

Newborns have the ability to focus momentarily on a bright or moving object that is within 20 cm (8 inches) and in the midline of the visual field. In fact, infants' ability to fixate on coordinated movement is greater during the first hour of life than during the succeeding several days. Visual acuity is reported to be between 20/100 and 20/400, depending on the vision measurement techniques.

Infants also demonstrate visual preferences: medium colors (yellow, green, pink) over bright (red, orange, blue) or dim colors; black-and-white contrasting patterns, especially geometric shapes and checkerboards; large objects with medium complexity rather than small, complex objects; and reflecting objects over dull ones.

Hearing

After the amniotic fluid has drained from the ears, infants probably have **auditory acuity** similar to that of adults. Neonates react to loud sounds of about 90 decibels with a startle (Moro) reflex.

The newborn's response to sounds of low frequency and high frequency differs; the former, such as a heartbeat, metronome, or lullaby, tends to decrease an infant's motor activity and crying, whereas the latter elicits an alerting reaction. There is an early sensitivity to the sound of human voices. For example, infants younger than 3 days old can discriminate the mother's voice from that of other women. As early as 5 days old, newborns can differentiate between stories repeated to them during the last trimester of pregnancy by their mother and the same stories read after birth by a different woman.

The internal and middle ear is large at birth, but the external canal is small. The mastoid process and the bony part of the external canal have not yet developed. Consequently, the tympanic membrane and facial nerve are very close to the surface and can be easily damaged.

Smell

Newborns react to strong odors such as alcohol and vinegar by turning their heads away. Breastfed infants are able to smell breast milk and will cry for their mothers when they smell leaking milk. Infants are also able to differentiate the breast milk of their mothers from the breast milk of other women by scent alone. Maternal odors