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Neonatal Disorders

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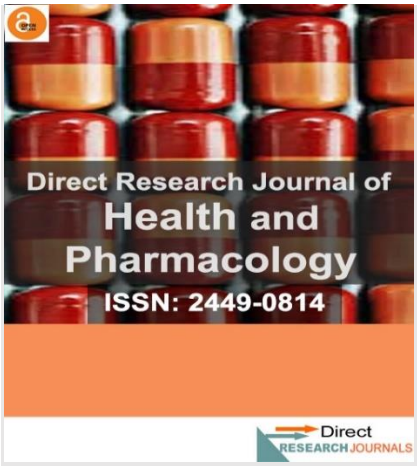
ABSTRACT

The neonatal period, encompassing the first 28 days of a newborn's life, is a critical and vulnerable phase. During this time, infants are highly susceptible to a wide range of diseases and disorders that can significantly impact their health and development. Neonatal diseases are still the leading public health problems in low-resource settings, e.g., serious infections neonatal encephalopathy, and neonatal preterm birth complications. In sub-Saharan Africa, neonatal sepsis caused an estimated 5.3–8.7 million disability-adjusted life-years (DALYs), and an economic burden of over 469 billion US dollars in 2014. However, the considerable disequilibrium of neonatal disorders was found across regions and countries, deeply dependent on the local demographics and socioeconomic status. Neonatal care has significant impact in the prevention and management of neonatal diseases worldwide. This review aims to provide an overview of common neonatal disorders, highlighting their cause/risk factors, diagnosis, prevention and available treatment options. The review also highlights the role of the health care providers and parents in prevention, early detection, diagnoses of these disorders, and prompt management for a better health outcome for the neonates. The review delves into the most prevalent and life-threatening conditions faced by neonates, including infections, respiratory distress syndrome, congenital anomalies, neurological disorders, and metabolic disorders. By emphasizing the importance of early detection and multidisciplinary collaboration, this review aims to contribute to improved neonatal care and enhanced overall neonatal health.

Keywords: *Neonate, disorders, congenital disorders, genetics, gestational age, birth injuries, respiratory disorders*



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INTRODUCTION

Neonatal disorders encompass a wide range of conditions that manifest within the first 28 days of a newborn's life a period marked by rapid physiological transitions and heightened vulnerability. These disorders can arise during fetal development, labor and delivery, or shortly after birth, and they vary in severity from subtle abnormalities to life-threatening emergencies. The ability of midwives and obstetricians to recognize and assess these conditions is crucial for timely referral to neonatal multiprofessional teams. Early identification and intervention not only improve outcomes for the infant but also provide essential support to parents throughout the diagnostic and treatment process (Marshall & Rayne, 2014).Globally, neonatal diseases remain a leading public health challenge, particularly in low-resource settings. Conditions such as serious infections, neonatal encephalopathy, and complications from preterm birth continue to contribute significantly to neonatal morbidity and mortality (Lake et

al., 2013; Hicks & Fairchild, 2013). In sub-Saharan Africa, neonatal sepsis alone accounted for an estimated 5.3–8.7 million disability-adjusted life-years (DALYs) and imposed an economic burden exceeding 469 billion US dollars in 2014 (Gupte, 2016). The distribution of neonatal disorders is uneven across regions, influenced by local demographics and socioeconomic conditions (Caserta, 2015).

The neonatal period is critical for survival and long-term development. Advances in neonatal care have significantly improved the prevention and management of neonatal diseases worldwide (Khan, 2023). However, untreated neonatal disorders can lead to developmental delays or death, with sub-Saharan Africa recording the highest neonatal mortality rates globally (Balest, 2021). Addressing these challenges requires a focus on improving care during birth and the first week of life, a time when infants are most vulnerable.

High rates of preventable neonatal deaths and poor health outcomes among children under five reflect disparities in access to life-saving interventions and broader issues of inadequate social and economic development. Factors such as poverty, malnutrition, and lack of access to clean water, sanitation, and quality healthcare—including essential newborn care—are significant contributors to neonatal morbidity and mortality (Akangire & Brian, 2016).

Neonatal disorders are central to the United Nations' Sustainable Development Goals (SDGs), with their epidemiological patterns informing global health decisions. By exploring both the challenges and successes in managing neonatal diseases, this review aims to enrich the collective understanding of neonatal health and promote continued efforts to enhance care. A deeper grasp of these issues empowers healthcare professionals to deliver targeted, effective interventions that improve survival and long-term well-being for newborns (Marouane et al., 2022).

Recent developments in neonatal screening and immunization have transformed care delivery. For instance, newborn bloodspot screening programs in the Asia-Pacific region have proven effective in early detection within resource-limited settings (Therrell et al., 2024). Targeted screening for sickle cell disease in Nigeria and Angola highlights the importance of context-sensitive approaches to neonatal health (Galadanci et al., 2024; Su et al., 2025). These initiatives underscore the need for equitable access to diagnostic technologies and preventive care.

Maternal education and healthcare provider training are pivotal in improving neonatal outcomes. Research shows that informed mothers and skilled professionals enhance the recognition of neonatal danger signs and promote timely healthcare-seeking behavior (Szilagyi et al., 2025; Alemu, 2025). Additionally, maternal satisfaction during labor and delivery correlates with better neonatal care practices and outcomes (Ibrahim & Mahmood, 2025), emphasizing the interconnectedness of maternal and neonatal health.

Despite progress, neonatal mortality remains a pressing concern. Studies in Ethiopia have identified thrombocytopenia, prematurity, and limited access to neonatal intensive care units as key determinants of neonatal death (Asefa, 2024; Ashebir et al., 2025). An umbrella review of risk factors further highlights the multifactorial nature of neonatal mortality and the need for comprehensive, evidence-based interventions (Kefale et al., 2025). In conflict-affected regions like Sudan, healthcare barriers among internally displaced populations exacerbate neonatal vulnerabilities, necessitating targeted humanitarian and policy responses (Omer et al., 2025).

Infectious diseases continue to pose significant threats to neonatal health. Respiratory syncytial virus (RSV) is a leading cause of infant hospitalization, prompting the development of maternal vaccination campaigns and monoclonal antibody therapies such as nirsevimab (Attaianese et al., 2025; Perramon et al., 2025; Soussan et al., 2025; Olesen et al., 2025). Studies in China reveal complex pertussis transmission dynamics in highly vaccinated urban populations, informing control strategies (Shen et al., 2025). The global rise of human metapneumovirus (hMPV) further underscores the need for vigilant surveillance and immunological research (Adedokun et al., 2025).

Maternal immunization has emerged as a vital strategy to prevent neonatal infections and birth defects. Updated joint position statements affirm the safety and efficacy of vaccination during pregnancy, reinforcing its role in protecting newborns from teratogenic and infectious threats (Rasmussen et al., 2025). Technological innovation in pediatric care, exemplified by the Consortium for Technology & Innovation in Pediatrics (CTIP), is driving the development of novel diagnostic and therapeutic devices tailored to neonatal needs (Lambert et al., 2025).

The global campaign to eliminate maternal and neonatal tetanus remains a priority, with investment cases demonstrating the cost-effectiveness and life-saving potential of immunization and clean delivery practices (Laing et al., 2019). These efforts reflect a broader commitment to reducing preventable neonatal deaths and advancing health equity.

Neonatal disorders represent a multifaceted challenge within global health. Addressing them requires coordinated, evidence-based, and contextually relevant strategies from screening and immunization to education and innovation. As neonatal care continues to evolve, sustained investment in research, policy, and practice will be essential to safeguarding the lives and futures of the world's youngest and most vulnerable population.

METHODOLOGY

This review used an organized approach to analyze

literature on common neonatal disorders in Nigeria. The methodology began with a comprehensive literature search across various academic and Pediatric databases, including PubMed, Google Scholar, and WHO fact sheet on neonatal disorders. Relevant peer-reviewed articles, reports, and policy documents published between 2015 and 2025 were included. Key search terms such as "neonates, neonatal disorders, neonatal infections, genetics, congenital malformations were used to identify relevant studies needed for the review. Inclusion and exclusion criteria were used to ensure the selection of relevant materials only. Studies, reviews and guidelines on neonatal disorders, diseases, diagnosis and prevention were included. Data collection and analysis focus on key issues like etiology, risk factors, diagnosis and prevention of neonatal disorders. Also, data related to guidelines for management of neonatal disorders by WHO was reviewed. Extracted data were particularly classified and adapted to provide a thorough analysis which gave a proper insight into the subject topic (Table 1).

Table 1. Statistics on Neonatal Disorders Globally

S/N	Data on Neonatal Disorders
1	Neonatal Mortality in 2022 was 3.2m Neonatal deaths have increased since 2000. An average of 6500 neonates die daily accounting for 44%
2	sub-Saharan Africa has the highest burden of Neonatal Mortality, 27%
3	Neonatal Jaundice in Preterm 60% and term neonates 80%
4	Congenital abnormality account for 240,000 neonatal deaths annually
5	About 94% of severe congenital disorders occur in low- and middle-income countries,

Source (WHO, FACT SHEET, 2023)

DISCUSSION

Etiology / Risk Factors of Neonatal Disorders

Neonatal diseases and disorders can be caused by various factors, including genetic, environmental, and maternal health conditions, infections or complications during pregnancy and childbirth, prematurity (Balest, 2021).

Genetic Disorders

Congenital malformations, potentially indicating an underlying genetic disorder, are estimated to be present in 13% of all admissions to neonatal intensive care units (NICUs) and remain one of the leading causes of neonatal mortality (Centre for Disease Control, 2024). Genetic disorders are health problems that happen because of some type of abnormality in a person's genetic material. Genetic changes can be passed down to a child from their parents. When this happens, the disease or condition is called hereditary or inherited. Or the changes can happen for the first time in the process of making the sperm or egg or early in development, so the child will have the genetic change but the parents will not (Centre for Disease Control, 2024). If one parent has an autosomal dominant disease or condition, each child has a 50% (1 in 2) chance of inheriting the genetic change that causes the condition. Examples of autosomal dominant conditions include hereditary breast and ovarian cancer. With autosomal recessive diseases or conditions, a person needs a genetic change in both copies of the gene to have the disease or condition. While a person with a genetic change in only one copy of the gene will not have the disease or condition, they can still pass the genetic change down to their children. These parents are sometimes called "carriers" of the disease because they "carry" the genetic change that causes the disease or condition but do not have the disease themselves (Vineet &Jeffrey, 2015; Xiao et al., 2023).

A parent who is a carrier of a disease has a 50% (1 in 2) chance of passing the gene with the genetic change on to each of their children. If both parents are carriers of the disease, each child has a 25% (1 in 4) chance of inheriting two genes with the genetic change and thus of having the disease. Carrier screening looks for autosomal recessive genetic changes in parents to see if they could have a child with the disease or condition. Genetic factors are believed to account for approximately 46% of the variation in SGA births (Kathuria, 2023). Examples of autosomal recessive disorders are sickle cell disease and cystic fibrosis (Centre for Disease Control, 2024). Some diseases or conditions happen when a gene on the X chromosome has a genetic change. Examples of X-linked conditions include fragile X syndrome, Duchenne muscular dystrophy, and hereditary hemophilia.

Gestational age

Gestational age refers to how far along the fetus is. Many issues that affect newborns are related to the gestational age because it reflects the newborn's degree of physical maturity at birth. The gestational age is the number of weeks between the first day of the mother's menstrual period and the day of delivery. Babies are estimated to be due (the due date) at a gestational age of 40 weeks. (Kumari et al., 2023). Newborns are classified by gestational age as: premature: delivered before 37 weeks of gestation, full term: delivered at 37 to before 41 weeks of gestation, late term: delivered at 41 to before 42 weeks of gestation and post term: delivered at 42 weeks or more of gestation. The gestational age and weight classifications help doctors determine the risk of various complications. For example, premature and late preterm

newborns are at increased risk of breathing problems because their lungs may not be fully developed. Large-for-gestational-age newborns may have more difficult births and be at increased risk of low blood sugar (glucose) and birth injuries (Marouane et al., 2022, Kathuria, 2023). This knowledge helps the obstetrician decide the best way to deliver the baby thereby avoiding birth complications.

Maternal Health factors

The mother's health problems during pregnancy, maternal age, undernutrition, anaemia, diseases, socio-economic conditions, access to affordable and better-quality healthcare facilities, education level, and other demographic and clinical factors (Kumari et al., 2023, Dathe & Schaefer, 2019) can affect the growing fetus and negatively impact the health of the newborn. The chance of midwives caring for a woman with pre existing cardiac disease, or developing cardiac disease in pregnancy, has increased over recent years due to many factors, including the increased age of childbearing women and the association it has with coexisting medical conditions such as diabetes, hypertension, as well as obesity. Risk for morbidity and mortality depends on the nature of the cardiac lesion, its effect on the functional capacity of the heart and the development of pregnancy related complications such as hypertensive disorders of pregnancy, infection, thrombosis and haemorrhage. High blood pressure, heart disease, and pre eclampsia may reduce the growth of the fetus and cause other complications (Marshall &Rayne, 2014). Thyroid disease that causes a low thyroid hormone level (hypothyroidism) may cause brain damage in the fetus and lead to long-term neurologic problems. Thyroid disease with a high thyroid hormone level (hyperthyroidism) may cause the fetus and newborn to have an overactive thyroid gland. Maternal malaria, anemia, and several other infections like HIV and hepatitis B and C can also have negative impact on the fetus (Marouane et al., 2022). Early diagnosis and management of these health condition can help prevent neonatal disorders.

Drug safety has the highest priority in the treatment of pregnant women, as any effect on fetal development will not be immediately evident, and the harm that ensues may have lifelong adverse consequences. The safety of medication use in pregnancy always involves two individuals. The developing “co-treated“unborn child is at its most vulnerable stage of life. Unlike children or adults, side effects affecting the embryo cannot be detected early enough to prevent potentially life-long damages. Thus, medication safety in pregnancy is of utmost importance (Diguisto & Dochez, 2020).

The effects of smoking during pregnancy have been the subject of numerous studies and have been associated with many adverse perinatal outcomes. Specifically active exposure to tobacco has been shown to be associated with a dose response relationship to adverse outcomes such as preterm birth (birth before 37 weeks of pregnancy) (Moore et al., 2016; Soneji & Beltrán-Sánchez, 2019; Colins & Popek, 2018) reduced birth weight, with the reduction in fetal measurements occurring after the first trimester and transfer to a neonatal intensive care unit. Smoking has also been associated in a dose-dependent manner with an increased risk of intrauterine fetal death (Diguisto & Dochez, 2020). Cocaine increases the risk of poor growth of the fetus and prematurity. The premature separation of the placenta from the wall of the uterus (placental abruption) is more common among cocaine users and can cause stillbirth or oxygen deprivation and brain damage in the fetus. Because cocaine narrows blood vessels, it can cause a stroke or damage other organs in the fetus. The signs most frequently seen are jitteriness, irritability and constant high-pitched crying. Babies often fail to settle between feeds and are hyperactive. When feeds are offered they often feed voraciously although some have a poor suck. Vomiting is common. Diarrhoea and an irritant nappy rash are also often seen. Sneezing and yawning are also seen alongside episodes of high temperature in the absence of infection. In rare circumstances babies may also have seizures (Marshall & Rayne, 2014, Akangire & Brian, 2016).

Birth injuries

Birth injury is harm that can happen to a baby during the birthing process, usually in the process of passing through the birth canal (Marouane et al., 2022). Birth injury is a general term used to describe any injury to a fetus or neonate during labour and delivery, frequently during the second stage of labour in which the fetus descends through the birth canal (WHO, 2025). The incidence of neonatal injury resulting from difficult or traumatic deliveries is decreasing due to increasing rates of cesarean delivery in place of difficult versions, vacuum extractions, or mid- or high-forceps deliveries (Marouane et al., 2022). Skin damage is often iatrogenic, resulting from forceps blades, vacuum extractor cups, scalp electrodes and scalpels. Poorly applied forceps blades or vacuum extractor cup may result in scalp abrasions although less so with softer vacuum extractor cups. Forceps blades may cause bruising, scalp electrodes cause puncture wounds, as do fetal blood sampling techniques. Occasionally laceration of the baby’s skin may occur during uterine incision at caesarean section (Marouane et al., 2022). There is a wide spectrum of birth injuries ranging from minor and self-limited problems (eg, laceration or bruising) to severe injuries that may result in significant neonatal morbidity or mortality (ie, intraabdominal or

intracranial hemorrhage). Ohers include, Cephalhematoma. Fractures, Facial paralysis, Erb's palsy, Hip dislocation, intracranial hemorrhage and soft tissue injuries.

Risk factors for Birth Injuries

There is an increased risk of trauma when the infant is large for gestational age (which is sometimes associated with maternal chronic diabetes or maternal gestational diabetes) or when there is a breech or other abnormal presentation, especially in a primipara, or in cases of cephalon- pelvic disproportion (Akangire & Carter, 2016). Birth injuries can also occur during some intrauterine procedures like, from electrode used in intrauterine fetal monitoring, forceps delivery, fetal scalp electrodes, and intrapartum heart rate monitoring, prematurity, precipitate labor (WHO, 2025).

Common Neonatal Disorders

Disorders that affect the Lungs and Breathing

Birth Asphyxia, Apnea of prematurity, Respiratory distress syndrome,

Birth asphyxia is a decrease in blood flow to a newborn's tissue or a decrease in oxygen in a newborn's blood during delivery. When a baby is born, the doctor or midwife examines the newborn for any obvious abnormalities or signs of distress. The newborn's condition immediately after birth is recorded at 1, 5 and at 10 minutes after birth using the Apgar score (WHO, 2025). The Apgar score is used to assign points for heart rate, effort to breathe, muscle tone, reflexes, and color. At 5 minutes, a score of 7 to 10 is considered normal, 4 to 6 is intermediate, and 0 to 3 is low. A low Apgar score is a sign that the newborn is having difficulty and may need extra assistance with breathing or blood circulation. The Apgar score does not predict anything about the baby's health after the first few minutes of life (Marouane et al., 2022). Some potential causes of low apgar score include, Separation of the placenta from the uterus before delivery (placental abruption), obstruction of umbilical cord blood flow, abnormal development of the foetus (for example, when there is a genetic anomaly), severe infection in the foetus, exposure to certain drugs or medications before birth, severe maternal haemorrhage, severe maternal illness. Sometimes the exact cause of birth asphyxia cannot be identified. Regardless of the cause, affected newborns appear pale and lifeless at birth. They breathe weakly or not at all and have a very slow heart rate. If asphyxia resulted from rapid blood loss, the newborn may be in shock. The newborn is immediately given fluids by vein, and sometimes a blood transfusion or plasma. Newborns may require care in the neonatal intensive care unit (NICU) (Marouane et al., 2022). With proper history, the obstetrician/midwife is well prepared to resuscitate to newborn to avoid further complications.

Respiratory Distress Syndrome (RDS)

Respiratory Distress Syndrome RDS is generally a condition that affects preterm babies, however, it can also occur in those born at term as other disorders like maternal diabetes can also inhibit the production of surfactant. This condition is caused by lack/ inadequate surfactant in the alveoli. Surfactant is made up of phospholipids and proteins and is produced by type 11 pneumocytes to reduce surface tension within the alveoli preventing their collapse at the end of exhalation. The introduction of surfactant therapy into neonatal care during the 1980s and 90s combined with much wider use of antenatal steroids significantly reduced the mortality and morbidity previously seen in RDS. Babies with RDS experience increasing respiratory distress and work of breathing. In extremely preterm babies, surfactant is often given in the labour suite at birth although alternative approaches using continuous positive airway pressure can be used (Marouane et al., 2022). RDS is a common issue in preterm infants. WHO guidelines suggest the use of antenatal steroids for mothers at risk of preterm delivery to promote lung maturity (Akangire and Brian, 2016).

Jaundice

Neonatal jaundice is a clinical manifestation of elevated total serum bilirubin which results from bilirubin that is deposited into an infant's skin. The characteristic features of neonatal jaundice include yellow skin, sclerae and mucous membrane. Approximately 60% of term and 80% of preterm newborn develop clinical jaundice in the first week after birth. Neonatal jaundice is usually a mild, transient and self-limiting condition known as physiological jaundice. However, this should be distinguished from the more severe pathologic jaundice (Ansong-Assoku et al., 2024). Jaundice is caused by an increase in serum bilirubin levels largely as a result of breakdown of red blood cells (Mitra & Rennie, 2017). Typically, babies on the first day after birth will not appear jaundiced, but most babies will look yellow by days 3-4. Jaundice that appear earlier than the third day of birth is of clinical importance (Mitra & Rennie, 2017).

Infections in the Newborn

Infection in the newborn contributes signifcantly to morbidity and mortality and possible infection is one of the commonest reasons for newborn babies becoming unwell and requiring admission to a neonatal unit. Neonatal infections are infections of the neonate (newborn) acquired in utero, trans placentally or through ruptured membranes, in the

birth canal during delivery (intrapartum), from external sources after birth (postpartum) (Tesini, 2020). Some neonatal infections are apparent soon after delivery, while others may develop in the postnatal period. Some neonatal infections such as HIV, hepatitis B, and malaria do not become apparent until much later. There is a higher risk of infection for preterm or low birth weight neonates, or in cases of premature rupture of membranes (PROM). Umbilical cord until its separation can be a focus for infection by bacteria that colonize the skin of the newborn. Babies are protected from infection by the passive transfer of antibodies from their mother. The major advantage of this is that they receive passive immunity for those infections they are most likely to come into contact with. The immune system is functional at birth and newborn babies can also mount their own humeral (antibody) response to new infections; however, preterm babies are particularly vulnerable to infection as placental transfer of IgG mainly occurs after 32 weeks' gestation and their own antibody response is immature (Tesini, 2020). The physical signs of infection that may be apparent are: temperature instability. There may be a low, lethargy or poor feeding, unexplained bradycardia (heart rate <100/min) or tachycardia (heart rate >180/bpm) and any apnoea or episodes of cyanosis, increased respiratory rate or signs of respiratory distress, irritability, abnormal movements, skin mottling, rashes, prolonged capillary refill time.

Neonatal sepsis is a type of neonatal infection and specifically refers to the presence in a newborn baby of a bacterial blood stream infection (BSI) (such as meningitis, pneumonia, pyelonephritis, or gastroenteritis) in the setting of fever (Balest, 2021). Older textbooks may refer to neonatal sepsis as "sepsis neonatorum". Neonatal sepsis is an invasive infection occurring in the first twenty eight (28) days of life. It could be bacterial, viral, fungal or even toxin mediated. Early signs are frequently nonspecific and subtle and do not distinguish among organisms. Neonatal sepsis is the single most common cause of neonatal death in hospital as well as community in developing country. The signs of sepsis are non-specific and include: Body temperature changes, Breathing problems, Diarrhea, Low blood sugar (hypoglycemia), reduced movements, reduced sucking, seizures, bradycardia, swollen belly area, vomiting, yellow skin and whites of the eyes (jaundice)., hemorrhagic rash, jitteriness, abdominal distension, jaundice, diminish spontaneous activities, less vigorous sucking, apnoea (Liu et al., 2015). A heart rate above 160 can also be an indicator of sepsis, this tachycardia can present up to 24 hours before the onset of other signs.

It is observed that birth asphyxia, prematurity, low birth weight, premature rupture of membranes and other factors such as delivery settings, type of delivery, antenatal care received, newborn mixed feeding, and some cultural practices for cord care are believed to contribute to the incidence of neonatal sepsis (Adatara et al., 2019) across the world causing morbidity and mortality among neonates. Successful intervention in neonatal sepsis requires investment in high-quality data and reliable identification of neonatal sepsis. Worldwide neonatal deaths have decreased by over 3.6 million per year since 2000, largely due to decreases in the incidence of major conditions such as pneumonia and diarrhea. However, neonatal sepsis remains a notable counterexample to the progress in the decline of cause-specific mortality rates (Liu et al., 2015). Despite its disproportionate burden on childhood mortality, neonatal sepsis receives substantially less investment internationally as a public health priority compared with other major conditions (Adatara et al., 2019, Ranjeva et al., 2018). Neonates with clinical signs of sepsis should have a complete blood count (CBC), differential with smear, blood culture, urine culture (not necessary for evaluation of early-onset sepsis), and lumbar puncture (LP), if clinically feasible, as soon as possible. Neonates with respiratory symptoms require chest x-ray. Diagnosis is confirmed by isolation of a pathogen in culture. Other tests may have abnormal results but are not necessarily diagnostic. Infants should be given broad-spectrum empiric antimicrobial therapy (Tesini, 2020).

Ophthalmia Neonatorum

Eye infection caused by Chlamydia or Gonococcus will present with a red sore eye with a large amount of purulent discharge, usually after the first week after birth.

Ophthalmia neonatorum is defined in England as any purulent eye discharge within 21 days of birth. A swab must be taken for culture and sensitivity testing, with immediate medical referral. Identification of the organism responsible is essential as chlamydial and gonococcal infections can cause conjunctival scarring, corneal infiltration, blindness and systemic spread. Treatment includes local cleaning and care of the eyes with normal saline, and appropriate drug therapy for the baby and mother if required (Tesini, 2020).

Congenital Disorders

Congenital disorders can be defined as structural or functional anomalies that occur during intrauterine life. An estimated 240,000 newborns die worldwide within 28 days of birth every year due to congenital disorders. Congenital disorders cause a further 170 deaths of children between

the ages of 1 month (WHO, 2023). These conditions develop prenatally and may be identified before or at birth, or later in life. It is estimated that about 94% of severe congenital disorders occur in low- and middle-income countries. An indirect determinant, this higher risk relates to a possible lack of access to sufficient nutritious foods by pregnant women, an increased exposure to agents or factors such as infection and alcohol, or poorer access to health care and screening. Risk factors for congenital disorders include genetics, drugs, socioeconomic and environmental factors and infections.

Some congenital disorders can be treated with surgical and non-surgical options, such as cleft lip and palate, clubfoot and hernias, Gastroschisis and exomphalos, polydactyly, syndactyly, congenital hip displacement, hypospadias and epispadias, cryptorchidism (WHO, 2023). Others, including heart defects, neural tube defects, and down syndrome, spinal bifidas can cause lifelong impacts. Congenital disorders are one of the main causes of the global burden of disease, and low- and middle-income countries are disproportionately affected. These areas are also less likely to have facilities to treat reversible conditions such as clubfoot, leading to more pronounced and long-lasting effects (Colins & Popek, 2018).

Neonatal Seizures

Neonatal seizures are among the most common neurological emergencies in the first month of life and often signal serious underlying pathology. Their recognition is crucial, as they may indicate life-threatening conditions requiring immediate intervention. Seizures in the newborn period can be difficult to recognize due to their subtle presentation, yet they remain a vital clinical sign. The most common cause is neonatal encephalopathy, particularly hypoxic-ischemic encephalopathy (HIE), although readily treatable conditions such as hypoglycemia must not be overlooked.

Unlike seizures in older children or adults, neonatal seizures often manifest differently. They may be subtle and hard to distinguish from normal neonatal behaviors. Types of seizures include tonic seizures (sustained posturing of the limbs or trunk, or deviation of the head), clonic seizures (rhythmic jerking of one limb or one side of the body at 1–4 times per second), myoclonic seizures (rapid, isolated jerking of muscles), and subtle seizures (repetitive lip smacking, staring, blinking, or cycling movements of the limbs). Almost all neonatal seizures have an identifiable cause, such as HIE, cerebral infarction (neonatal stroke), cerebral trauma, infections (e.g., meningitis or encephalitis), metabolic abnormalities (including hypoglycemia), narcotic drug withdrawal, or intracranial hemorrhage (Colins & Popek, 2018).

It is essential to differentiate seizures from benign conditions like jitteriness and neonatal sleep myoclonus. Jitteriness involves symmetrical, rapid movements of the hands and feet, often stimulus-sensitive and lacking associated eye movements. Neonatal sleep myoclonus presents as bilateral or unilateral jerking during active sleep, is not stimulus-sensitive, and typically affects the upper limbs more than the lower limbs. Ensuring the newborn's safety during a seizure includes maintaining a clear airway and checking for treatable causes such as hypoglycemia and electrolyte imbalances (calcium and sodium), as well as considering infection [Colins & Popek, 2018].

In low and middle-income countries, the burden of neonatal seizures is particularly pronounced due to limited diagnostic and therapeutic resources. In a rural Kenyan district hospital, Mwaniki et al. (2010) found that HIE and neonatal infections were frequent causes of seizures, significantly impacting hospitalization outcomes. Ogunlesi et al. (2007) highlighted similar mortality risk factors in Nigerian newborns, emphasizing delayed presentation and inadequate care. Kuti et al. (2015) identified birth asphyxia and sepsis as leading causes of neonatal seizures in Ilesa, Nigeria. Nyong et al. (2025) reported a high burden of neonatal seizures in Uyo, Nigeria, again citing HIE and infections as predominant causes. In North West Ethiopia, Fetene Terefe et al. (2025) found that early neonatal deaths were often linked to severe underlying conditions and delayed intervention. Weldegerima et al. (2023) emphasized the prognostic importance of seizure type and timing in Mekelle, Ethiopia. Electroencephalographic (EEG) monitoring plays a critical role in assessing seizure burden and predicting neurodevelopmental outcomes. Mathieson et al. (2024) demonstrated in Uganda that EEG background activity and seizure burden were closely linked to early childhood outcomes in neonates with encephalopathy. Weeke and de Vries (2025) provided clinical guidance on neonatal EEG use, reinforcing its importance in seizure management.

Despite their clinical significance, neonatal seizures remain difficult to manage in resource-constrained environments. Spenard et al. (2024) reviewed literature from low- and middle-income countries, identifying diagnostic and treatment gaps, including limited EEG access and inconsistent anticonvulsant use. Naburi et al. (2024) surveyed neonatal HIE management in sub-Saharan Africa, revealing wide variability in clinical practices and underscoring the need for standardized protocols. Nanyunja et al. (2022) introduced the baby BRAiN study protocol to improve understanding and management of birth asphyxia and neonatal encephalopathy in African newborns.

Therapeutic hypothermia has emerged as a promising intervention for neonates with HIE. Nakwa et al. (2023) reported favorable outcomes in South African neonates treated with hypothermia, while Kali et al. (2016) demonstrated similar benefits in a middle-income country, reinforcing its neuroprotective potential. The long-term

consequences of neonatal seizures extend beyond the acute phase. Kariuki et al. (2017) reviewed the prevalence and causes of acute symptomatic seizures in Africa, noting behavioral and emotional comorbidities. Serem et al. (2015) examined seizure phenotypes in Kenyan children following a decline in malaria, highlighting evolving epidemiological patterns and the need for ongoing surveillance. Neonatal outcomes are also influenced by gestational age and delivery practices. Mettananda et al. (2025) conducted a multicenter study in Sri Lanka, showing that term deliveries at different gestations had varying outcomes, potentially affecting seizure risk. Musango et al. (2019) quantified the economic burden of neonatal disorders in Mauritius, offering a broader perspective on the impact of neonatal seizures.

Hypoglycemia

Neonatal hypoglycemia is among the most common metabolic disturbances encountered in the immediate postnatal period, affecting both term and preterm infants. Characterized by abnormally low blood glucose levels. Its early identification and management remain critical due to the heightened metabolic demands of the developing neonatal brain. While transient hypoglycemia is often considered benign when promptly corrected, growing evidence suggests that even short episodes of low glucose may have lasting implications for neurodevelopment (Abdelmonem et al., 2025). The signs of hypoglycemia are lethargy, poor feeding, seizures and decreased consciousness level (Abdelmonem et al., 2025). Several observational and cohort studies have reported associations with adverse outcomes, including developmental delay, learning disabilities, and decreased school performance, whereas others suggest no significant long-term sequelae when hypoglycemia is effectively managed. Various maternal and neonatal factors are crucial for keeping newborns' circulating glucose concentrations within the normal range, and any disruption to these factors can lead to hypoglycemia. Preterm infants, babies born large for gestational age, infants of diabetic mothers, and babies small for gestational age particularly those with intrauterine growth restriction are at high risk for NH (Abdelmonem et al., 2025).

Diagnosis. Sometimes, doctors can diagnose a problem with a baby before it is born. This is done by testing the mother's blood and performing ultrasounds of the foetus during prenatal visits. Examples of neonatal disorders that can be diagnosed before birth include Rh incompatibility and various heart defects. Most of the time, doctors will diagnose a neonatal disorder shortly after birth. A neonatal disorder can be recognized during Physical examination from head to toe which is conducted by the midwife or obstetrician to detect any abnormality, Cord blood test is done to measure the level of bilirubin, oxygen level, blood sugar level, blood type, platelet count and complete blood count, C-reactive protein measurement. A blood culture is also prepared to check for infection if necessary (Abdelmonem et al., 2025).

Screening test – A screening test is not routinely done, however, if indicated, the newborn blood is taken from the heel 24-72 hours after birth to check for genetic, metabolic and endocrine disorders. Feeding observation – The doctor and nurses visit the mother and baby regularly to assess the feeding process. Feeding problems (i.e., refusing to eat, gagging, spitting up, or crying) can be an indicator of a larger issue. If an issue is found during any of the steps listed above, additional tests may need to be administered. These additional tests can include blood tests, echocardiogram (a test that studies the heart), X-rays, or ultrasound.

Timely diagnosis and appropriate treatment are crucial for managing neonatal diseases and disorders effectively. Newborns undergo routine screenings and assessments to detect any potential issues and high-risk infants may receive additional monitoring and testing (Balest, 2021).

Prevention of Neonatal Disorders

Regular antenatal check-ups, balanced diet, iron and folic acid tablet, avoiding repeated pregnancies are some measures which can prevent prematurity. Others include avoidance of exposure to any form of irradiation and adverse environmental agents. Screening of at risk mothers is conducted to detect any abnormality that can have adverse effect on the fetus. Any factors which cause maternal hypoxia during pregnancy are responsible for fetal hypoxia. Proper and regular prenatal care and avoidance of narcotic drugs in pregnancy are the pillars to combat respiratory dysfunction. Obstetricians and experienced midwives play an important role in minimizing birth trauma which is single handedly an important cause of birth defect. Early detection of any obstetrical anomaly reduces birth trauma to a large scale. In case of congenital anomalies, genetic counselling and early abortion in gross congenital anomaly are important aspects which can be looked after by the obstetricians. Neonatal infections can be minimized by the obstetricians themselves if they take care of any suspicious vaginal discharge in antenatal period and during delivery. Dirty dressings are to be avoided in delivery time. Proper immunization to the mother and also counselling of HIV/ HBV transmission are also important. Haemolytic diseases of the newborn can be confronted by proper Rh and ABO blood groupings in antenatal period and proper intervention at the time of delivery (Gupta & Choudhury, 2001). Obstetricians and Midwives need to implement better practices for identifying at-risk mothers before delivery so that they're prepared for possible complications. They also need to practice and drill for complicated deliveries so that they can quickly and properly perform any necessary treatment. Mothers should be encouraged to speak out about how or what they are feeling during pregnancy, labor and delivery (Colins &

Popek, 2018). If bacterial infection is suspected then antibiotics should be commenced and investigations performed (often referred to by neonatologists as a 'septic screen'). Antibiotics are generally given until blood and cerebrospinal fuid (CSF) cultures have confirmed no growth of pathogenic organisms (usually 36–48 hours). Some congenital disorders can be prevented through vaccination, adequate intake of folic acid or iodine through fortification of staple foods or supplementation and adequate care before, during a pregnancy are examples of prevention methods (WHO, 2023). Breast milk significantly reduces the risks of necrotizing enterocolitis (a serious intestinal disorder that can occur in preterm infants) and infections in preterm infants, and has a wide range of health benefits for all infants (Marouane et al., 2022).

Conclusion

Neonatal disorders continue to be of public health interest despite improvements in technological advancement and the highest burden continue to affect sub Saharan Africa. Neonates are affected by various disorders ranging from mild asphyxia, to more severe disorders like spinal bifida and RBO/Rhesus incompatibility. Some of these disorders can be prevented if diagnosed early, while others have lasting disability on the newborn; some may even lead to death of the neonate.

Neonatal disorders can be present at birth or develop shortly after birth. If a neonatal disorder is not treated properly, it can result in developmental problems or even death for the new-born. As medical research and technology continue to advance, we can hope for better prevention, diagnosis, and treatment options to ensure a healthier start for every newborn. Parents and care givers need to be educated and empowered with knowledge and skills to better care for themselves and this vulnerable population during this delicate phase of their lives. Health care professionals who handle pregnant women must always be on alert while caring for them to detect at risk mothers during the prenatal period.

Encourage couples to attend preconception care clinic, educate mothers on self-care, nutrition and prenatal vitamins. Pregnant women should also be counseled against alcohol, drugs, adverse weather condition and smoking to prevent its adverse effect on the neonate. Skilled birth attendants at birth can also go a long way to prevent birth defect and also detect abnormalities early.

Finally, post natal care is also valuable in the prevention of neonatal disorders because it affords the baby opportunity for having all immunization doses and to also detect any abnormality that was not so apparent soon after birth. All hands must be on deck to help our neonates reach their full growth potential.

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