

Abstract:

Neonatal intensive care unit graduates can be more complex than the average infant. They often have an intricate and long medical history but appear to be only a few days or weeks old. Former preterm infants also have a variety of unique medical conditions that make them less resistant to normal childhood illnesses, have a greater readmission rates, and have a higher mortality. The goal of this article is to address the acute presentation of the high-risk former preterm infant and offer ways to care for them upon presentation to the emergency department.

Keywords:

neonate; emergency department; neonatal intensive care; follow-up; gastrostomy tubes; necrotizing enterocolitis; short bowel syndrome; bronchopulmonary dysplasia; tracheostomy; intraventricular hemorrhage; ventriculoperitoneal shunt; gastroesophageal reflux disease

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1522-8401

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Care of the High-Risk Newborn in the Emergency Department

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The number of preterm births is rising.¹ Just under 10% of infants born in the United States will be born premature. A total of 1.4% of all births will be very low birth weight (VLBW) infants (<1500 g), and less than 1% of all births will be extremely low birth weight or less than 1000 g.² Premature infants are at risk for multiple comorbidities related to their prematurity, and these comorbidities may affect every organ system. Term infants with congenital anomalies or a difficult hospital course may similarly be discharged with complex medical issues. The goal of this article is to highlight some of the common complications affecting infants who are discharged from the neonatal intensive care unit, especially issues that may arise in the first year of life and may prompt parents to seek care in the emergency department (ED) or urgent care setting.

NUTRITION AND GROWTH

Growth in the neonatal intensive care unit (NICU) and in the postdischarge period is critical for determining long-term outcomes in premature infants. Catch-up growth in all areas is particularly important for former preterm infants, but poor growth in head circumference after discharge is associated with poor long-term outcomes.³ Growth of a former preterm infant should be monitored closely and prematurity adjusted for until

the infant reaches 24 months. It is important to use the appropriate preterm, sex-specific growth curves on former preterm infants.

Infants with a prolonged NICU course often have delayed feeding and increased energy needs, and may even develop oral aversion. These infants may be especially challenging for parents to feed in the initial postdischarge period. Typically, VLBW infants are discharged home on a transitional 22-kcal/oz formula or human milk fortified to 22 kcal/oz. Increasing energy densities, up to 30 kcal/oz, may be required for a select group of infants. Parents may have difficulty understanding how to mix the formula, or parents with low incomes may try to make the amount of formula “stretch” by diluting it down with extra water. Infants with improperly mixed formula are at risk not only for poor growth but also for electrolyte derangements. A formerly preterm infant who presents to the ED with weight loss or poor feeding should be evaluated for electrolyte abnormalities, and the physician should have a discussion with parents on how the formula was prepared. Access to formula should be assessed whenever an infant is evaluated for poor growth. Many specialty formulas are expensive and cannot be obtained without ordering them ahead of time at grocery and drug stores.

MEDICAL NEGLIGENCE OR ABUSE

Children with complex medical needs can often present a challenge for families, especially families with limited income and resources. Failure to thrive may be a sign of an overwhelmed parent, or even medical neglect or abuse. Studies have shown that children in the birth-to-3 years age group have the highest rates of victimization, with children less than 1 year of age accounting for the highest percentage of victims (9.6%).⁴ One study showed that infants born at low birth weight had an adjusted relative risk of 2 for neglect or abuse compared with infants born at a normal birth weight.⁴ Physicians who are treating former preterm infants should be aware of this risk when these children present with failure to thrive or other signs suspicious for medical neglect or abuse.

GASTROSTOMY TUBES

Infants born with congenital anomalies or with a history of prolonged hospitalization will occasionally require partial or full nutritional support with the assistance of a gastrostomy tube (G-tubes) (Figure 1). There are multiple reasons for the use of G-tubes in premature infants, and defining the underlying



Figure 1. Gastrostomy tube.

etiology may help the medical team provide appropriate treatment. Premature infants with complicated courses may exhibit oral aversion and will take time to develop proper oral feeding skills. Infants with congenital anomalies of the head and neck (eg, micrognathia) may be unable to feed orally at the time of discharge. Complex genetic syndromes or neurologic syndromes may also leave infants unable to feed orally.

Gastrostomy tubes, although important for nutrition and growth, may provide challenges to the family in terms of management. Infants may dislodge the G-tubes themselves, or a parent or sibling may accidentally dislodge the tube and the family may present to the ED for assistance. Gastrostomy tubes may also need to be replaced because of cracks in the tubing or a defective balloon. It is important to know that simple G-tubes take at least 1 to 2 weeks to form a mature tract. If a fresh G-tube is dislodged, the tract may begin to narrow or even close in a matter of hours. Replacement of a G-tube into a mature tract should be completed as soon as possible. If the tract is less than 8 weeks old, the service that initially placed the tube should be contacted, and correct placement should be confirmed before feeding.⁵ In the meantime, a Foley catheter or the defective G-tube may be placed into the tract to ensure that it does not narrow further.

Two common G-tube related complaints presenting to the ED are granuloma and G-tube leaking. Granulomas are fleshy out-pouchings that are often mucosa-like in appearance (Figure 2). Most granulomas are not infected; they represent the result of local irritation by the plastic in the gastrostomy tube, which can cause bleeding or even irritability in the infant. A conservative approach is to apply a small amount of triamcinolone ointment or cream

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