Prematurity Statistics for the U.S.

- Every eight seconds a baby is born in the U.S.
- About one in eight babies is born preterm (less than 37 weeks gestation)
- Every two minutes a low birthweight baby is born (less than five and one-half pounds).
- Every year nearly 4,500 babies are born weighing less than one pound.
- Prematurity is one of the leading causes of deafblindness nationally.
- In Indiana, Complications of Prematurity is the leading cause of combined vision and hearing loss.

Developmental Effects of Prematurity

In typical prenatal sensory development, each sensory system begins to develop at a particular time and in a particular sequence. In addition, each sensory system completes its own unique developmental sequence, assuring that the system will be mature and operational at birth. An infant’s developing sensory systems are extremely vulnerable and any compromise can have long-lasting implications.

In the womb, a baby spends his or her time curled up, cozy and warm in the dark, listening to mother’s heartbeat and occasional muted sounds from the outside world. This environment is perfectly designed to provide just the right space, temperature, and security for the developing fetus. During the early weeks the infant’s tactile system (touch, temperature, pressure, pain), vestibular system (balance and motion), gustatory system (taste) and olfactory system (smell) develop rapidly. These systems are fully functional by week 21. The auditory and visual systems are the most complex of the sensory systems and take longest to develop. An infant’s auditory system (hearing) is fully functional at week 24, however, an infant’s ability to distinguish and process sounds is not complete until after birth. Visual alertness is present in infants by week 36, but development of the visual system continues for three to four months following birth. As all this sensory development is taking place, the infant’s nervous system also is developing at rapid rate, forming thousands of
care different from that of full-term infants. Their tiny bodies must deal with a constant barrage of sights, sounds, smells and activities that their senses are not yet mature enough to handle, so they often begin their lives in an Intensive Care Nursery (ICN) or NICU (Neonatal Intensive Care Unit). Intensive care nurseries are designed to provide an atmosphere that limits stress to the infant and meets the basic needs of warmth, nutrition, and protection to assure proper growth and development (Kids Health, 2009). While most NICUs do their best to minimize overstimulation, an intensive care nursery is an unnatural environment that is very different from the warm, dark, constant environment of a mother’s womb.

Since no two babies are alike, there is no way to predict how preterm birth and the NICU experience may affect individual babies. There is a wide range of sensory issues that could result. The chart on the left provides an overview of sensory development and some of these effects.

**Vision & Hearing Losses in Prematurity**

Although most premature babies grow to be normal healthy children, some will have a disability. The chance for any particular premature baby to have an ongoing disability depends upon several factors. In general, the most premature and lowest birth weight babies are at highest risk for ongoing problems. In addition, those babies who have had specific complications of prematurity are also at high risk (About Kids Health, 2009). It is in this group of high risk infants that we find many cases of combined vision and hearing loss.

Premature infants are particularly prone to hearing loss. This is due to multisystem illness and the increased use of medications such as antibiotics and diuretics that can be harmful to the auditory system (Batshaw, 2007). The underdeveloped blood vessels in the inner ear may rupture interrupting the flow of blood to the inner ear. This results in the destruction of hair cells and contributes to a sensorineural hearing loss (Edwards, Goehl & Gordon, 1992). Hearing loss may or may not be diagnosed early on, so it is critical that early intervention providers be alert to signs and behaviors associated with hearing loss and assist families to follow-up with appropriate examinations.

The eyes of premature infants are especially vulnerable to injury after birth. A serious complication is called retinopathy of prematurity (ROP), which is abnormal growth of the blood vessels in an infant’s eye. The blood vessels in the retina stop growing normally and begin to branch excessively. This causes the development of scar tissue which may eventually pull the retina off the inner wall of the eye. (Edwards, Goehl & Gordon, 1992).

In the most serious stages of ROP, there may be partial or complete retinal detachment. While one eye may be more damaged than the other, ROP affects both eyes. About 7% of babies weighing 1,250 grams (2.75 pounds) or less at birth develop ROP, and the resulting damage may range from mild (the need for glasses) to severe (blindness). The cause of ROP in premature infants is unknown, although it is known that a lower birth weight and gestational age increases the incidence and

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**Common Complications of Prematurity**

- Intraventricular Hemorrhage or Bleeding in the Brain
- Asphyxia or Lack of Oxygen to the Brain
- Apnea or Respiratory “Pauses” lasting 15-20 seconds
- Severe Jaundice
- Hypoglycemia or Low Blood Sugar Levels
- Severe Infections
- Periventricular Leukomalacia or Lesions in or
- Injury to the White Matter in the Brain
- Sensorineural Hearing Impairment
- Retinopathy of Prematurity or Abnormalities in Retinal Vascular Development
- Long-Term Use of Ventilation Leading to Bronchopulmonary Dysplasia (BPD) or Chronic Lung Disease

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Prematurity alters the development of all sensory systems and is a leading cause of a variety of sensory issues. 

Vision and hearing are the most complex sensory systems and are at high risk of being affected by preterm birth. 

In Indiana, prematurity is the leading cause of combined vision and hearing loss.

**Key Points to Remember**

- Currently in the US, approximately 1 out of every 8 babies is born with low birth weight or preterm. 
- Prematurity alters the development of all sensory systems and is a leading cause of a variety of sensory issues. 
- Vision and hearing are the most complex sensory systems and are at high risk of being affected by preterm birth. 
- In Indiana, prematurity is the leading cause of combined vision and hearing loss.

**References/Resources**


For additional resources and information about deafblindness, go to www.nationaldb.org.

**TA, Training, & Support**

Families and educators of infants, toddlers and children who are deafblind need to have access to training and support. Each state has a federally funded technical assistance project specifically designed to improve educational services, provide opportunities for training, and to help support families of children who are deafblind. For more information or to request services in Indiana contact:

Indiana Deafblind Services Project
Blumberg Center, COE/University Hall
401 N. 7th St, Room 009W
Terre Haute, IN 47809

www.indbservices.org

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