

# Newborn Screening

All Massachusetts babies undergo mandatory newborn screenings prior to being discharged home. This public health program helps prevent serious health problems that can develop in some newborns. Massachusetts also offers optional newborn screening services using the same blood sample and we recommend your baby have these as well.

## Massachusetts Newborn Screening

The Massachusetts Newborn Screening is an advanced and useful test that evaluates all newborns, using just a few drops of blood, for more than 30 serious conditions that might not be recognized at birth, including blood problems (such as sickle-cell anemia), biochemical disorders (such as PKU or cystic fibrosis), and metabolic conditions (such as low thyroid hormone). Within 24-48 hours of your baby's birth a few drops of blood will be taken from your baby's heel. This specimen will be sent to the New England Newborn Screening Program for testing. Any concerning results will be reported to your pediatrician who will arrange for further testing.

The New England Newborn Screening Program started in 1962 in Massachusetts, screening for just one disease. Since that time, the number of treatable disorders in the program has increased, and newborn screening has been adopted worldwide as a routine standard of care. Early detection of many of these disorders is crucial to enable starting treatment and, in some cases, to improve life-long health. All newborns are tested in the first one-to-two days after birth and then at a week of age. Premature babies undergo additional tests until they are near term in maturity.

## Hearing Screening

All newborns are provided with a hearing test prior to discharge. It is common for babies to fail the screening test, usually because amniotic fluid or vernix (the cheesy white moisturizer on your baby's skin after birth) is in the ear canal. Your baby will have another hearing screen done if this happens. If your baby does not pass the second hearing screen, an appointment will be made for a more thorough hearing test to be done in a few weeks time.

Although most of the time babies pass the later hearing test, it is very important to make sure that this test is done because early diagnosis of true hearing loss helps tremendously to ensure the best outcomes for those children.

If your baby's hearing screening test is abnormal or there are other indications of potential hearing problems, we will also check for cytomegalovirus infection (CMV) because it can cause hearing loss. This will be done by gently swabbing your baby's mouth.



## Premature Babies

Very premature babies can have problems with eye development or brain issues. These babies are usually referred for specialized eye examinations and head ultrasounds.

### Eye Exams

Premature babies have specialized eye exams because the blood vessel growth in the eye isn't fully developed in preemies. If blood vessels grow very abnormally, they can hemorrhage causing retinal scarring and visual problems or impaired sight. Our NICU team works with ophthalmologists (eye specialists) at Boston Children's Hospital who come to the BWH NICU to examine these babies. Infants who meet the criteria will be examined first at three to nine weeks postnatal age, and afterwards every one to three weeks until their eyes show mature blood vessel development. If abnormalities develop, treatments are available.

### Eye Screening Criteria

- Birth weight below 1500 grams (3 pounds, 5 ounces)
- Gestational age at birth earlier than 31 weeks
- Request of attending neonatologist for specific issues such as severity of illness or congenital abnormalities

At each exam, the ophthalmologist conducts a standard evaluation of the blood vessels growing on the retina (the interior back of the eye). This is accomplished by dilating the pupil of the eye and carefully examining the baby's retina, using a light and magnification to look through the eye lens and beyond the front of the eye. Sometimes photos of the blood vessel pattern on the retina are taken with a special camera at the same time as the eye exam.

### Head Ultrasounds

All people have small chambers inside their brains where fluid is made that cushions the brain and the spinal cord. In premature babies, there are some blood vessels near these chambers that sometimes rupture and bleed. Many babies have no bleeding; others have mild, moderate or, in rare instances, severe bleeding. The effects of a bleeding episode depend upon the severity and the baby's overall health.

Extremely premature babies are at greatest risk of hemorrhage (bleeding) into these chambers or, less commonly, brain tissue. For this reason, babies who are born at or below 32 weeks of gestation undergo head ultrasound testing. These are done usually once or twice in the first week, once at a month of age, and sometimes several times in the interim. More mature babies who are ill at birth or develop signs of a possible brain problem also might have one or more head ultrasound examinations. Some of these babies will also undergo MRI examination when they reach full-term corrected gestational age.

