Neonatal and Infant Health

OBJECTIVE

The objective of this Clinical Practice Guideline (CPG) is to provide evidence-based practice recommendations Neonatal and Infant Health. The CPG discusses topics such as: Inhaled Nitric Oxide (iNO), Apnea and Bradycardia, Discharge Planning, Early-Onset Neonatal Sepsis, Feeding the Neonate, Neonatal Abstinence Syndrome (NAS), Synagis, and Thermoregulation. The CPG outlines the organizations that WellCare aligns with regarding Neonatal and Infant Health as well as relevant Measureable Health Outcomes.

OVERVIEW

Infant mortality is defined as the death of an infant before his or her first birthday. The infant mortality rate is the number of infant deaths for every 1,000 live births. This number gives key information and insight to maternal and infant health and is an important marker of the overall health of a society. In 2015, the infant mortality rate in the United States was 5.9 deaths per 1,000 live births. Over 23,000 infants died in the United States – the top five leading causes of infant death in 2015 were: birth defects; preterm birth and low birth weight; Sudden Infant Death Syndrome (SIDS); maternal pregnancy complications; and injuries (e.g., suffocation). In 2015, infant mortality rates were highest for non-Hispanic black infants (11.3 per thousand), followed by American Indian/Alaska Native infants (8.3 per thousand), and then Hispanic infants (5.0 per thousand). Rates were lowest among Asian/Pacific Islander infants (4.2 per thousand), followed by Non-Hispanic white infants (4.9 per thousand).[1]

Final data from the CDC for 2015 indicated that there were 3,978,497 births. Of this total, 8% of births had a low birthweight (≤5.5 pounds) and nearly 10% were preterm (≤37 weeks gestation). Of nearly 4 million births, there were 23,215 infant deaths. The leading causes of infant deaths include:[1]

- Congenital malformations, deformations and chromosomal abnormalities
- Disorders related to short gestation and low birthweight: not elsewhere classified
- Newborn affected by maternal complications of pregnancy

Preterm Infants and Low Birth Weight

Infants born prior to 37 weeks gestation and those with a low birthweight (less than 5 lbs. 8 oz.) are at higher risk of early death, long term health issues and developmental issues than those born at full term or at a higher birth weight. Disorders related to preterm birth and low birthweight are the second leading cause of infant death in the United States. Often premature infants are also those born with a low birthweight. In 2013, two thirds of all low birthweight infants were premature and more than 40 percent of prematurely born babies had low birthweight.[2]

A new method for measuring gestational age was developed in 2006 and caused a sharp decline in the percentage of considered to be born preterm (less than 37 weeks gestation). Under this new measure the number continued to decline from 2007 to 2015. The percentage of infants born late preterm (34–36 completed weeks of gestation) increased from 1990 to 2005, and then declined through 2015 to 6.9 percent. The percentage of infants born early preterm (less than 34 completed weeks of gestation) increased from 3.3 percent in 1990 to 3.7 percent in 2006. Under the new measure for gestational age, the decline continued from 2.9 percent in 2007 to 2.8 percent in 2015.[2]

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The percentage of infants born with low birthweight (less than 2,500 grams, or 5 lb. 8 oz.) increased from 1990 to 2006, and then declined from 2006 to 2013, before increasing from 8.00 percent in 2014 to 8.07 percent in 2015. The percentage of infants born with very low birthweight (less than 1,500 grams, or 3 lb. 4 oz.) rose from 1990 to 2006, and then declined for the rest of the period to 1.4 percent in 2015. The percentage of infants born with moderately low birthweight (less than 2,500 grams, or 5 lb. 8 oz.) rose from 5.7 percent in 1990 to 6.9 percent 2006, and then declined to 6.7 percent in 2015. Increasing multiple birth rates were a contributing factor to the rise in preterm birth and low birthweight. However, preterm birth and low birthweight levels also increased substantially among singleton births.[2]

Preterm Infants and Low Birth Weight Among Racial and Ethnic Groups

Among racial and ethnic groups, Black, non-Hispanic women were the most likely to have a low birthweight infant in 2015 (13.3 percent), than White, non-Hispanic (6.9 percent); Hispanic (7.2 percent); American Indian or Alaska Native, non-Hispanic (7.6 percent); and Asian or Pacific Islander, non- Hispanic (8.4 percent) mothers. These percentages were in line with low birthweight by race and ethnicity percentages in previous years.[2]

Infant Mortality

Infant mortality has several contributing factors including the underlying health of the mother, public health practices, socioeconomic conditions, and availability and use of appropriate health care for infants and pregnant women. Despite modern medical advances and public health efforts, Black, non-Hispanic and American Indian or Alaska Native, non-Hispanic infants have had consistently higher than mortality rates than other racial and ethnic groups. For Black, non-Hispanic infants a higher percentage of preterm births were the cause for higher rates in infant mortality. American Indian and Alaska Native infants had higher rates of sudden infant death syndrome (SIDS), birth defects, preterm births, and injuries. In 2014, the infant mortality rates were 10.9 infant deaths per 1,000 live births for Black, non-Hispanic; 7.7 infant deaths per 1,000 live births for American Indian or Alaska Native, non-Hispanic; 5.0 infant deaths per 1,000 live births for Hispanic; 4.9 infant deaths per 1,000 live births for White, non-Hispanic; and 3.7 infant deaths per 1,000 live births for Asian or Pacific Islander, non-Hispanic infants.[2]

Topics Addressed. The following topics are addressed in more detail under the *Guideline Hierarchy* and *Care Management* sections:

- Inhaled Nitric Oxide (iNO)
- Apnea and Bradycardia
- Early-Onset Neonatal Sepsis
- Feeding the Neonate
- Neonatal Abstinence Syndrome (NAS)
- Synagis
- Thermoregulation
- Hyperbilirubinemia
- Plagiocephaly
- Seizures

Hierarchy of Support

GUIDELINE HIERARCHY

CPGs are updated annually or as necessary due to updates made to guidelines or recommendations by the United States Preventive Services Task Force (USPSTF), Federal Interagency Forum on Child and Family Statistics, the American Academy of Pediatrics (AAP), Bright Futures, the American Academy of Orthopaedic Surgeons, and the National Institute for Health and Care Excellence (NICE). When there are differing opinions noted by national organizations, WellCare will default to the member's benefit structure as deemed by state contracts and Medicaid / Medicare regulations. If there is no specific language pertaining to the Neonatal and Infant Health, WellCare will default (in order) to the following:

- National Committee for Quality Assurance (NCQA);
- United States Preventive Services Task Force (USPSTF), National Quality Strategy (NQS), Agency for Healthcare Research and Quality (AHRQ);
- Specialty associations, colleges, societies, etc. (e.g., American Academy of Family Physicians, American Congress of Obstetricians and Gynecologists, American Cancer Society, etc.).

Links to websites within the CPGs are provided for the convenience of Providers. Listings do not imply endorsement by

WellCare of the information contained on these websites. NOTE: All links are current and accessible at the time of MPC approval.

WellCare aligns with the USPSTF, Federal Interagency Forum on Child and Family Statistics, AAP, Bright Futures, AAOS, and NICE on the topic of Neonatal and Infant Health. Highlights from their respective publications are below.

UNITED STATES PREVENTIVE SERVICES TASK FORCE (USPSTF)

Neural tube defects are major birth defects of the brain and spine that occur early in pregnancy due to improper closure of the embryonic neural tube, which may lead to a range of disabilities or death. The most common neural tube defects are anencephaly (an underdeveloped brain and an incomplete skull) and spina bifida (incomplete closing of the spinal cord). Based on 2009–2011 data, the estimated average annual prevalence of anencephaly and spina bifida combined was 6.5 cases per 10,000 live births. Daily folic acid supplementation in the periconceptional period can prevent neural tube defects. The USPSTF recommends that women who are planning or capable of pregnancy should take a daily supplement containing 0.4 to 0.8 mg (400 to 800 µg) of folic acid in order to help prevent neural tube defects in their newborn babies.[3]

Gonococcal ophthalmia neonatorum develops in approximately 28% of infants born to women with gonorrheal disease in the United States. Identifying and treating the infection is important because gonococcal ophthalmia neonatorum can result in corneal scarring, ocular perforation, and blindness. The USPSTF recommends prophylactic ocular topical medication for all newborns (within 24 hours after birth) for the prevention of gonococcal ophthalmia neonatorum.[4]

FEDERAL INTERAGENCY FORUM ON CHILD AND FAMILY STATISTICS

The Federal Interagency Forum on Child and Family Statistics published *America's Children: Key National Indicators of Well-Being* – an annual report focusing on conditions affecting children. Indicators are noted below and include those related to neonatal and infant health:

- **Family and Social Environment** including family structure and living arrangements, births to unmarried women, child care, child of a foreign-born parent, and language barriers. Children of unmarried mothers are at higher risk of adverse birth outcomes (e.g., low birthweight, infant mortality) than children of married mothers. They are also more likely to live in poverty than children of married mothers. In 1980, 18% of all births wereto unmarried women compared to 40% in 2015. Compared with babies born to older mothers, babies born to adolescent mothers are at higher risk of low birthweight and infant mortality.
- **Economic Circumstances**
- **Health Care** including insurance coverage and immunizations.
- **Physical Environment and Safety** including housing issues, air quality, secondhand smoke, and lead. Children exposed to secondhand smoke have an increased chance of experiencing adverse health effects such as infections of the lower respiratory tract, bronchitis, pneumonia, middle ear disease, sudden infant death syndrome (SIDS), and other respiratory symptoms. Secondhand smoke may also lead to the development and exacerbation of asthma.
- **Health** including preterm birth and low birthweight as well as infant mortality.

The report can be viewed in its entirety here.[5]

AMERICAN ACADEMY OF PEDIATRICS (AAP)

iNO for Preterm Infants

In perinatal medicine, inhaled nitric oxide (iNO) was initially studied for its pulmonary vasodilating effects in infants with pulmonary hypertension and has since become an important tool for the treatment of full-term and late-preterm infants with persistent pulmonary hypertension of the newborn and hypoxemic respiratory failure. Inhaled NO also has multiple and complex systemic and pulmonary effects. In animal models of neonatal chronic lung disease, iNO stimulates angiogenesis, augments alveolarization, improves surfactant function, and inhibits proliferation of smooth muscle cells and abnormal elastin deposition.[6]

The National Institutes of Health (NIH) created a consensus panel in 2010 to evaluate the evidence for safety and efficacy of iNO therapy in preterm infants. After reviewing the published evidence, the panel concluded that the

available evidence does not support the use of iNO in early routine, early rescue, or later rescue regimens in the care of infants born at less than 34 weeks' gestation. In addition, they concluded that hospitals, clinicians, and the pharmaceutical industry should avoid marketing iNO for this group of infants. An individual-patient data meta-analysis of 14 randomized controlled trials reached similar conclusions. Below are the summaries of the trial conclusions:[6]

- Neither rescue nor routine use of iNO improves survival in preterm infants with respiratory failure.
- Evidence is not established to support treating preterm infants who have respiratory failure with iNO for the purpose of preventing/ameliorating BPD, severe intraventricular hemorrhage, or other neonatal morbidities.
- Incidence of cerebral palsy, neurodevelopmental impairment, or cognitive impairment in preterm infants treated with iNO is similar to that of control infants.
- Results of 1 multicenter, randomized controlled trial suggest that treatment with a high dose of iNO (20 ppm) in the beginning of the second postnatal week may provide a small reduction in the rate of BPD; further research is needed.
- An individual-patient data meta-analysis that included 96% of preterm infants enrolled in all published iNO trials found no statistically significant differences in iNO effect according to any of the patient-level characteristics, including gestational age, race, oxygenation index, postnatal age at enrollment, evidence of pulmonary hypertension, and mode of ventilation.
- There are limited data and inconsistent results regarding the effects of iNO treatment on pulmonary outcomes of preterm infants in early childhood.

To read the full clinical guideline on iNO for preterm infants please click here.[6]

Apnea of Prematurity

Apnea of prematurity is one of the most common diagnoses in the NICU. An apneic spell is usually defined as a cessation of breathing for 20 seconds or longer or a shorter pause accompanied by bradycardia (<100 beats per minute), cyanosis, or pallor. It is unknown whether recurrent apnea, bradycardia, and hypoxemia in preterm infants is harmful, but llimited data has suggested that the total number of days with apnea and resolution of episodes at more than 36 weeks' postmenstrual age (PMA) are associated with worse neurodevelopmental outcome in preterm infants.[7]

Standard NICU monitoring techniques may not detect events that are primarily obstructive in nature. Continuous electronic recording allows some preterm infants to continue to have clinically unapparent apnea, bradycardia, and oxygen desaturation events even after discharge. Most infants in NICUs are continuously monitored for heart rate, respiratory rate, and oxygen saturation. Data do not suggest that a diagnosis of apnea of prematurity is associated with an increased risk of sudden infant death syndrome (SIDS) as well as the efficacy of home monitoring to prevent SIDS in former preterm infants.[7]

Methylxanthines have been a standard for treating apnea. Both theophylline and caffeine are used however caffeine citrate is preferred due to a longer half-life, higher therapeutic index, and lack of need for drug-level monitoring. Xanthines have multiple effects on respiration – this includes increased minute ventilation, improved carbon dioxide sensitivity, decreased periodic breathing, and decreased hypoxic depression of breathing. The optimal time to begin caffeine therapy in infants at risk of apnea is unknown due to limited trials and research. Nasal continuous positive airway pressure (NCPAP) at pressures of 4 to 6 cm H2O, typically in conjunction with treatment with a xanthine, is effective in reducing the frequency and severity of apnea in preterm infants. This appears to be effective by splinting open the upper airway and decreasing the risk of obstructive apnea. NCPAP may also decrease the depth and duration of oxygen desaturation during central apneas by helping maintain a higher end-expiratory lung volume.[7]

Clinical Implications as outlined by the APA are noted below:[7]

1. Apnea of prematurity reflects immaturity of respiratory control and generally resolves by 36-37 weeks' PMA in infants born at ≥28 weeks' gestation.

2. Infants born at <28 weeks' gestation may have apnea that persists to or beyond term gestation.
3. NICUs are encouraged to develop policies for cardiorespiratory monitoring for infants considered at risk of apnea of prematurity.
4. Initial low heart rate alarms are most commonly set at 100 beats per minute. Lower settings for convalescent preterm infants older than 33 to 34 weeks' PMA may be reasonable.
5. Caffeine citrate is an effective treatment when administered at a 20-mg/kg loading dose and 5 to 10 mg/kg per day maintenance. A trial off caffeine may be considered when an infant has been free of clinically significant apnea/bradycardia events off positive pressure for 5-7 days or at 33-34 weeks' PMA (whichever comes first).
6. Evidence suggests that GER is not associated with apnea of prematurity, and treatment of presumed or proven GER solely for the reduction in apnea events is not supported by currently available evidence.
7. Brief, isolated bradycardic episodes that spontaneously resolve and feeding-related events that resolve with interruption of feeding are common in convalescent preterm infants and generally need not delay discharge.
8. Policy and procedure development should focus on caregiver assessment, intervention, and documentation of apnea/bradycardia/desaturation events as well as the duration of the observation period prior to discharge.
9. A clinically significant apnea event–free period before discharge of 5 to 7 days is commonly used; a longer period may be applied for infants born at ≤ 26 weeks' gestation. This specific period may need to be individualized for some depending on gestational age at birth and the nature and severity of recorded events.
10. Interrogation of electronically archived monitoring data may reveal clinically unsuspected events of uncertain significance. Such events do not predict subsequent outcomes, including recurrent clinical apnea or SIDS.

To read the full guideline on apnea of prematurity please click here.[7]

Hyperbilirubinemia

Jaundice occurs in most newborn infants and although most jaundice is benign, newborn infants must be monitored for potential toxicity of bilirubin and to identify those who are at risk for developing severe hyperbilirubinemia or acute bilirubin encephalopathy or kernicterus. Although kernicterus should almost always be preventable, cases do occur. It is recommended that clinicians do the following for every infant:

- Promote and support successful breastfeeding.
- Perform a systematic assessment before discharge for the risk of severe hyperbilirubinemia.
- Provide early and focused follow-up based on the risk assessment.
- When indicated, treat newborns with phototherapy or exchange transfusion to prevent the development of severe hyperbilirubinemia and, possibly, bilirubin encephalopathy (kernicterus).

The full guideline on hyperbilirubinemia can be found here.[8]

Brief Resolved Unexplained Event

A Brief Resolved Unexplained Event (BRUE) (formally known as an apparent life-threatening event or ALTE) is a sudden, and now resolved episode of one or more of the following: [9]

- Cyanosis or pallor
- Absent, decreased or Irregular breathing
- Change in tone (hyper or hypotonia)
- Altered level of responsiveness

When an explained event occurs infants should have full physical exam and review of health history. A diagnosis of BRUE should only be given when there is no other explanation for the event. Some recommendations from the AAP

state that infants should not be admitted for respiratory and cardiac monitoring on the basis of BRUE diagnosis alone due to unnecessary testing, undue anxiety for infant and caregiver and other risks associated with hospitalization. Infants with a lower-risk BRUE should have continuous pulse oximetry and serial observations to identify hypoxemia. Chest radiographs, overnight polysomnography tests and measurements of venous or arterial blood gases in lower-risk infants are not recommended due to procedure related risks, risk of false positives and unnecessary testing. Twelve lead electrocardiograms are recommended to rule out heart disease but echocardiograms are considered unnecessary testing in low-risk infants. For the full list of recommendations from the American Academy of Pediatrics access the full guideline found here.[9]

Prenatal Substance Abuse

Prenatal substance abuse continues to be a significant problem America and creates multiple health risks for a developing fetus. The most common drugs involved in prenatal exposure include: nicotine, alcohol, marijuana, opiates, cocaine, and methamphetamine. The National Survey on Drug Use and Health is an annual survey providing national and state level information on the use of alcohol, tobacco, and illicit drugs in a sample of over 67,000 noninstitutionalized people older than 12 years. Data reported drug use for pregnant women between the ages of 15 and 44 years. Current illegal drug use among pregnant women remained relatively stable from 2007–2008 (5.1%) to 2009–2010 (4.4%). The average prevalence rates were significantly lower than reported current illicit drug use rates for non-pregnant women (10.9%). Importantly, the rate of current drug use among the youngest and possibly the most vulnerable pregnant women was highest (16.2% for 15- to 17-year-olds, compared with 7.4% among 18- to 25-year-olds and 1.9% among 26- to 44-year-olds). An additional important finding was that the rate of cigarette smoking for those 15 to 17 years of age was actually higher for pregnant women than non-pregnant women (22.7% vs 13.4%, respectively). [10]

In early gestation drugs can have significant teratogenic effects on an embryo. Once the fetal period has begun and major structural development is complete, drugs can have lesser effects including abnormal growth and maturation, congenital anomalies, difficulty with breast feeding and some cases, withdrawal symptoms. Drugs can also have pharmacologic effects on the mother which in turn can affect the fetus due to altered maternal health behavior. Altered behaviors can include poor nutrition, decreased access/compliance with health care, increased exposure to violence and increased risk of mental illness and infection. Long-term effects related to prenatal drug exposure can include impaired growth, behavioral problems, delays with cognition and language development, and predisposed to own drug use. The 3 most commonly used specimens to establish drug exposure during the prenatal and perinatal period are urine, meconium, and hair; however, none is accepted as a “gold standard.” [10]

It is the primary care pediatrician’s responsibility to address prenatal substance exposure including prevention, identification of exposure, recognition of medical issues for the exposed newborn infant, protection of the infant and follow-up of the exposed infant. To access the entire report please click here.[10]

Evaluation of Child Abuse

As an important cause of pediatric morbidity and mortality, child physical abuse is associated with major physical and mental health problems. These problems can extend into adulthood. The AAP provides guidance on the role of the Provider in identifying abused children with suspicious injuries who present for care, reporting suspected abuse to the child protection agency for investigation, supporting families who are affected by child abuse, coordinating with other professionals and community agencies to provide immediate and long-term treatment to victimized children, providing court testimony when necessary, providing preventive care and anticipatory guidance in the office, and advocating for policies and programs that support families and protect vulnerable children. To access the entire report click here.[11]

Hypothermia and Neonatal Encephalopathy

Clinical trials indicate that therapeutic hypothermia, using either selective head cooling or systemic cooling, is an effective therapy for neonatal encephalopathy. Infants selected for cooling must meet the criteria outlined in published clinical trials. The implementation of cooling needs to be performed at centers that have the capability to manage medically complex infants. Many infants with neonatal encephalopathy are born at community hospitals – centers that perform cooling should work with the referring hospitals to implement education programs focused on increasing the awareness and identification of infants at risk for encephalopathy, and the initial clinical management of affected

infants. To access the entire report please click here.[12]

Newborn Biliary Atresia

Biliary atresia is the most common cause of pediatric end-stage liver disease and the leading indication for pediatric liver transplantation. Diagnosis is usually made within the first few weeks after birth. Early diagnosis and successful surgical drainage of bile are associated with greater survival with the child's native liver. Newborn screening for biliary atresia in the United States is assessed by using criteria established by the Discretionary Advisory Committee on Heritable Disorders in Newborns and Children. Published analyses indicate that newborn screening for biliary atresia by using serum bilirubin concentrations or stool color cards is potentially life-saving and cost-effective. To access the entire report please click here.[13]

BRIGHT FUTURES

Bright Futures has published a series of **Infancy Visit Tools** that can be utilized during visits such as screening tools (Medical Screening Reference [MSR]), questionnaires, and supplemental items by age. Items are located here).[14]

The American Academy of Pediatrics (AAP) developed the **Oral Health Risk Assessment Tool** to aid in the implementation of oral health risk assessment during health supervision visits. This tool has been subsequently reviewed and endorsed by the National Interprofessional Initiative on Oral Health. The tool can be found here.[15]

Information regarding prevention screenings and immunizations can be found in the CPG *Pediatric Health: HS-1019.*

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS (AAOS)

The American Academy of Orthopaedic Surgeons (AAOS) recommends that newborn infants have an evaluation for risk factors for Developmental Dysplasia of the Hip. Infants should have imaging done prior to 6 months of age when any of the following risk factors are present: breech presentation, family history, and history of clinical instability. Infants who show an unstable hip should be treated with von Rosen splints and should be monitored with periodic imaging during brace treatment. For the AAOS recommendation click here.[16]

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE (NICE)

The National Institute for Health and Care Excellence (NICE) have published the following guidelines:

- Developmental Follow-Up of Children and Young People Born Preterm[17]
- Jaundice in Newborn Babies Born Under 28 Days[18]
- Neonatal Infection (Early Onset): Antibiotics for Prevention and Treatment[18]

Evidence Based Practice

AGENCY FOR HEALTHCARE RESEARCH AND QUALITY (AHRQ)

The Agency for Healthcare Research and Quality (AHRQ) has not published reports on this topic.

MEASUREMENT OF COMPLIANCE

WellCare is committed to adhering to the measures and standards published by the Centers for Medicare and Medicaid Services (CMS) and the National Committee for Quality Assurance (NCQA). Please reference WellCare's Clinical Policy Guiding Document titled *Quality Improvement.*

NOTE: To access Clinical Policy Guiding Documents visit www.wellcare.com – select the Provider tab, then "Tools" and "Clinical Guidelines".

Care Management

The following are found in the neonatal and infant population:

Early-Onset Neonatal Sepsis. Neonatal sepsis occurs in infants younger than 90 days old; it most often occurs within 24 hours of birth. Infection is received from the mother before or during delivery. Early onset neonatal sepsis can be caused by bacteria (e.g., Escherichia coli [E.coli], Listeria, some strains of streptococcus). Group B

streptococcus (GBS) is also a major cause however, it has become less common as women are screened during pregnancy. Sever infection in infants can also be caused by the herpes simplex virus (HSV) and occurs most often when the mother is newly infected. A baby's risk increases with the following:[20]

- GBS colonization during pregnancy
- Preterm delivery
- Water breaking (rupture of membranes) longer than 18 hours before birth
- Infection of the placenta tissues and amniotic fluid (chorioamnionitis)

Symptoms can include:[20]

- Body temperature changes
- Breathing problems
- Diarrhea or decreased bowel movements
- Low blood sugar
- Reduced movements
- Reduced sucking
- Seizures
- Slow or fast heart rate
- Swollen belly area
- Vomiting
- Yellow skin and whites of the eyes (jaundice)

Neonatal Abstinence Syndrome (NAS). The syndrome is a group of problems that are seen in newborns who were exposed to addictive opiate drugs while in utero. It occurs when a pregnant woman takes drugs such as heroin, codeine, oxycodone (Oxycontin), methadone or buprenorphine. Substances pass through the placenta and becomes dependent on the drug as well. As the baby no longer gets the drug after birth, withdrawal symptoms may begin as the drugs clear the baby's system. Withdrawal symptoms may occur in babies exposed to alcohol, benzodiazepines, barbiturates, and certain antidepressants (SSRIs). Treatment can last from 1 week to 6 months however babies will greatly benefit from additional "TLC" for the weeks and months ahead. Long term problems may exist for babies exposed to nicotine, amphetamines, cocaine, and marijuana. Symptoms of NAS depend on: [21]

- The type of drug the mother used
- How the body breaks down and clears the drug (influenced by genetic factors)
- How much of the drug she was taking
- How long she used the drug
- Whether the baby was born full-term or early (premature)

Symptoms typically begin within 1 to 3 days after birth, but can take up to a week. Observation of the baby in the hospital may be required. Symptoms may include:[21]

- Blotchy skin coloring (mottling)
- Diarrhea
- Excessive crying or high-pitched crying
- Excessive sucking
- Fever
- Hyperactive reflexes
- Increased muscle tone
- Irritability
- Poor feeding
- Rapid breathing
- Seizures
- Sleep problems
- Slow weight gain
- Stuffy nose, sneezing
- Sweating
- Trembling (tremors)
- Vomiting

Complications of NAS may also include: [21]

- Birth defects
- Low birth weight
- Premature birth
- Small head circumference
- Sudden infant death syndrome (SIDS)
- Problems with development and behavior

Plagiocephaly. Plagiocephaly is a common, treatable disorder that is characterized by the flattening of a baby's head. The disorder develops as a result of an infant's soft skull becoming flat in one area due to repeated pressure on one part of the head. Most cases are the result of a baby sleeping in one position regularly. It is very common in premature infants whose skulls are especially pliable. Treatment includes special exercises, changing sleep position, or wearing corrective headbands or using molding cups. Consultation with a plastic surgeon or neurosurgeon can rule out craniosynostosis (when the bones of the skull meld together to create an abnormal head shape and requires surgery).[22]

Synagis. The drug is given to those born prematurely at or before 35 weeks and are ≥6 months of age at the start of of RSV season. Synagis protects children with certain lung or heart conditions who are at high risk for severe RSV disease. It is not a vaccine and children can still get severe RSV disease despite receiving the drug. Synagis should be given to high-risk babies every 28-30 days during RSV season; monthly injections should continue on time throughout RSV season as babies can get RSV more than once.[23]

Thermoregulation. Neonates in the NICU may benefit from thermoregulation; guidelines apply to neonates who are at least 32 weeks gestational age and require assistance in maintaining their neutral thermal environment. Heat loss, especially very small premature neonates, is due to the properties of the skin, low insulation (i.e., fat), high evaporation and limited ability to vasoconstrict. Importantly, the body surface area is high in relation to weight in the neonate; a factor that significantly facilitates heat loss in this group. Maintaining thermoregulaton involves reducing one or more of the four mechanisms of heat loss – convection, conduction, evaporation and radiation. Using an incubator/radiant warmer to facilitate maintenance of a thermoneutral environment is routine in the NICU. In addition, isolated weight loss is not to be a sole indicator to place an infant back in an incubator. Those who are placed back into the incubator, a repeat trial of weaning to an open crib should be considered within 24 hours (if parameters for weaning continue to be met). An evaluation of the NICU environment (temperature and physical location near sources of heat loss) and/or medical reasons for crib failure should be considered.[24]

Seizures. Neonatal seizures may be the first and only clinical sign of a central nervous system (CNS) disorder. Seizures may require emergent therapy as they a disorder can affect the infant's homeostasis or contribute to additional injury to the brain. Some are associated with a higher incidence of early death; among those who live with seizures, the incidence of neurologic impairment, developmental delay, and post-neonatal epilepsy are high.[25]

MEASURABLE HEALTH OUTCOMES

Targeted Health Outcomes (Extended Program Goals) result from successful member self-management (see Case Management Objectives).

- Parent/Caregiver will have age/gender/condition appropriate Preventive Health Care and Well Visits as evidenced by claims for immunizations, screenings. CM may use Provider and/or Caregiver/Parent narrative and/or HRA data may be used.

CASE MANAGEMENT GOALS

Case Goals should target specific care gaps and/or adherence issues, and measure the Parent/Caregiver's progress towards self-management and adherence which will lead to the targeted health outcomes above. Examples:

1. The Member's claims demonstrate adherence to Preventive Health Care immunizations, screenings, and education (verified by claims or member/provider narrative) over last 360 days.
2. Parent/Caregiver will make follow up appointments with Neonatologist/Pediatrician every 2 weeks for first month, every month for first 3 months and every 3 months after 3 months of age of member.
3. Specific for Members requiring hospitalization: The Member participates in provider follow-up visit within 7 days of hospital discharge.

CASE MANAGEMENT OBJECTIVES

Case Management Objectives should focus on improving the Parent/Caregiver's self-management skills including:

- Adhering to provider visit(s) as scheduled
- Educate Parent/caregiver on age/gender/condition specific Preventive Health Care screenings & immunizations
- Assist member/caregiver with transportation and making appointments for screenings and immunizations as needed
- Assist Parent/caregiver with addressing barriers to receiving Preventive Care screenings and immunizations
- Utilize approved screening tools to identify risk factors

The care team should also conduct risk screening and treat anxiety and depression, if applicable.

Discharge. At the time of discharge home, parents of preterm infants in the neonatal intensive care unit often feel apprehensive and may question their ability to care for their baby. A well-planned, comprehensive discharge of a

medically stable infant ensures a positive transition to home and safe, effective care after discharge. Discharge readiness is usually determined by demonstration of functional maturation, including the physiological competencies of thermoregulation, control of breathing, respiratory stability, and feeding skills and weight gain. Supporting family involvement and providing education from the time of admission improve parental confidence and decrease anxiety. Assessing the physical and psychosocial discharge environment is an important part of the discharge process. The clinical team is responsible for ensuring that appropriate investigations and screening tests have been completed, that medical concerns have been resolved and that a follow-up plan is in place at the time of discharge home.[26]

MEDICAL BEHAVIORAL INTEGRATION

Infant mental health refers to the social and emotional development of a child from birth to age three. Infants need a safe environment and interaction with a caregiver who is consistent, responsive and nurturing. Strong emotional health supports the healthy development of physical health, as well as language, social, and cognitive skills. It is possible for infants to develop emotional, relational or behavioral disturbances, resulting in an Infant and Early Childhood Mental Health (IECMH) Disorder. Certain risk factors can increase the likelihood that an infant will be diagnosed with IECMH. Risk factors include exposure to trauma, maternal depression, poor parental physical health, poverty, parental loss, and substance abuse and/or mental health in the family. With early identification of mental health concerns, services can be put in place to redirect at-risk infants, and put them back on the path for healthy development. Behaviors that warrant further investigation in infants from birth to age three include:[27]

- Prolonged eating or sleeping problems
- Inconsolable irritability
- Continuous crying with little capability to be consoled
- Excessive distress when left with another adult
- Inability to adjust to new situations
- Easily disconcerted by routine events
- Inability to form relationships with other children
- Excessive hitting, biting and pushing of other children
- Withdrawn behavior
- Flat affect

MEMBER EDUCATIONAL RESOURCES

Currently there are no Krames/StayWell Member educational materials utilized by WellCare Case Managers.

Related WellCare Guidelines

In addition to the information contained in this document, please reference the following CPGs: *Behavioral Health Conditions and Substance Use in High Risk Pregnancy: HS-1040; Pediatric Preventive Health: HS-1019; Preconception and Inter-Pregnancy: HS-1028;* and *Pregnancy and Post-Partum Care: HS-1029.*

NOTE: Clinical Policies can be accessed by going to www.wellcare.com – select the Provider tab, then “Tools” and “Clinical Guidelines”.

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Medical Policy Committee Approval History

Date	History and Revisions by the Medical Policy Committee
7/12/2018	• Approved by MPC. No changes.
12/72017	• Approved by MPC. New.