28 Days

# Understanding the Implications of Birth Weight

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After months of anticipation, new parents are eager to find out the birth weight of their newborn. It is our responsibility as neonatal nursing care providers to understand the significance of a newborn's birth weight as it relates to gestational age. This article includes a review of terms, implications for neonatal health, and evidence-based care practices that will guide nurses in supporting a newborn's transition to extrauterine life.

## General Size Classifications

Weight, head, and length measurements are classified as small for gestational age (SGA), average for gestational age (AGA), or large for gestational age (LGA). The New Ballard maturational assessment tool is used to assess gestational age on the basis of physical and neurological criteria (Ballard et al., 1991). Measurements are plotted on a growth curve to establish the relationship between size and

**Abstract** Neonatal growth parameters include birth weight, length, and head circumference. Weight, as it relates to gestational age, is monitored closely during pregnancy to assess the appropriate growth of the fetus. At birth, it becomes an important parameter to assess the health and well-being of the newborn. Birth weight carries implications for nursing care and monitoring of the newborn's transition to extrauterine life. The importance of birth weight assessment and its interpretation will be reviewed, along with the implications for immediate neonatal care and potential long-term effects on an infant's health outcomes. http://dx.doi.org/10.1016/j.nwh.2016.12.005

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age. A neonate is identified as SGA if under the 10th percentile for gestational age, AGA if between the 10th and 90th percentiles, or LGA if greater than the 90th percentile (Bowers, 2007).

## SGA Versus Intrauterine Growth Restriction

Intrauterine growth restriction (IUGR) describes the failure of a fetus to grow at an expected rate in utero and to fall short of meeting his or her genetic size potential (Cetin, Mando, & Calabrese, 2013). Head circumference is the key determinant between *symmetric* IUGR versus *asymmetric* IUGR. Head, weight, and length measurements are equally SGA in a symmetric IUGR infant. Symmetric IUGR may represent an underlying pathologic condition, such as chromosomal disorder or congenital infection, that has affected the intrauterine growth rate since early in gestation (Clark, Olsen, & Spitzer, 2014). Conversely, asymmetric IUGR occurs if the head circumference is AGA, compared with SGA weight and length. This paradigm typically occurs later in pregnancy and reflects compromised placental function and, thus, altered nutrient supply to the growing fetus (Cetin et al., 2013). Common contributors include maternal hypertension, substance abuse, autoimmune diseases, uterine malformations, and malnutrition. Placenta- or umbilical cord-related complications can contribute to IUGR, including twin-to-twin transfusion syndrome, chronic abruption, placenta previa, and multiple gestation (Bowers, 2007).

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The terms *SGA* and *IUGR* are not interchangeable. Growth-restricted newborns have had their rate of growth affected in utero. This may result from placental dysfunction, often later in gestation, or it may be caused by an early gestational insult, such as a chromosomal abnormality or viral infection. Newborns who are SGA are constitutionally small, and their size does not affect their outcomes (Alberry & Soothill, 2007).

## LGA Newborns

Another extreme growth parameter refers to newborns who are LGA. Macrosomia is a general term to describe a newborn who is larger than 4,000 g, often born after term (Trotter, 2015). Excessive maternal weight gain and gestational diabetes influence excessive fetal growth (Chiavaroli, Derraik, Hofman, & Cutfield, 2016). Increased glucose presence, shared from mother to fetus, causes increased insulin production by the fetus to occur. Excessive body growth occurs and increased fat deposits develop in that environment because insulin has a growth hormone effect on the fetus.

## Antenatal Growth Surveillance

Although the focus is on postnatal nursing implications, it is important to have an understanding of the reliability of fetal assessments. The distance from the symphysis pubis to the top of the fundus is measured as the fundal height and is translated into weeks of gestation. It is valid after 24 weeks gestation. As the simplest obstetric measurement, it is commonly used to determine gestational age despite reports that have been unable to confirm its use in identifying growth restriction (Robert, Ho, Valliapan, & Sivasangari, 2015).

Considering multiple fetal measurements by ultrasonography is useful to establish gestational age dating in the second trimester. Accurate estimated fetal weight, gestational age, and population-based growth data help clinicians make accurate conclusions about fetal growth (Clark et al., 2014). Neonatal outcomes may be affected if obstetric decisions are based on imprecise growth assessments. The risk is reflected by SGA newborns experiencing NICU admission rates more than twice that of appropriately sized neonates (Callec, Lamy, Perdriolle-Galet, Patte, Heude, & Morel, 2015).

## Implications of Aberrant Antenatal Growth Indexes

Additional surveillance is required when diminished growth trends are identified. Abnormal Doppler flow studies have predictive value to identify increased risks of perinatal morbidity and mortality, likely related to uteroplacental insufficiency (Alberry & Soothill, 2007). Nonstress testing and biophysical profile monitoring

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