

SPECIALLY FOCUSED NURSING CARE FOR PREEMIES - BORN TOO SOON

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Abstract

The little body of a preterm baby still have underdeveloped parts that include the lungs, digestive system, immune system and skin. At birth, neonates undergo physiological adaptations, especially those related to breathing and few minutes of severe oxygen deprivation can cause irreversible brain damage. Thankfully, medical technology has made it possible for preemies to survive the first few days, weeks or months of life until they are strong enough to make it on their own. A specially focused nursing care is very essential to care the babies that are born too soon. It includes the total care of the preterm like thermal regulation, feeding, respiratory support and infection prevention. This article serves on the nursing care that is essential for the preterm baby to prevent the risk and is a brief description of what to expect in the care for a newborn preemie.

Key words: *Preterm, Thermal care, Breastfeeding, Infection prevention, Breathing Issues*

Introduction:

Babies born before the 37th week of gestation are considered premature and are sometimes referred to as “Preemies”. World Health Organization definition of prematurity is a baby born before 37 weeks of gestation, counting from the first day of the Last Menstrual Period (LMP). Each year 15 million babies are born preterm and their survival chances vary dramatically around the world. Premature newborns have increased risk of complications. The risks increase the earlier the child is born⁵. Any complications of a premature newborn will be addressed in the neonatal intensive care unit (NICU). Improvements in the quality of antenatal care, from care during labor until the delivery room and neonatal care have reflected in the survival of premature in different regions and countries of the world .Special care is sometimes provided on the ordinary postnatal ward and sometimes in a specialist newborn (neonatal) area. Having a baby in neonatal care is naturally worrying for parents and every effort should be made to ensure that you receive the information, communication and support that you need

Do Premies Need Special Care?

Premature babies are not fully equipped to deal with life in our world as they are born early – one baby in 13 (8 out of 100) is born early in our country, and those babies born before 34 weeks may need extra help with breathing, feeding keeping warm.

- Feeding difficulties since the coordinated suck and swallow process only starts at 34 weeks gestation. Preterm babies need help to feed and are more likely to aspirate.
- Severe infections are more common, and premature babies are at higher risk of dying once they get an infection.
- The majority of babies who die from neonatal sepsis are preterm.
- Respiratory Distress Syndrome(RDS) due to lung immaturity and lack of surfactant in the alveoli, resulting in collapsing lungs that take extra pressure to inflate. Below 32 weeks gestation, the majority of babies develop RDS, although this risk can be reduced by antenatal corticosteroids injections to women at risk or in preterm labor.

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- Jaundice is more common in premature babies since the immature liver cannot easily metabolize Bilirubin, and once jaundiced, the preterm baby's brain is at higher risk since their blood-brain barrier is less well developed to protect the brain.
- Brain injury in preterm babies is most commonly cause intra ventricular hemorrhage, occurring in the first few days after birth in about 1 in 5 babies under 2,000 g and is often linked to severity of RDS and hypotension. Less commonly, preterm babies may have hypoxic brain injury with white matter loss which differs from that seen in the brain of term babies (Volpe, 2009).
- Necrotizing Enterocolitis is a rare condition affecting the intestinal wall of very premature babies, with a typical X-ray image of gas in the bowel wall. Formula feeding increases the risk tenfold compared to babies who are fed with breast milk alone.
- Retinopathy of prematurity due to abnormal proliferation of the blood vessels around the retina of the eye, which is more severe if the baby is given too high levels of oxygen.
- Anemia of prematurity, which often becomes apparent at a few weeks of age due to delay in producing red blood cells as the bone marrow is immature.

Specialty Focused Nursing Care

1. Breathing Issues/Problems In Premature Babies

Improvements in the quality of antenatal care, from care during labor until the delivery room and neonatal care have reflected in the survival of premature and very low birth weight babies in different regions and countries of the world³. At birth, neonates undergo physiological adaptations, especially those related to breathing and few minutes of severe oxygen deprivation can cause irreversible brain damage⁴

Challenges a premature baby may face when taking in oxygen¹²:

Apnoea Pronounced 'ap-nee-ya', this is the term for episodes when a baby stops breathing. Premature babies will often stop breathing, or breathe very shallowly, for 5–10 seconds, before resuming normal breathing – this is known as periodic breathing.

True apnoea is defined as episodes that last more than 20 seconds. This often happens because the

breathing centre of the brain has not yet matured. The healthcare team will probably recommend either caffeine treatment, which stimulates the breathing centre, or support with a ventilator. Studies suggest that most babies will have overcome apnoea by 37 to 40 weeks corrected age. However extremely premature babies may not achieve this until 43 weeks corrected age.

Bradycardia During an episode of apnoea some babies' heart rates may drop called bradycardia.

Cyanosis This term refers to a bluish skin tone, caused by a lack of oxygen. This happens because blood that is low in oxygen is blue-purple, while oxygen-rich blood is bright red. In dark-skinned people, cyanosis may be more noticeable in the lips, tongue or nail beds.

Nasal flaring If the baby's nostrils open widely or flare out, this could be a sign that she is having to work hard to breathe.

Recession If the baby's airways aren't fully open she may suck in the centre of her chest to breathe. When this happens, you may notice a dip between the ribs.

Rapid breathing This problem, known as tachypnoea, is often a sign of distress. The baby's team will examine her and may carry out investigations to determine the cause and appropriate treatment.

Bronchopulmonary dysplasia (BPD) This condition, formerly known as chronic lung disease of infancy, is the diagnosis given to babies who need extra oxygen at 36 weeks corrected age. The more premature the baby, the more common BPD is. It may be made worse by artificial ventilation, which may be used in the early weeks of life to improve the baby's chance of survival but can cause scarring or inflammation in the baby's lungs.

A baby with BPD may go home on oxygen and some will need to continue this therapy for several months, or even years. If this happens, you will be supported by specialist nurses in the community.

Breathing Support for Premature Babies

- Many premature babies need help with breathing for a while. Until the baby is born, the lungs are filled with a liquid that helps them grow and develop. During labour and birth this

fluid is absorbed so that after birth she can take in the surrounding air. Premature babies are at high risk of developing breathing problems because their lungs are not yet mature enough to make this switch without some extra help.

- The healthcare team will aim to use a ventilation (breathing) strategy that is as gentle as possible, because in some cases artificial breathing machines (ventilators) can cause lung problems such as broncho pulmonary dysplasia

Types of Ventilation Support on the Baby Unit

Mechanical ventilation through an Endotracheal tube (intubation)

A plastic tube is inserted through the nose or mouth into the windpipe and air or an air–oxygen mix is blown in and out of the lungs under pressure. The machine does most or all of the breathing for the baby.¹⁸

Continuous Positive Airway Pressure (CPAP)

Short prongs or a mask are positioned by the nostril or nose, and air or oxygen is blown in at a constant pressure. The baby does all of her own breathing, but the machine helps keep the lungs open in between breaths. Continuous positive airway pressure (CPAP) with nasal devices (nCPAP) is widely used in the



respiratory management of newborns. nCPAP can improve oxygenation, maintain lung volume, lower upper airway resistance, reduce obstructive apnoea, and most importantly eliminate an ETT/ventilator and the associated risks.^[1,2]

Nasal prong oxygen

A pair of small prongs is used to deliver extra oxygen through the nostrils. This option is used when the baby does not need pressure to keep the lungs open, but needs a little extra oxygen to maintain sufficiently high oxygen levels in her bloodstream. A modified version of this is called Vapotherm, which allows higher levels of oxygen to be delivered through prongs, and works in a similar way to CPAP (above).

Incubator oxygen

It is possible to control the oxygen level in most incubators. This is another way of adjusting the amount of oxygen that the baby breathes.

Role of nurse –a gist in respiratory care

- Assess infant's color, perfusion, respiratory rate, heart rate, position and oxygen saturation.
- Document frequency and severity of episodes and type and amount of stimulation required to interrupt the event.
- Ensure bag and mask set-ups with oxygen available at infant bedside.
- Maintain paO₂ and oxygen saturation levels.
- Recognize importance of weaning oxygen and other ventilator parameters.
- Recognize complications arising from RDS, intubation and mechanical ventilation.
- Utilize proper endotracheal suctioning techniques.
- Provide mouth and skin care.
- Maintain proper positioning.

2. Thermal care

Simple methods to maintain a baby's temperature after birth include drying and wrapping, increased environmental temperature, covering the baby's head (e.g., with a knitted cap), skin-to-skin contact with the mother and covering both with a blanket³. Delaying the first bath is promoted, but there is a lack of evidence as to how long to delay, especially if the bath can be warm and in a warm room. Kangaroo Mother Care (KMC) has proven mortality effect for babies <2,000g. Equipment-dependent warming techniques include warming pads or warm cots, radiant heaters or incubators and these also require additional nursing skills and careful monitoring. Sleeping bags lack evidence for comparison with

skin-to-skin care or of large-scale implementation. There are several trials suggesting benefit for plastic wrappings but, to date, these have been tested only for extremely premature babies in neonatal intensive care units.



Knitted cap



Skin to skin contact



Pre warmed incubator

Role of nurse –a gist in thermal care

- Monitor temperature & observe for instability
- Methods to keep baby warm / prevent heat loss -skin-to-skin contact, cover/wrap, hats,
- Plastic wrapping for preterm neonates in
- delivery suite and then humidification
- Maintain the neutral thermal environment

3.Feeding:

A premature baby's diet will be carefully balanced to suit the tiny digestive system while meeting the needs of the growing baby.

What kind of nutrition does a premature baby need?

When the baby is first born, the healthcare team may give fluids and nutrition through an intravenous (IV line) if the baby is extremely premature or has breathing difficulties . Alternatively, the doctors may decide that the baby is mature enough to take milk through a small tube that is passed through the nose into the stomach. Breast milk is the best choice for the baby. . If the baby is too weak, expressed milk can be fed through a tube.

Introducing Milk Feeds

It is important for milk feeds to be introduced in a timely way - not too quickly but not too slowly - and the team will have the expertise to decide this. This progression must be very gradual because premature babies - especially those born at 34 weeks or less - are slow to cope with milk that goes into their stomachs and have more problems with absorbing nutrients.

Supplements/supplementary formula for premature babies

Babies who are born early miss out on a lot of the nutrition that term babies receive during the final weeks of pregnancy, including key vitamins and minerals that are important to help them grow and become strong.

Breast milk is best for the baby, but she may also need extra vitamins and minerals for growth, so many premature babies are given supplements. There are also formula milks specially designed for

premature babies to ensure they get all the nutrients they need.

How will a baby feed if the baby is too weak to breastfeed?

- **Through an IV line.** A baby who is born very prematurely will initially be fed through an IV line. This carries the nutrients she needs directly into her blood supply. This may last anything from a few hours after birth to days, weeks or longer, depending on how premature she is and whether she has any digestive problems.
- **Through a tube.** Even if the baby is able to digest milk, she will not be mature enough to co-ordinate sucking, swallowing and breathing until about 32-34 weeks, so until then she will need to be fed through nasogastric tube or through an orogastric tube. The baby may continue tube feeding while she is learning to breast, cup or bottle feed, to make sure she gets enough food.

Breastfeeding the premature baby

Giving birth prematurely does not prevent the mother from making milk for the baby. The extra stress, fear, discomfort and fatigue that go along with the birth of a premature baby can cause a slow start with milk production, but with patience and support the mother can express and breastfeed successfully. Breastfeeding the premature baby will boost her health and will help the mother to develop a bond with her.

Why breast milk is best for premature babies

Health professionals generally advise women to breastfeed if they can. Breast milk has many health benefits for premature babies, and is recommended by neonatologists wherever possible.

The benefits of breastfeeding:

- **It's good for the preterm baby.** Breastfeeding will help to build the baby's health and strength as well as protecting from viruses and bacteria, which can cause infection. The milk provides antibodies and other substances that help the baby's immature gut and immune system. Breast milk is easier for a small baby to digest than

baby formula. Preterm babies are particularly vulnerable to necrotizing enterocolitis, so the mothers should be encouraged to breastfeed or express her milk.

- **It creates bond between mother and premature baby.** Once the preterm baby is able to feed directly from the breast, you will also get regular skin-to-skin contact with her.

4. Infection prevention

Clean birth practices reduce maternal and neonatal mortality and morbidity from infection-related causes, including tetanus. Premature babies have a higher risk of bacterial sepsis. Hand cleansing is especially critical in neonatal care units. However basic hygienic practices such as hand washing and maintaining a clean environment are well known but poorly done. Unnecessary separation from the mother or sharing of incubators should be avoided as these practices increase spread of infections. Recent cluster-randomized trials have shown some benefit from chlorhexidine topical application to the baby's cord and no identified adverse effects. The skin of premature babies is more vulnerable, and is not protected by vernix like a term baby's. Topical application of emollient ointment such as sunflower oil or Aquaphor reduces water loss, dermatitis and risk of sepsis and has been shown to reduce mortality for preterm.

Role of nurse –a gist in infection prevention

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Goals of Nursing Care to Promote Parental Attachment

- Opening the intensive care nursery to parents
- Transporting the mother to be near her infant

- Maternal day care for premature infants
- Rooming in for parents
- Individualized nursing care plans
- Early discharge
- Listening to parents during the infant's hospitalization and after discharge
- Parent support groups
- Programmed contact and reciprocal interaction
- Transporting the healthy premature infant to the mother
- Home-based interventions for young parents
- Discussion with parents after discharge
- Kangaroo care

Conclusion

Globally, progress is being made in reducing maternal deaths and child death after the first month of life. Improvements in the quality of antenatal care, from care during labor until the delivery room and neonatal care have reflected in the survival of premature and very low birth weight babies in different regions and countries of the world

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