fellow or pediatric resident. In addition, many other types of specialists may be involved and work together to provide care for babies and their families. In the SCN/NICU, these include:

1. *SCN/NICU nurse*: This nurse has specific experience working with babies in the intensive care unit. One nurse typically cares for 1 to 4 babies at a time. In some units, a baby may have a primary care team of nurses who coordinate hospital care of the baby.
2. *Nurse practitioner*: This nurse has received advanced education and training to care for babies in the SCN/NICU. The nurse practitioner's responsibilities include performing physical examinations, ordering diagnostic tests, performing clinical procedures, and prescribing medications. The nurse practitioner works directly with physicians to treat infants.
3. *Physician assistant*: Similar to neonatal nurse practitioners, physician assistants have received advanced training in newborn care. In the SCN/NICU, they have similar responsibilities as nurse practitioners and work closely with physicians.
4. *Respiratory therapist*: A respiratory therapist helps to provide extra breathing support to babies.
5. *Nutritionist or dietician*: A nutritionist or dietician helps ensure that babies in the intensive care unit receive optimal nutrition.
6. *Pharmacist*: A pharmacist works with the SCN/NICU staff to provide the appropriate medications and intravenous fluids for babies.
7. *Physical or occupational therapist*: A physical or occupational therapist helps to support the development of babies while they are in the SCN/NICU.

8. *Lactation specialist*: A SCN/NICU lactation specialist is trained to support breastfeeding mothers whose babies have been born prematurely.
9. *Feeding specialist*: In some SCNs/NICUs, a feeding specialist, trained in feeding and swallowing issues of preterm infants, is available. This clinician is sometimes known as a speech and language pathologist (SLP).
10. *Social worker*: A SCN/NICU social worker, trained in mother and child health, provides support and counseling to families. This clinician also helps identify relevant community resources for families.
11. *Case manager*: A case manager helps to manage insurance coverage in the hospital and coordinate discharge care.

All of these providers work as a team to provide the best possible care to babies in the SCN/NICU.

All hospital clinicians work in continuous blocks of time, known as *shifts*. Typically, one shift ranges between 8 and 12 hours. During a shift change, the new provider meets with the previous clinician to obtain medical information about each baby. This transfer of information from one clinician to another is known as a *signout* and typically takes 10 to 20 minutes.

Monitoring

If an infant is observed in the Postpartum Room or the Newborn Nursery, a nurse or nursing assistant will check the baby's vital signs every few hours. The vital signs that are measured are:

- *Heart rate*,
- Breathing rate, also known as *respiratory rate*, and

- Temperature.

A nurse or assistant will also weigh the baby every day and record the number of times that the baby has a wet or soiled diaper.

If an infant is admitted to the SCN or NICU, the baby will be placed on several monitors. This involves placing 3 monitor leads on a baby's chest that detect the baby's heart rate and respiratory rate. Because this monitor measures the functions of the infant's heart (i.e., "cardio") and lungs (i.e., "respiratory"), it is also known as a *cardiorespiratory monitor*. Images of the leads that are placed on an infant and a cardiovascular monitor are shown in the pictures below.



Monitor leads



Cardiovascular monitor

A device called a pulse oximeter probe that looks like a band-aid (see page 17) will also be placed on an infant's toe, foot, palm, or wrist to measure the infant's *oxygen saturation*. Additionally, nursing staff will frequently record the baby's temperature, weigh the baby daily, and count the number of wet and soiled diapers.

The normal baseline heart rate of all infants ranges between 100 and 160 beats per minute. When an infant cries, the heart rate can increase to as high as 200 beats per minute. An infant's heart rate can also increase if the baby has an elevated temperature. Late preterm infants can have a decrease in their heart rate while having a bowel movement, during a pause in breathing, and while breastfeeding or drinking from a bottle.

A normal respiratory rate of a baby ranges between 40 and 60 breaths per minute. A late preterm infant can have a low breathing rate because of an immature breathing pattern. Alternatively, preterm infants can have a high breathing rate because of breathing difficulties.

An oxygen saturation level is the amount of oxygen carried by red blood cells in small blood vessels called capillaries. The normal oxygen saturation level in an infant will vary based on the age of a baby and the infant's gestational age. Parents may find it helpful to ask the clinical provider to specify the appropriate oxygen saturation level for their baby.

If an infant has a heart rate, respiratory rate, or oxygen saturation level that is outside of the normal range, an alarm will sound. This alarm is similar to the ring of a bell. Depending on the type of monitor apparatus, the alarm can be heard at:

- The baby's bedside,
- A close distance, or

- A far location, such as from a desktop computer monitor. Of note, an alarm may be silenced from this far location if the baby does not require an intervention.

Even though a clinician may not actually be at a baby's bedside when an alarm rings, the alarm will be heard by many clinicians who can respond quickly to assess the baby.

Parents are often frightened when they hear a monitor alarm for their baby. Most of these alarms reflect small changes in an infant's heart rate, breathing rate, or oxygen saturation level, and the baby's vital signs quickly return to normal values without any assistance. Some monitors may also alarm when a baby is very active or if a monitor lead is no longer attached to the baby's skin. If a baby has a large change in heart rate, breathing rate, or oxygen saturation, a clinician can intervene by:

- Gently touching the baby to remind the baby to breathe,
- Stopping breast or bottle feeding, or
- Increasing the amount of extra oxygen.

Sometimes, additional support may be needed (see Breathing Chapter).

Medical Decisions

For babies who are admitted to the Postpartum Room or Newborn Nursery, a physician will typically assess the baby each morning and determine how the baby is doing. If the physician recommends any changes to the baby's care, the physician will discuss these issues with the infant's family and nurse. If a nurse or parent is concerned about how a baby is doing at any point during the day or

night, the nurse will contact the covering physician to establish a plan.

In the SCN/NICU, infants are continuously monitored and have 24-hour nursing care. A physician, nurse practitioner, and/or physician assistant, located outside or inside the hospital, are available 24 hours a day, 7 days a week. Each morning, physicians, nurse practitioners or physician assistants, nurses, and other clinical providers gather to discuss each infant's progress over the past 24 hours and then determine the medical plan. This team meeting is termed *rounds*. During the rest of the day and night, if the baby's status changes, the physician, nurse practitioner, nurse, and respiratory therapist covering during that time, can adjust the medical plan, as needed.

Parent Role

If a baby is observed in the Postpartum Room or Newborn Nursery, parents are involved in all aspects of their baby's care. If a baby needs to be transferred to a SCN/NICU, parents are often uncertain about their role. Although parents may initially have fewer direct responsibilities in the intensive care environment, they are just as important in their baby's care.

Some activities that parents can do in the SCN/NICU include:

- Talking and soothing their baby (studies have shown that babies recognize their parents' voices and are soothed when they hear these familiar sounds),
- Changing their baby's diapers,
- Feeding their baby, if possible,

- Holding their baby skin to skin, if possible,
- Taking their baby's temperature,
- Providing breast milk by pumping soon after delivery and regularly thereafter if their baby cannot be breastfed, and
- Being involved in clinical discussions about their baby. Parents can have these conversations during the day with their baby's physician, nurse practitioner, or nurse. Some hospitals invite parents to join in during rounds when their baby is being discussed.

Conclusion

There are different approaches to monitoring late preterm infants. While some hospitals admit all late preterm infants directly to the SCN/NICU, other hospitals admit late preterm babies to the intensive care unit after they exhibit symptoms that require closer observation. Before a late preterm infant is discharged to home, clinicians in the hospital will make sure that it is safe for a baby to go home and that parents are prepared to care for their baby.