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Essential Newborn Care during Humanitarian Crises: Integration of Low-Cost Interventions

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Essential Newborn Care during Humanitarian Crises:
Integration of Low-Cost Interventions

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Fall 2017

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Abstract

Newborn healthcare has long been neglected on the international agenda despite neonatal death making up 44% of all under-five deaths. Neonates are newborns under 28 days of age and are the most vulnerable population with the highest risk of mortality during humanitarian emergencies. The common misconception that neonatal healthcare is very expensive and requires delivery from highly skilled healthcare professionals must be dismissed. There are many low-cost interventions that are highly effective at saving lives, the most notable ones being kangaroo mother care, bag and mask resuscitation, and basic immunizations. The leading causes of neonatal death are prematurity, intrapartum complications, and infections including sepsis. Despite the extensive and high-quality manuals available from accredited international humanitarian health organizations, many challenges remain in the implementation of these guidelines by healthcare workers on the field. The most commonly cited problems include lack of funding and poor human resources. In order to achieve SDG goals of reduction in maternal and neonatal mortality rates, the global community must work together to scale-up neonatal interventions addressing small and ill newborns as well as improve training of healthcare workers concerning newborn care.

Introduction

Humanitarian crises that are not only marked by widespread distress and excess casualties but have lasting impacts on adverse health outcomes for many generations to come, have devastating consequences for the mass populations affected. However, neonates or newborn infants under 28 days of age, are by far the most vulnerable population during these emergencies with the highest risk for mortality. Unfortunately, newborn health during humanitarian emergency settings has long been neglected on the international agenda, receiving insufficient funding and inadequate

exposure. A possible explanation for the lack of attention given to the issue of newborn health is discussed by Mason et al. in “From Evidence to Action to Deliver a Healthy Start for the Next Generation,” the fifth paper in the Lancet series “Every Newborn”. The death of newborns has been widely normalized and sometimes even expected by parents in some parts of the globe. Some cultures cope with this harsh and common reality with practices such as delayed naming of the baby in attempt to minimize attachment to the child. During humanitarian crises, newborn health is even less prioritized and placed on the back burner after triage and emergency care for adults and older children who have the power to speak for themselves. Another reason is the common misconception that life-saving newborn care is expensive due to the precise skillset and advanced technologies needed to treat such fragile and miniscule babies. Contrary to these beliefs, there are many highly effective yet low-cost interventions available to combat the most common causes of neonatal death including lack of timely and appropriate resuscitation, sepsis, and prematurity. Furthermore, these interventions can readily be practiced in local and/or low-resource settings by appropriately trained community health workers. Although seemingly small and delicate, newborns are extremely resilient and oftentimes manage to survive against all odds. Neonates are truly the future of the world and they all deserve a chance to live and make their own impact on our society.

Beyond humanitarian and moral reasons to address and support the issue of newborn health during humanitarian crises, it is of economic value to invest in improving the overall standard of newborn health globally. According to Bhutta et al. in “Can Available Interventions End Preventable Deaths in Mothers, Newborn babies, and Stillbirths, and at What Cost?,” increased funding in maternal and neonatal care to provide high coverage can have a minimum of triple and up to a quadruple return in investments. By 2025, meeting the running cost of US \$5.65

billion annually for the global maternal and neonatal healthcare program could reduce neonatal mortality by 71%, stillbirths by 33%, and maternal mortality by 54%. These estimated numbers for returns on investments do not even include financial and societal gains from the increased intellectual human resources and labor as well as the decreased burden of mentally or physically disabled newborns that survive into adulthood. Interventions addressing immediate care post-delivery of healthy newborn produce the greatest return on investments followed by care for small and sick newborns, then by interventions during labor and delivery. Interventions that are the most effective at reducing mortality rates address obstetric complications during labor and delivery, followed by care for small and ill newborns, then by care of the healthy neonate with immediate newborn care following closely behind. The most important and cost-effective issues to address in maternal and neonatal health are obstetric complications, the care of small and ill infants, and immediate newborn care following delivery.

The global goal to improve reproductive, maternal, newborn, and child health (RMNCH) is expressed under #3 “Good Health and Well-Being” of the sustainable development goals. SDG 3.1 aims to “By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births.” SDG 3.2 aims to “By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.” Improving newborn healthcare is critical in achieving these SDG’s because neonatal mortality currently accounts for about 44% of total deaths for children under five. As discussed by Lawn et al. in “Every Newborn: Progress, Priorities, and Potential Beyond Survival,” although efforts have been made during the past two decades, there has only been 37% reduction in neonatal mortality rates compared to 50% reduction in mortality rates of children aged 1-59 months between 1990-

2012. As defined by UNICEF and Save the Children in the field guide for “Newborn Health in Humanitarian Settings,” essential newborn care (ENC) is the basic set of healthcare procedures that should be administered to every newborn infant regardless of where the delivery is taking place. The set of protocol for ENC include life-saving, low-cost interventions that can readily be administered by a trained community healthcare worker or even at home by an educated and responsible family member. During humanitarian emergencies, when there is significant reduction in access to high-level health facilities with advanced technology and expert health personnel, essential newborn care becomes more crucial than ever in saving the lives of newborn infants.

Methodology

The analysis included primary and secondary sources and was conducted in three parts: (1) review of current clinical and field guidelines published by key international health and humanitarian agencies, (2) systematic literature review of accredited peer-review journal publications and (3) in-depth formal interview with experts from the Moroccan Ministry of Health, Geneva Infant Feeding Association of the International Baby Food Action Network (GIFA-IBFAN), and Médecins sans Frontières (Doctors Without Borders) Switzerland. The search for current clinical field guides for neonatal care during humanitarian settings was conducted on the Google search engine through inputting key terms such as “neonatal” OR “children” OR “babies” OR “newborn” AND “health” AND “humanitarian” AND “guide” OR “manual”. Only guidelines from major international humanitarian health organizations were retrieved, specifically from WHO, UNICEF/Save the Children, and MSF. Neonatal care guidelines not specific for humanitarian emergencies were excluded because it was irrelevant to

the research topic. Extensively technical portions of the manuals were not reviewed because research being conducted is public health in nature and not a clinical trial.

The systematic literature search was conducted through the Cornell University Library database through inputting key terms such as “neonatal” OR “children” OR “babies” OR “newborn” AND “humanitarian” AND “settings” OR “emergencies” OR “crises”. Observational and experimental studies, reviews of national health systems and current practices, and editorial/opinion pieces written by neonatal public health experts and published in accredited journals were included in the systematic review. The “Every Newborn” Lancet Series was thoroughly reviewed and served as the basis of comparison for neonatal healthcare on the global scale. Articles that addressed neonatal health in low resource or protracted conflict settings without specific mention of humanitarian emergencies were included in the systematic review if study settings were similar enough to those during humanitarian crises. Criteria for exclusion from the systematic review included studies that address reproductive or child health too broadly with no specific focus on the neonatal period. The full text of publications found to meet inclusion criteria were retrieved and independently reviewed. Quality of the articles was assessed by evaluating legitimacy of methodology, sample size if applicable, and declared limitations and conflicts of interests.

The selection of experts to interview included evaluation of credentials, experience on the field, geographic region of service, and affiliated institutions. Dr. Wafa Chemaou Elfihi is an advisor at the Moroccan Ministry of Health and a Professor at the National School of Public Health in Morocco. The interview took place at the Center for Cross Cultural Learning in Rabat, Morocco on Tuesday, September 26, 2017 and lasted approximately 60 minutes. Elfihi spoke on the status of maternal health in Morocco addressing issues from both the sociocultural and

biological perspectives. Elfihri was optimistic about the progress made in the extension of maternal health care coverage and the increasing number of births delivered in health facilities. She noted flaws in the current Moroccan maternal care system is the lack of technology available to test for certain prenatal diseases that are have a significant prevalence in the population.

Alessia Bigi is the program officer for GIFA-IBFAN. The interview took place at the GIFA-IBFAN main office on Tuesday, October 17, 2017 and lasted approximately 90 minutes. Bigi mostly spoke on the international/national policies related to breastfeeding as well as the flaws in implementation of these guidelines. Bigi had special interest in the effect of breastmilk substitute marketing on the rates of breastfeeding. Her primary responsibilities at GIFA-IBFAN include disseminating accurate scientific breastfeeding information as well as international breastfeeding recommendations to local NGOs and healthcare professionals that provide lactation consulting services. She is also responsible for advocacy and contributing to the development of international/national policies regarding breastfeeding guidelines.

Dr. Marie Claude Bottineau is the Senior Pediatrics and Neonatology Coordinator at MSF Switzerland. The interview took place at the MSF main office in Geneva on Wednesday, November 8, 2017 and lasted approximately 60 minutes. Dr. Bottineau spoke on her extensive experience on the field working as a physician as well as an advisor for pediatric and neonatal programs. She is responsible for overseeing maternal, neonatal, and pediatric operations of MSF facilities in the field. Dr. Bottineau was especially passionate about the integration of RMNCH and to extend MSF treatment to extremely low birthweight infants in more advanced health facilities.

Analysis

Defining Essential Newborn Care

As defined by UNICEF and Save the Children, essential newborn care (ENC) is the basic care required for every baby. Immediately at birth, breathing of the newborn and physical signs of hypoxemia should be assessed. If the newborn does not spontaneously breathe at birth, initiate tactile stimulation but never slap the infant. A resuscitation kit should always be present and ready at every delivery because the need for it cannot be predicted. According to the MSF Neonatal Guidelines, about 10% of newborns delivered in health facilities do not spontaneously breathe at birth and require either tactile stimulation or resuscitation. ENC consists of five main categories: (1) thermal care, (2) infection prevention, (3) feeding support, and (4) monitoring of danger signs, and (5) postnatal care and follow-ups.

As explained in the WHO Manual for the Health Care of Children in Humanitarian Emergencies, (1) thermal care consists of immediately drying the newborn infant post-delivery with a warm and clean cloth. Cover the newborn head and body with a warm blanket and if possible, place on mother's chest ensuring skin-to-skin contact in order to initiate bonding and keep the infant warm. Refrain from bathing the infant until 24 hours post-delivery to minimize heat loss and hypothermia. After the initial 24 hours, only sponge baths should be given until the umbilical cord heals and falls off naturally.

Kangaroo Mother Care is perhaps the most well-known life-saving low-cost intervention used not only in low-resource settings but also often used in university hospital settings of developed countries because it is highly effective. According to the UNICEF/Save the Children field guide, Kangaroo Mother Care (KMC) is when the newborn is placed on the mother's chest with direct skin-to-skin contact preferably for 24 hours per day. The infant should only be wearing socks, diaper, and a hat with both baby and mother wrapped or covered with a blanket or warm cloth. The goal of KMC to prevent hypothermia, to promote intimate bonding of mother and infant,

and to encourage breastfeeding. KMC has shown to be highly effective at saving newborn lives in all settings especially for preterm or low birth weight infants and is seen to be a promising alternative to intensive newborn care facilities when access is unavailable. If mother is unavailable, other caregivers or family members can assume KMC position as well. KMC should be administered until newborn no longer tolerates the position.

(2) Infection prevention begins from sanitary birthing environments. The birth attendant should make sure to wash hands with soap and water and delivery should take place on clean surface. Umbilical cord infection and subsequent sepsis is a major cause of neonatal deaths so special care must be taken to ensure that clean and proper care for the umbilical cord is taken. Sterile tying and cutting instruments should be used to cut the umbilical cord. Delayed cutting of the umbilical cord for at least one minute for infants that do not require resuscitation helps in increasing blood flow between the mother and newborn. Intramuscular vitamin K prophylaxis should be given, especially to newborns who adhere to the recommended feeding practice of exclusive breastfeeding, in order to minimize bleeding associated with Vitamin K deficiency. If there is any evidence or suspicion for possible umbilical cord infection or if the newborn is delivered at home in an area where the neonatal mortality rate is greater than 30 per 1,000 live births, it is recommended that 7.1% chlorhexidine digluconate gel or liquid is applied to the umbilical cord once a day for the first week of life in order to minimize risk of life threatening infections.

(3) Feeding support includes timely initiation of breastfeeding within the first hour of birth and sustained exclusive breastfeeding for at least six months. Care should be taken to not discard colostrum, or the first breastmilk produced by mothers, as it is commonly practiced by some cultures due to the fact that it is seen as dirty or contaminated. Skin-to-skin contact with infant

laying on the mother's chest with access to the breasts should be sustained so that infant can feed as frequently as necessary. Physical separation of mother and infant should be avoided or reduced to the absolute minimum.

Evidence-based studies have shown that breastfeeding is the optimal feeding practice recommended for all infants. Breastmilk contains unique immune boosting ingredients and antibiotic properties that cannot be found in any infant formulas. Exclusive breastfeeding has been found to help protect infants against pneumonia, one of the most common neonatal infections. Breastfeeding is not only the most healthy and nutritional option for infant feeding but is also the safest and most accessible option during humanitarian crises. As explained by Pfeiffer et al. in "Maternal and Newborn Care During Disasters: Thinking Outside the Hospital Paradigm," exclusive breastfeeding prevents infants from contracting infectious diseases associated with contaminated water sources prevalent during emergency settings. Milk substitutes require access to safe drinking water, clean pots, heating source, sterilized bottles, and refrigeration to make, feed, and store. During crises however, it is often difficult to secure sustained access to all of these facilities. Loss of access to any one of these facilities puts newborns at risk for infection and malnutrition. Despite the multitude of negative consequences of infant formula feeding however, exclusive breastfeeding rates remain low during humanitarian settings. As explained by Alessia Bigi during the expert interview with GIFA-IBFAN, milk substitute companies often donate copious amounts of infant formula to non-governmental organizations administering emergency relief efforts. Many of these organizations then readily hand out milk substitutes to mothers with young children regardless of what infant feeding practice they have been using. Seeing milk substitutes as a more convenient alternative to breastfeeding when distress and trauma can reduce milk supply, many previously breastfeeding

mothers readily switch over to formula feeding. However, many of these milk substitute donations are often almost expired or sometimes even already expired. Many companies use charitable donations for tax exemption purposes and burden already vulnerable communities with issues of disposing large amounts of expired breastmilk substitutes. Instead of freely distributing breastmilk substitutes during emergencies, humanitarian organizations should first assess need and only give them to families that have legitimate use for infant formula.

(4) Monitoring of danger signs involves frequent and cautious assessment of danger signs for serious infections or other complications in attempt to identify and address any potential issues as early as possible. Serious and easily identifiable danger signs include abnormal breathing with change in frequency or produces noise, poor feeding, lethargy or reduced movement, convulsions, and abnormal body temperatures.

(5) Recommended postnatal care and follow-ups should include at least three postnatal visits within the first week of life with the first visit preferably occurring within the first 24 hours of life. According to the Médecins sans Frontières (MSF) Neonatal Care Guidelines, 73% of neonatal deaths happen during the first week of life and 36% happen during the first 24 hours when the infant is the most vulnerable. For all home deliveries, encourage mothers and infants to visit a health facility for examination as soon as possible after birth. Teach mothers and caretakers how to properly care for the umbilical cord as well as how to identify danger signs. Encourage mothers and emphasize the importance of continuing to attend postnatal visits despite the fact that there may be no obvious complications.

Common Causes of Neonatal Mortality

According to Lawn et al. and reaffirmed by Dr. Marie Claude Bottineau representing MSF during an interview, the leading causes of neonatal mortality are prematurity, intrapartum

complications including birth asphyxia, and infections with 1.0 million, 0.7 million, and 0.6 million neonatal deaths annually attributable to each cause, respectively. Together, these three major causes were responsible for 77% of total neonatal mortality as explained by Shiffman in “Issue Attention in Global health: The Case of Newborn Survival.” Low birthweight (LBW) significantly increases the risk for neonatal complications and mortality with more than 80% of neonatal deaths being low birthweight infants. LBW newborns have a higher risk for stunting, infectious diseases, and developmental delays. Infants weighing less than 2500 grams at delivery are considered to have low birthweight and newborns that weigh less than 1500 grams are considered to have extremely low birthweight. Extremely low birthweight infants often require referrals to higher level health facilities that have advanced technologies and highly skilled health professionals. As a result, they are often neglected in humanitarian and low resource settings because referrals due to lack of access to transportation and security issues. Low birthweight can be due to prematurity or infants can be small for gestational age.

Prematurity

According to the UNICEF manual, premature newborns are born before 37 weeks of gestation, with infants born between 32-37 weeks of gestation considered to be moderate to late premature, infants born between 28-32 weeks of gestation considered to be very premature, and infants born before 28 weeks of gestation considered to be extremely premature. Dr. Bottineau emphasized the importance to distinguish between the prematurity and small for gestational age categories because a full-term infant that is slightly small for gestational age more often than not can survive fine without any extensive interventions and grow up to live a healthy life. Premature newborns that have low birthweight are the real high-risk group that may experience long-term impairments in neurological development, growth stunting, and increased risk for non-

communicable diseases. Full-term infants that are small for gestational age have increased risk for growth stunting and metabolic disease during adulthood. There are lasting adverse health consequences for newborns that do survive into adulthood despite not receiving adequate neonatal care. Many disabilities are associated with prematurity and neonatal complications that have a negatively impact on the human capital and global economy.

There is a common misconception that premature newborns require extensive care with advanced technology and highly specialized physicians. As a result, they are often neglected during humanitarian settings because healthcare providers do not have the time and effort to attend to this extremely vulnerable group during emergencies. Contrary to this belief however, over 80% of premature newborns are classified as moderate to late preterm infants that do not require intensive care. It is estimated that 58% neonatal deaths due to prematurity can be saved with the provision of low-cost interventions that can be delivered in low-resource settings. Premature infants are at higher risk for hypothermia and hypoglycemia. Thermal care should be scaled up via KMC which is recommended for all premature newborns or small for gestational age infants weighing less than 2500 grams as well as timely initiation of breastfeeding. It is common for premature infants to have difficulty feeding on demand. A routine feeding schedule where the newborn is regularly woken up to be breastfeed is recommended to ensure that they are receiving adequate nutrition. Prematurity is often genetically related making it difficult and expensive to detect and is often unpreventable. However, as discussed by Bhutta et al., antenatal corticosteroids have shown to be effective in reducing neonatal mortality related to prematurity and should be integrated into routine antenatal care for mothers that are at risk for preterm delivery.

Intrapartum Complications

Intrapartum-related complications and deaths happen during labor or delivery. The estimated 1.2 million intrapartum stillbirths annually are not included under this category. The most common intrapartum cause of neonatal mortality is birth asphyxia. The need for resuscitation cannot be predicted therefore a basic resuscitation kit should be readily available at all deliveries. According to the MSF Neonatal Care Guidelines about 10% of newborns delivered in health facilities need some sort of assistance breathing. For some of these newborns, only tactile stimulation or rubbing of the back and gentle drying is necessary to stimulate breathing. 5% of all newborns require assisted ventilation and less than 1% of all newborns require advanced resuscitation. All health personnel, especially midwives and birth attendants, should be taught the basics of how to resuscitate properly using bag mask ventilation. It is important that healthcare workers begin resuscitation within the first minute of life after birth or otherwise known as the “golden minute”. The Helping Babies Breathe action plan provides clear and helpful infographics and education on how to determine appropriate evidence-based steps of resuscitation to take based on evaluation of newborn conditions. Birth asphyxia may also cause convulsions however, convulsions may also be caused by hypoglycemia or infection. Prolonged birth asphyxia can cause permanent brain damage and long-term disabilities.

Although intrapartum complications cannot always be predicted, quality antenatal care can effectively detect and prevent them from happening. Delivering in health facilities under the care of a skilled birth attendant without access to emergency obstetric care can reduce intrapartum-related neonatal mortality by 25% according to Bhutta et al. Provision of basic emergency obstetric care, which MSF has focused recent efforts on, is estimated to be able to decrease intrapartum-related neonatal mortality by up to 40%. Training of healthcare workers on how to properly resuscitate newborns can decrease related neonatal mortality by 30%. The most

important interventions that effectively reduce neonatal deaths to intrapartum complications is antenatal care services, encourage delivery at facilities, provision of skilled birth attendant that is trained to properly resuscitate newborns, and timely referral to emergency obstetric services. Education of pregnant women on the importance of attending antenatal visits is critical to improving awareness and adherence.

Infections

As reinforced by Hirani and Kenner in “International Column: Effects of Humanitarian Emergencies on Newborn and Infant’s Health in Pakistan,” newborns are the most vulnerable population to infections that thrive under the overcrowded and poor sanitation settings of humanitarian emergencies due to their underdeveloped immune systems. The basic vaccination package that should be given to all infants, including LBW and premature newborns, include BCG, hepatitis B, and oral polio. The vaccination dose administered at birth is known as dose 0 and serves to prevent potential mother-to-child transmission. Infants should be tested for endemic infectious diseases such as HIV and malaria. If mother is known to have infectious disease, the newborn should be treated with the corresponding antibiotics regardless of whether the infant show symptoms or not. Maternal vaccinations should be reviewed as part of antenatal care. Mothers should be vaccinated against tetanus especially during crises when roads are littered with debris that can cause open wounds when walking.

Fortunately, neonatal deaths due to infections, most notably sepsis, meningitis, and pneumonia, are perhaps the most preventable cause of mortality. Detection of infections however are often difficult during humanitarian settings because diagnosis requires laboratory equipment including x-rays and blood cultures that are unavailable during crises. As a result, healthcare professionals should be trained on how to diagnose common infections based on clinical

symptoms alone. If symptoms of infection are observed, appropriate antibiotics should be administered in a timely manner. As Dr. Bottineau explained, the global antimicrobial resistance crisis is adversely affecting efforts to combat neonatal infections. Within the past two years there have been three large outbreaks of multi-resistant microbial infections causing widespread neonatal sepsis in MSF facilities.

Hygienic birthing practices and sanitary environments are the easiest way to reduce neonatal infections. Birth attendants should take care to wash their hands with soap and water before, during, and after delivery. All equipment used during delivery including scissors or razor to cut the umbilical should be boiled or thoroughly sterilized before use. Mothers, caretakers, and all family members should be advised to wash their hands before handling the newborn. Bhutta et al. found that clean birthing practices can lower neonatal mortality rates due to infections by 15% if delivered at home and by 27% if delivered in health facilities. Sanitary postnatal care can reduce the rate by up to 40%. Teach caretakers to recognized danger signs of infection including lack of movement, isolated and/or rapid breathing, and fever and to seek immediate help if detected.

Implementation Challenges

The field guides and clinical handbooks published by UNICEF/Save the Children, WHO, and MSF on neonatal care during humanitarian emergencies are quite extensive and provide clear instructions on the necessary medical procedures to be taken under the most common circumstances. However, humanitarian workers and healthcare providers on the field face many challenges when implementing these guidelines during emergency settings. The most commonly cited barriers across all studies including findings by Lam et al. in “Neonatal Survival Interventions in Humanitarian Emergencies: A Survey of Current Practices and Programs,”

emphasize a lack of funding causing shortage of medicine and equipment as well as poor human resources marked by major gaps in training specific tailored for newborn care and low retention rates of skilled healthcare workers.

Lack of Funding

The lack of funding and investment in newborn healthcare stems from the lack of awareness and advocacy for RMNCH on the international agenda in general. Up until the past two decades, neonatal health was extremely neglected and almost unheard of. Although great achievements have been made in reducing the under-five mortality rates, there is limited segregated official data for neonatal mortality. In many societies, newborn death has become expected. Since newborns do not have the power to speak for themselves, parents must be the ones to advocate for change of notion that neonatal mortality is inevitable. Newborn deaths should not be the norm and national health systems should be held accountable for the provision of quality neonatal healthcare. Antenatal, postnatal, and newborn care should be included in universal health coverage. Coverage of care is the lowest in regions with the highest neonatal mortality rates. Improvement in consistency of the documentation of neonatal deaths as well as stillbirths are necessary in order to realize the true magnitude of the issue. According to Lawn et al., an estimated six million stillbirths and newborn deaths never receive a birth certificate and go undocumented each year. As emphasized by Dr. Elfihi, maternal and neonatal deaths as a result of home deliveries and especially in rural areas are extremely hard to audit and track. Due to lack of attention and funding from national governments and international organizations, there is usually no emergency plan prepared for reproductive or newborn healthcare. Ironically, delivering mothers and newborns are arguably populations that are the most in need of a plan in case of humanitarian emergencies because many of their associated complications can result in

death in a matter of minutes. It is important to draw transportation plans outlining how to safely and rapidly transport mothers and infants to higher level health facilities in case of birth complications.

Poor Human Resources

In most developing countries with the highest neonatal mortality rates, healthcare providers have never been exposed to and are not specifically trained on newborn care. It is considered to be an extremely specialized skillset that is unnecessary to know. As discussed by Mason et al., there is a stark dichotomy in the training of midwives and birthing attendants who are taught to focus either on caring for the mother or the child, with most choosing to focus on the health of the mother. Knowledge of basic newborn care, including how proper resuscitation skills, needs to be integrated into the training of all healthcare professionals, particularly community healthcare workers. Fortunately, good progress has been made in increasing the number of births given in health facilities which significantly decreases the risk of neonatal and maternal mortality. During humanitarian emergencies however, the number of at-home deliveries significantly increases due to reduced access to health facilities and compromised security. Skilled birth attendants assisting with home deliveries should be trained on clean birthing practices and identifying danger signs that indicate the need for referral. Furthermore, the number of skilled birth attendants trained in basic obstetric care as well as newborn care needs to be increased as well. The presence of a skilled birth attendant during at home deliveries significantly improves the chance of survival for both mother and infant. However, as with most humanitarian settings, there is an issue with the retention of skilled newborn healthcare workers due to security issues in these environments. Dr. Bottineau elaborated stating that it seems as if every time once a good quality of care is established with good teamwork and experienced

healthcare workers, one of the members decide to leave the service. Major disparities exist between access to and quality of neonatal care between rural and urban areas within the same country. As mentioned by Dr. Elfihri during the interview, it is extremely difficult to find healthcare workers willing to work and stay in rural areas. As a result, many pregnant women in rural areas are forced to deliver at home without the presence of skilled birth attendant and face the highest rates of mortality and morbidity. Incentives for healthcare workers to work in rural areas must be established in order to provide care for this underserved population.

Among the most common mistakes made by fieldworkers is failure to resuscitate properly with the bag and mask ventilation. Increase in recent trainings have improved technique but previously there have been issues with leaks in ventilation and fieldworkers progressing too quickly to cardiac compressions before it was necessary. Community health workers also lack skills in recognizing danger signs in newborns and responding efficiently. An example that Dr. Bottineau gave was that convulsions in newborns are significantly subtler than those in adults. Healthcare personnel are used to associating convulsions with obvious full body seizures but in newborns convulsions can be manifested as simple rapid movement of the eyes. Healthcare providers also often have problems with administration of vaccinations and confusion surrounding appropriate number of dosages. For example, the recommended vaccination for Hepatitis B given as soon as possible after birth is for prevention of mother-to-child transmission purposes, recognized as dose 0, and is not to be counted toward the total dosages required for full course of vaccination. The monitoring of basic vital signs including temperature and hypoglycemia pose a challenge for some healthcare workers on the field because surveillance of newborn vital signs is different from those of adults. Many have trouble properly inserting intravenous lines due to the small size of newborns. The small size of newborns in general is a

barrier for healthcare workers because staff are afraid to handle and manipulate these tiny infants due to fear of hurting them.

Sociocultural Challenges

Traditional birthing practices is a threat for newborn survival because many of these practices require at home deliveries with some practices directly increasing risk of infection. Dr. Bottineau explained that efforts to work with traditional birth attendants (TBA) has produced huge success in terms of increasing the number of deliveries given in health facilities. It is important to acknowledge and preserve the status of the TBA within the culture and society. Healthcare professionals should not attempt to connect with pregnant mothers and families by undermine the authority or legitimacy of the TBA and traditional birth practices. It is best to work with and train traditional birth attendants to communicate accurate information to families and communities. Have traditional birth attendants encourage pregnant mothers to attend antenatal care and give birth in health facilities with the presence of both the TBA and a skilled birth attendant is the ideal compromise. Some traditional practices such as rubbing honey, dirt, or cow dung on the umbilical cord stump of the infant post-delivery directly increase risk of neonatal mortality. These issues need to be addressed through education of not only mothers but all members of the community. Pregnant mothers are usually quite receptive to information given to them by healthcare workers. It is often husbands and elderly family relatives that often have issues with diverging from traditional birth practices. Therefore, it is important for traditional birth attendants to educate all members of society on the community level if further progress is to be made in stopping dangerous traditional practices.

According to Lawn et al., boys have a greater risk of neonatal mortality from a biological perspective due to increased risk of prematurity, infection, and intrapartum-related

encephalopathy. In many cultures however, girls have a greater risk of neonatal mortality due to social discrimination and neglect. In many patriarchal cultures, boys are significantly valued over girls. Some families would choose to terminate pregnancies based due to gender selection for males. In cultures where female children are neglected, girls face malnourishment because they are fed less than their brothers. Parents are unlikely to seek medical care for their ill daughters and even less likely to seek preventative care such as vaccinations. There is a vicious cycle of increased risk for neonatal and maternal mortality in these communities where women have extremely low social standing. It is more likely for these cultures to practice childhood marriage, marrying girls off before the age of 18, and female genital mutilation. There is increased risk of maternal mortality and morbidity as well as pregnancy resulting in stillbirth, neonatal mortality, prematurity of infant, and small for gestational age newborns for young mothers under the age of 18. Female genital mutilation is associated with adverse pregnancy outcomes. The link is not necessarily biological but perhaps the practice serves as an indicator of the overall social standing of women in the community and how valued women's health is.

Looking Beyond Essential Newborn Care

With the advancements in technology and medicine, international health organizations should look into providing more advanced newborn care in addition to essential newborn care currently available during humanitarian emergencies. Current protocol considers newborns that weight under 1500 grams as essentially not worth saving. Healthcare workers are unable to do anything for these extremely low birthweight newborns because referrals to neonatal intensive care units are often not available in low resource settings. There is much controversy surrounding the provision of treatment for these newborns even within experts from the same organization, namely MSF. During the neonatal lecture given by Dr. Anne Pittet, she supported the current

guidelines of providing minimal palliative care treatment to relieve the suffering of extremely low birthweight infants without taking any extreme measures to save their lives. She argues that under low resource settings, these infants would usually not survive and there is really no point in wasting resources and time trying to save them. Even if these newborns could be saved, there are usually devastating neurocognitive impairments or physical disabilities that significantly lower their quality of life. Dr. Bottineau argues that it is irresponsible and unacceptable for healthcare workers to idly watch these tiny lives die in front of them without making any genuine attempts to save their lives. She advocates for the development of more secondary and tertiary level health facilities equipped with advanced technology and highly trained health professionals on the national level that can serve more communities and have a far-reaching impact. The provision of CPAP machine is a pressing need for many newborns that are unable to breathe spontaneously at birth and require advanced resuscitation. As more infants with a history of neonatal complications that caused permanent disabilities grow into adults, community level health facilities need to provide the resources and train healthcare professionals on how to properly deal with and treat these disabilities.

Recommendations

Increased funding and awareness by national governments should be given to neonatal healthcare. According to Dickson et al. in “Every Newborn: Health-Systems Bottlenecks and Strategies to Accelerate Scale-up in Countries,” the provision of universal health coverage of maternal and newborn care as per recommended guidelines can reduce maternal deaths up to 54%, newborn deaths up to 71% and stillbirths up to 33%. It is important to prepare a plan for the delivery of emergency obstetric services as well as essential newborn care during humanitarian emergencies before crises commences. Deliveries at health facilities should be

covered under insurance to encourage mothers to give birth under the supervision of a skilled birth attendant. Health insurances should offer financial incentives such as reduction in premiums for mothers that attend antenatal care visits, deliver in health facilities, and then subsequently postnatal care visits. Doing so significantly lowers the risk of maternal and neonatal complications which would cost much more to treat than taking these preventative measures. National governments and the ministry of health should develop a plan to establish a continuum of care that covers preconception, antenatal, labor and delivery, postnatal, and neonatal needs. There remains to be a large gap in the provision of contraceptives and education on family planning. International advocacy organizations should continue efforts to dispose of the stigma and cultural taboos surrounding the use of contraceptives in societies that need them most. According to Bhutta et al., satisfying the unmet need for contraceptives can reduce unwanted births by half. The health of women and babies are intimately linked and it is impossible to address one without addressing the other. Establishing a continuum of care can also help streamline a timely referral process for obstetric and neonatal complications that is so crucial in saving the lives of mothers and infants.

Conclusion

There is a global call for action to bring the issue of neonatal healthcare to the forefront of the international agenda especially during humanitarian emergencies. Neonatal mortality makes up 44% of total under-five deaths. Investment in the scaling up of neonatal healthcare interventions can have up to a triple return in investment, with the most effective interventions addressing the care of small and ill newborns. Low birth weight and premature infants are the most susceptible to neonatal complications and at the highest risk for mortality. Contrary to popular belief, providing care for this vulnerable group does not necessarily have to be expensive. The increased

coverage and provision of low-cost interventions can have an incredible impact on the survival rates of newborns. The leading causes of neonatal mortality during humanitarian emergencies are prematurity, intrapartum complications including birth asphyxia, and infections including sepsis. Most of these causes are readily preventable through provision of quality antenatal care, sanitary and hygienic birthing practices, and presence of skilled birth attendant during delivery.

Improvements in training of community healthcare workers on basic newborn practices can significantly improve health outcomes. Integration of RMNCH and establishing a continuum of care from family planning through child and even adolescent health is of utmost importance because maternal and child health is intimately linked. Women empowerment in communities where females have low social standings and no voice is critical in order decrease maternal and neonatal mortality rates. The normalization of newborn deaths must be reversed and a systematic death documentation program be established. No women or newborn should be told that their health and lives matters less than others and nobody should have to settle for lower quality of healthcare due to social discrimination.

Limitations

Besides the interview with Dr. Bottineau, no further knowledge from a field worker's perspective providing neonatal healthcare during humanitarian emergencies was obtained. Barriers faced by community health workers receiving training from international humanitarian and health organization were not explored. There is a possibility that poor execution of clinical and field guidelines may be due to poor quality of training provided. Lastly, analyzing conditions of newborn healthcare during humanitarian settings having never visited a health facility in a low resource area leaves major gaps in my understanding of just how difficult it is to provide care in such environments.

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Abbreviation List

CPAP	Continuous open airway pressure
KMC	Kangaroo mother care
LBW	Low birth weight
MSF	Médecins sans Frontières
RMNCH	Reproductive, maternal, neonatal, and child health
SDG	Sustainable development goal
SGA	Small for gestational age
TBA	Traditional birth attendant

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