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CE 1.5 ANCC Contact Hours

Global Health of Babies and Children

Abstract

Purpose: We provide an overview of the health of neonates, infants, and children around the world. Issues in maximizing neonatal health are examined using the Sustainable Development Goals developed by the United Nations as a framework.

Recommendations: Interventions that can help optimize neonatal, infant, and child health in the future are reviewed, including increasing preventative healthcare (immunizations, malaria prevention, exclusive breastfeeding for the first 6 months of life), enhancing point-of-care interventions (including umbilical cord care, antenatal corticosteroids if preterm birth is anticipated, and antibiotic therapy), enhancing nutritional interventions (to decrease diarrheal diseases and decrease wasting, stunting, and underweight), and building systems capacity.

Clinical Implications: In an increasingly global world where wars, climate change, civil unrest, and economic uncertainty all influence health, it is important that nurses understand global health problems common for neonates, infants, and children and current recommendations to enhance their health.

Key words: Global health; Infant mortality; Neonatal health; World Health Organization.

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The Influence of Humanitarian Emergencies on Neonatal Health

Neonatal health is very dependent on the circumstances and time in which a baby is born. Humanitarian emergencies caused by conflict, natural disasters, food insecurity, and climate change are increasingly common and have a deleterious impact on neonatal and child health (Lam et al., 2012). We see on television the humanitarian emergencies resulting from the current Syrian refugee crisis and conflicts in Sudan and Congo. We have watched recent displacements that have a negative impact on neonatal health caused by natural disasters including earthquakes in Haiti (2010) and Nepal (2015) and floods in Pakistan (2010) and the Philippines (2011). We are becoming more aware of the effects of climate change on health as we identify changes in the patterns of disease, increasing water and food insecurity, and vector-borne diseases that are contributing to overall mortality globally (Costello et al., 2009).

The health of mothers and children is disproportionally and negatively influenced by humanitarian emergencies as mothers and, especially, neonates (newborns less than 28 days), are most vulnerable with the highest risk of mortality from humanitarian emergencies (Oestegaard et al., 2011). In times of humanitarian crises we know that there are gaps in necessary knowledge and services provided to mothers and infants that include infection management and care of low birthweight or preterm newborns (Lam et al., 2012). Barriers to providing adequate care during humanitarian crisis result from lack of funds, and shortages of healthcare personnel (Lam et al.).

Global Health: Past and Present Development Goals

The Millennium Development Goals (MDGs), developed in 2000 as a result of the Millennium Summit of the United Nations (UN), were a set of eight goals established to improve the lives of the world's poorest people at all times, including times of humanitarian emergencies. The MDGs saw significant progress in many target areas, including poverty and hunger levels, education, and environmental sustainability. Child and maternal mortality decreased and global targets for HIV, tuberculosis, and malaria were met (World Health Organization [WHO], 2015).

Unfortunately, many countries failed to meet their proposed goals by 2015, the end of the MDG era. In September 2015, the UN adopted the 17 new Sustainable Developmental Goals (SDGs), which expand on the MDGs, by including a new health goal with 13 targets (WHO, 2015). At the same time, the UN also launched the *Every Woman Every Child* movement that parallels the goals of the SDGs in ending all preventable deaths of mothers and babies (United Nations Foundation, 2016).

As we move toward ensuring that the SDGs are met, it is important that action items outlined under SDG3 (good health and wellbeing) are monitored closely in times of humanitarian emergencies. Targets to ensure global good health and wellbeing include: eradicating poverty and hunger, supporting education and gender equality, promoting safe water, protecting health from climate risks, and promoting healthy natural environments (WHO, 2016c). These targets are all both more difficult to achieve and more critical in areas that are suffering from humanitarian emergencies and require specific training and resource allocation for neonatal health. Neonates are vulnerable to infection, food and water insecurity, and challenges with thermoregulation, and are dependent on a healthy caregiver (Lam et al., 2012).

Current State of Neonatal and Child Mortality Globally

From 1990 to 2015, there was an overall 47% decline in neonatal mortality (WHO, 2015). However, newborn deaths account for at least 44% of childhood deaths globally (Kinney et al., 2015; WHO, 2015). The SDG is to reduce neonatal mortality to at least as low as 12 per 1,000 live births by 2030. In order to achieve this, 63 countries will need to increase their rate of decline in neonatal mortality (You, Hug, Ejdemyr, Beise, & Idele, 2015).

In 2015, the global neonatal mortality rate was 19 per 1,000 live births, with sub-Saharan Africa and Southern Asia having the highest rates of neonatal mortality at 29 deaths per 1,000 live births (You et al., 2015). At the present rate of decline of neonatal deaths it would take longer than the next century for a baby born in Africa to have the same survival rate as a baby born in Europe or

North America (Darmstadt, Shiffman, & Lawn, 2015). We only have 15 years to make considerable progress in improving neonatal mortality rates and in meeting the SDGs for neonatal health.

As well as making progress in decreasing neonatal mortality we are also decreasing childhood mortality globally. Today the world is reducing under-5 deaths faster than at any other time in history (Kinney et al., 2015). In 2013, 6.3 million deaths were children under-5 compared to 12.7 million deaths in 1990, which means that childhood mortality globally has been halved (Shetty, 2016).

Preventable deaths continue to occur globally to neonates and older children that are due to infection and malnutrition. Currently, half of the deaths that occur in children under-5 are caused by infectious diseases including pneumonia, diarrhea, and malaria (Liu et al., 2015). The other major cause of death in this age-group is childhood undernutrition that accounts for approximately 3.1 million deaths annually (Shetty, 2016) and again is largely preventable and exacerbated by humanitarian emergencies.

Care of Low Birthweight and Preterm Infants

Preterm birth and low birthweight account for as much as 80% of the neonatal deaths that occur in sub-Saharan Africa and South Asia (Shetty, 2016). In underresourced areas or at times of humanitarian emergency, decreasing mortality resulting from prematurity is difficult. Antenatal corticosteroids and kangaroo care are two interventions that are improving care of preterm infants globally (Darmstadt et al., 2015). Kangaroo care is a low-cost intervention to decrease problems with neonatal thermoregulation. Antenatal corticosteroids, given to women at high risk for births between 24 and 34 weeks of gestation, can improve birth outcomes by reducing complications from respiratory distress syndrome, necrotizing enterocolitis, and systemic infections (Sotiriadis et al., 2015). Developing countries are lacking systems of perinatal regionalization of care, so that preterm births are often unattended by specialized healthcare professionals who are able to provide antenatal corticosteroids and neonatal resuscitation and who understand the benefits of kangaroo care.

We have made some progress globally ensuring that all women have an attended birth. In 2012, 71% of all births globally were accompanied by a skilled attendant, whereas only 62% of births were in 2000 (Lawn et al., 2014). However, we need to continue to ensure that there is adequate health manpower to provide skilled birth care, to ensure perinatal regionalization of care, and to diminish the gap between urban and rural access to healthcare (Lawn et al.).

Health Promotion for Neonates and Infants Globally

The mortality rate for neonates is being improved globally through plans such as the Every Newborn Action Plan, endorsed at the World Health Assembly in 2014 (Kinney et al., 2015). This action plan has resulted in global consensus on interventions for all newborns that include clean umbilical cord care with chlorhexidine, which decreases neonatal mortality by over 20% (Imdad et al., 2013), thermal protection (especially using kangaroo care in community settings), and immediate and exclusive breastfeeding.

One of the most inexpensive and accessible interventions toward reducing global neonatal mortality is early initiation of breastfeeding within the first hour of life and continuing for up to 24 months (WHO, 2014a). Exclusive breastfeeding, feeding only breast milk for the first 6 months of an infant's life, can prevent 800,000 deaths annually (Black et al., 2013). The positive health benefits from breastfeeding are well recognized, with numerous immunological and anti-inflammatory properties that can protect infants from infectious diseases and illnesses (U.S. Department of Health and Human Services, 2011). Maternal vaccination during pregnancy increases the amount of IgA in breast milk, which when consumed, can lower the incidence of some infectious diseases in infants (Maertens et al., 2014). Breastfeeding is encouraged as the best practice in lower middle-income countries with infants being more likely to die from diarrheal complications due to unsafe water used for formula preparation than from transmission of infectious diseases such as HIV through breast milk (Kafulafula, Hutchinson, Gennaro, & Guttmacher, 2014).

Only a small number of countries have complied with the World Heath Assembly's International Code of Marketing of Breast-Milk Substitutes, which mandates that infant formula not be marketed or distributed in ways that interfere with the promotion of breastfeeding (WHO, 2015). Infant formula and other breast milk substitutes can


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Preterm birth and a low birthweight contribute to 80% of neonatal deaths.


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For a baby born in Africa to have the same survival rate as a baby born in Europe or North America, it would take more than 100 years at the current rate of decline of neonatal mortality.

be available when needed, but should not be promoted, thereby maximizing the amount of breastfed newborns. Recommendations to ensure promotion of breastfeeding include reducing formula distribution and supporting work policies that advocate for working mothers globally to be able to breastfeed without fear or anxiety.

Health Promotion for Older Children

Vaccines. An estimated 2 to 3 million deaths are prevented every year through vaccinations (WHO, 2015). The Global Vaccine Action Plan (GVAP) 2011–2020, developed by the WHO, provides a framework for eradicating preventable infectious diseases through immunizations (WHO, 2013). At its halfway mark in 2015, 129 of 194 countries achieved the goal of 90% vaccination coverage.

Although the GVAP's goals include increasing coverage of all vaccinations, the first milestone is the eradication of polio. Today, only Afghanistan and Pakistan still have active cases of polio (WHO, 2015). In 2014, 84% of the world's children had been vaccinated against polio through global vaccination programs (WHO, 2015). In 2015, 86% of infants globally had received three doses of the DTaP vaccine and 85% had received one dose of the measles immunization (WHO, 2016a).

The introduction of newer vaccines, such as those that protect against Haemophilus influenzae type b, pneumococcal and rotavirus, show promise in decreasing child mortality rates. These vaccines have seen slower increases in administration rates (ranging from 23% to 64%) (WHO, 2016a), but with more widespread coverage, have the potential to reduce the number of childhood deaths caused by pneumonia, meningitis, and diarrheal infections (Liu & Black, 2015).

There are seven countries in which less than half of the population of children is immunized. Barriers to widespread immunization coverage include migratory and indigenous populations, lack of services available or a tracking system for immunizations, and humanitarian emergencies such as civil unrest and natural disasters (Strategic Advisory Group of Experts on Immunization, 2015). To promote overall neonatal and child health, it is essential to continue to support increased immunization coverage in these undervaccinated children.

Other preventative interventions. There are, of course, ways to prevent infection other than vaccination. Malaria infection globally has been prevented in neonates, infants, and children as the proportion of children in malaria endemic areas that are sleeping under insecticide-treated nets (ITN) or long-lasting insecticidal nets (LLIN) increased from 0% in 2000 to 43% in 2013 (WHO, 2015). The WHO further recommends intermittent preventative therapy with antimalarials for infants in endemic areas (WHO, 2016b).

Assessment and Treatment of Infections

In 2010, infections were responsible for between one-quarter and one-half of all neonatal deaths (Lee et al., 2014). When infection cannot be prevented, it is necessary that adequate assessment and treatment options are available and accessible, especially in low-income countries. Point-of-care (POC) diagnostic tests can have a significant effect on improving neonatal health by diagnosing infections more efficiently so that appropriate treatments and interventions can be initiated (Pai, Vadnais, Denkinger, Engel, & Pai, 2012). Unfortunately, there are a number of barriers that are limiting the use of POC tests in high-risk areas, including economic constraints and provider hesitation (Pai et al.).

Although POC tests hold a lot of promise, trained healthcare workers have also demonstrated high sensitivity when screening for infection in young infants in areas like Southeast Asia and Africa. Once an infectious disease is diagnosed through POC tests or other means, antibiotics are often provided for treatment. However, the accessibility of antibiotics varies, with oral formulations being more widely available and affordable (Lee et al., 2014) than first-line injectable antibiotics in these high-risk areas. As a result, the UN Commission for Life-Saving Commodities for Women and Children is recommending increased access to injectable antibiotics for the treatment of neonatal sepsis (Lee et al.).

Impact of Nutrition and Nourishment

Lower income countries have the disproportionate burden of malnourished newborns and children due to a combination of factors such as food insecurity, uneducated women, and lack of access to resources like safe drinking water. Without proper nutrition for all neonates and children, SDG3 cannot be achieved. Interventions toward achieving optimal nutrition are most effective in the "first 1,000 days," the critical window from conception to a child's second birthday, because after this time period irreversible damage to future growth and development can occur (Bhutta, Cabral, Chan, & Keenan, 2012).

Underweight (inadequate weight for age), wasting (low weight for height), and stunting (inadequate height for age) are three serious complications from undernutrition or malnutrition that affect infants from underprivileged areas around the world most prevalently in the "1,000 days" window (WHO, 2015). Underweight remains a factor in the death of 80% of infants who were low birthweight (Lawn et al., 2014). In 2011, there was still an 8% global prevalence of wasting in children under-5, often from significant food shortage or disease (Black et al., 2013). Wasting most often affects those of lower middle-income countries with approximately 70% of the world's wasting children living in South-Central Asia (Black et al.). Stunting also disproportionally affects those in socioeconomically disadvantaged countries. The WHO (2014b) set the global nutrition target of a 40% reduction in the number of children under-5 who are stunted by 2025.

Nutritional recommendations and interventions. In addition to early promotion of breastfeeding, high-impact, low-cost, evidence-based interventions that can reduce neonatal and child morbidity and mortality from malnutrition include supplementation of vitamin A and zinc and oral rehydration therapy (Shetty, 2016). Infants from lower middle-income countries are at a higher risk for micronutrient deficiencies, specifically vitamin A and zinc, because of inadequate food intake and rampant disease and infection. Vitamin A deficiency can exacerbate the severity of infections in neonates and infants and can lead to blindness (Ahmed, Hossain, & Sanin, 2012)

Diarrhea remains one of the leading causes of death among infants and children. Routine use of zinc supplementation is an effective intervention for managing acute diarrhea and has been found to lessen the duration and severity of episodes and chance of subsequent infections for 2 to 3 months thereafter (Khan & Sellen, 2011). Zinc is essential for immune function, intestinal transport of water and electrolytes, and normal growth and development of infants with and without diarrheal episodes (Khan & Sellen). Oral rehydration therapy, recommended for children with profuse watery diarrhea, can reduce diarrhea-specific mortality in children by 69% (Bhutta et al., 2013; WHO, 2016d).

Clinical Nursing Implications

Nurses can foster the health of babies worldwide by:
Promoting the initiation and extended duration of exclusive breastfeeding
Encouraging kangaroo care for thermoregulation in preterm infants
Administering antenatal corticosteroids to improve birth outcomes in women at high risk for preterm birth
Endorsing attended births by specialized healthcare providers
Practicing clean umbilical cord care with chlorhexidine
Nurses can foster the health of children worldwide by:
Supporting on-time immunization administration
Encouraging the use of ITNs and LLINs and preventative antimalarials in malaria endemic areas
Using Point-of-Care diagnostic testing so appropriate treatments, like antibiotics, can be initiated promptly
Providing supplemental vitamin A, zinc, and oral rehydration therapy for children with malnourishment and diarrhea

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A Culture of Health for Children

Neonatal and child health is not measured only by changes in death rates, diseases prevented, or diseases successfully treated. If we are to meet the SDGs for neonates, infants and children, we need to continue to see improvements in socioeconomic conditions, sanitation, roads, and food security.

We have seen progress in education with nearly half of all countries having achieved universal primary education and with significant increases in secondary school attendance globally (an increase of over 34 million children in secondary school from 2000 to 2012) (WHO, 2015). Adequate primary education in women is closely linked to neonatal and child health (WHO, 2015) as educated women have more control over their circumstances and more knowledge upon which to base life decisions.

Achieving the SDGs for neonatal, infant, and child health in the future also requires investment in programs to improve mental health for mothers and children. Many promising programs have been implemented by governments, relief agencies, and nongovernmental organizations to help support mental health for those experiencing humanitarian emergencies or who live in difficult circumstances. "Ngoana

eo ke oa mang" means "whose child is this" in Lesotho and is an early intervention program designed by Catholic Relief Services and is only one example of programming for children globally designed to improve mental health and child development (Sebatane, Lefoka, & Connolly, 2012).

Through play, puppets, games and other strategies, children around the world are being provided with tools to help them grow optimally, to help them learn, and to help them make sense of the world around them and their experiences. Clearly, as we move forward, mental, as well as physical health is important for all children and our goals for neonatal mental health must focus on secure parent–child relationships.

System Barriers to Ensuring Sustainable Developmental Goals are Being Met for Child Health

Globally, one detriment to improving maternal and child health is insufficient data, as countries cannot be held accountable for improvements in healthcare if adequate reporting systems do not exist. At a very basic level, if a country cannot accurately account for the births and deaths of its citizens, it is difficult to effectively evaluate how SDGs are being met.

Over a third of babies in South Asia and sub-Saharan Africa are not registered at birth and so it is difficult to have adequate mortality rates in these areas (Darmstadt et al., 2015). Improved perinatal data systems are needed to counter inaction and to ensure that tracking exists for indicators of health promotion (vaccinations), and disability (neurodevelopment outcomes), as well as births and deaths.

Accurate data are particularly needed to ensure that philanthropic and governmental agencies are able to prioritize health spending. Until newborn care is a priority, it will not receive the kind of resource allocation that other health problems such as HIV/AIDS have received.

Another system barrier to improving neonatal health is inadequate trained workers to provide neonatal care. Implementation of programs that support access to care for pregnant women and newborns is particularly important (Requejo et al., 2015). Community health workers and mobile applications have both shown great promise in improving maternal health and accessibility. Internet and cell phone coverage is becoming increasingly common around the world making mobile apps of particular interest for hard-to-reach areas (Shetty, 2016) and the use of community health workers supervised by trained healthcare providers has also proven to be a cost-effective way to decrease the barrier of access to healthcare.

As we look into future interventions that support families, we need to continue to focus on responding to humanitarian emergencies, encouraging child spacing, promoting breastfeeding, and ensuring immediate care to treat diarrheal diseases and pneumonia. These priorities (all of which are in line with the SDGs) are thought to have the greatest likelihood of improving child health in the future (Requejo et al., 2015).

Clearly, continued work to improve peace, improve women's social status and education levels, and improve economic development is also necessary around the world to have children who not only survive but who thrive. The goal of having every child a wanted child, in a safe environment, means that we must all work to decrease the likelihood of humanitarian emergencies.

As countries move from low-resource to middle-resource economies, we will need to continue to develop ways to ensure that women receive support during childbirth and that support for low birthweight and preterm infants is increasingly universal. Global ability to provide neonatal resuscitation and antenatal corticosteroids for preterm labor are among our next challenges (Liu et al., 2015). To improve the health of the world's infants and children, we must ensure a just, peaceful, and safe world. ✣

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