Guest Editorial

Importance Of Strengthening Quality Basic Inpatient Newborn Care As A Foundation To Improve Neonatal Outcomes

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The aim of the United Nations' Sustainable Development Goal 3 (SDG3) is to ensure healthy lives and to promote well-being for all ages. The newborn focused target of this goal, SDG3.2, is to end preventable deaths of newborns: specifically to achieve national neonatal mortality rates (NMR) as low as 12 deaths per 1000 live births, and additio-nally stillbirth rates of as low as 12 deaths per 1000 live births by 2030.[1] NMRs have decreased at global, regional, and national levels; however, the magnitude of these decreases have not paralleled the more substantial decreases of under-five mortality rates, and this disparity is even more significant in Pakistan at 62% of under five deaths being attributed to newborns.[2,3] Pakistan currently has the second highest NMR in the world, at 41.2 neonatal deaths per 1000 live births, and one of the highest stillbirth rates (SBR) at 30.6 per 1000 live births.[2] Within the Punjab region of Pakistan the neonatal mortality is a staggering 63 deaths per 1000 live births.[4] With Pakistan's neonatal mortality contributing to significantly more than half of the under five deaths, its NMR and SBR indicate a serious need for increased assessment and intervention within the neonatal delivery and care setting.

Nearly one third of neonatal deaths occur in the first 24-hours of life, and approximately three quarters within the first week. Globally, the largest percentage of deaths occur in babies born prematurely, at low-birth weights, or who become compromised with infections.[5] These Small and Sick Newborns (SSNBs) account for a vast majority of neonatal deaths that could have been prevented. The main causes of neonatal death within Pakistan are: preterm birth complications (38%), intrapartum-related events (22%), and sepsis (18%).[3]

While highly compelling practices to prevent premature deliveries are still being addressed, many comp-lications arising from prematurity can be effectively mitigated through specialized newborn care. Infants who are born between 32-37 week gestational age, known as moderate to late preterms, comprise nearly 85% of all premature infants and account for half of the risk in neonatal deaths around the world.[5,6] Infants within this gestational age range therefore can be considered comparably easier to impact, when it comes to improving neonatal outcomes, as they are less likely to have complex complications when compared to their <32 week gestational age counterparts. Being small for gestational age, in addition to preterm, exponentially increases risk of death.[5]

Intrapartum complications: Intrapartum complications can ultimately lead to death or, if survived, future complications such as long-term disabilities. Within health care facilities, interventions that focus on improving quality of prevention through labor and delivery management, resuscitation, and supportive care can lead to a potentially greater than 80% decrease in intrapartum related complications.[7] While current intrapartum-related death rates are already indicative of a need for intervention, two additional groups of infants suffer from intrapartum events who are not always included in this category: infants who survive and potentially have lasting neurologic injury and infants who are labeled as fresh stillbirths but could have survived if proper resuscitation was performed.[8]

Neonatal sepsis is one of the most preventable causes of neonatal deaths and prevention may seem elementary with easy interventions and quality improvement initiatives.

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Proper handwashing for both staff and patient family members should always be a priority, especially in a newborn care setting. Procedures and policies for appropriate equipment cleaning and sterilization, as well as personal protective equipment usage and waste disposal, are also essential factors in decreasing infection rates. Antimicrobial stewardship creates standards within healthcare facilities for the selection, dosing, and routine administration of antibiotics.[5] This allows for increased first line treatments, decreased use of third generation antibiotics, and therefore decreased drug resistance. These can be very achievable and lifesaving changes and should be standards in all patient care settings.

With the promotion and increase of deliveries in healthcare centers and hospitals with skilled birth attendants, it is important that these centers are truly equipped to provide high quality and respectful neonatal care. In addition to decreasing immediate neonatal death and long-term disabilities, improving neonatal resuscitation and essential care can decrease admissions and length of stay in neonatal special care units. The first 24 hours of life, and particularly the first hour, are a very vulnerable time for infants. It is therefore imperative that small and sick newborns, particularly in this critical time frame, receive the appropriate care in order to decrease neonatal mortality and disability globally, and in Pakistan. This first hour of care, the "Golden Hour", including resuscitation, stabilization, cardiovascular and respiratory support, is extremely important in reducing hypothermia, hypoglycemia, intraventricular hemorrhage, bronchopulmonary dysplasia, and retinopathy of the newborn.[5]

It is imperative to emphasize that when thinking about interventions for improving quality of care for the SSNB, complex and high-tech equipment is not the only solution. By addressing gaps in basic care for well and SSNBs, especially during the first hour of life or "Golden Hour", improved neonatal outcomes in mortality as well as morbidity, can be expected. These interventions include: essential and special newborn care (including kangaroo mother care), presence of skilled resuscitation teams, transportation with thermoregulation and respiratory support, and building the capacity of the skilled neonatal care providers.

Resuscitation by a skilled provider and essential newborn care should be practiced for all infants in all care settings and levels of care, including infants born at home, and not be delayed during the first day of life. Essential Newborn Care includes immediate care after delivery as it consists of early initiation and exclusive breastfeeding, thermal care (including prompt drying and covering at birth), maximizing skin-to-skin contact, delayed bathing (maintaining "warm chain"), and proper hygiene practices (including cord-care and caregiver handwashing).[9]

In two-thirds of SSNBs more advanced care that builds on the foundations of essential newborn care, termed special newborn care, is often required.5 Special newborn care involves practices that can only be done in a healthcare facility, but can still be done very effectively in a way that is easily attainable and cost-efficient. These include thermal care (possible with a radiant warmer, thermal mattress, or plastic covering), kangaroo mother care, assisted feeding, appropriate pain management and fluid administration, diagnosis and safe management of hypoxia, apnea, infection, jaundice, CNS complications, birth defects, and appropriate referral and transportation to specialty care. The most advanced form of care, intensive newborn care, involves more focused and sophisticated treatments for the most affected infants, but only one-third of SSNBs may need this level of care.[5]

Basic neonatal resuscitation, involving stimulation and bag and mask ventilation, for infants that are not breathing spontaneously is a WHO guideline for quality care.[9] Skilled neonatal resuscitation can reduce the occurrence of deleterious neonatal outcomes due to intrapartum events. Two well-studied training programs for improving neonatal resuscitation are Helping Babies Breathe (HBB) and Neonatal Resuscitation Program (NRP). HBB is a globally recognized modified resuscitation approach providing basic neonatal resuscitation, focusing on stimulation and breathing within the first minute of life. This program has seen success in improving neonatal providers' knowledge and skills and reducing neonatal deaths and fresh stillbirths.[11] This training program is designed to be taught to all skill levels of birth attendants, and is a very effective tool for improving neonatal resuscitation in lower level health care facilities and rural settings. In higher level health care centers, such as referral and tertiary care centers that provide care for more critically ill mothers and infants, NRP is more appropriate.

Thermoregulation, a vital part of special newborn care, has been directly tied to neonatal outcomes. Maintaining a normal body temperature for a newborn is critically important. Hypothermia increases the risk of illness and death. Admission temperature is a strong predictor of mortality, there is a 28% increase in mortality for every one degree fall in temperature during admission in small babies.[10] Basic interventions that can be used involve environmental controls, appropriate dry and clean towels and blankets, and prolonged skin-to-skin contact. Early skin-to-skin and kangaroo mother care are powerful practices that support the newborn and aid in controlling temperature, cardiorespiratory regulation, breastfeeding, infection prevention, pain control and parental/child bonding, and additionally are some of the most low-cost interventions available.[5]

Stabilization and transportation play a vital role in neonatal

care; if performed improperly, transport can increase risk for short and long term complications of unwanted outcomes through hypoxemia, hypothermia, and hypoglycemia.[5] Oxygen saturation, duration of transport, poor perfusion, and cyanosis at the time of admission are among the predictors of neonatal mortality. Intra and inter hospital transport is complicated in any setting, but even more so in developing countries. Lack of strong health care system infrastructure, equipment, skilled personnel, family consent, and funds contribute to this complicated process. There are inexpensive and low-technology changes that can be made to available hospital equipment to improve transport capabilities. Having a prepared neonatal transporter with an oxygen tank, a basic pulse oximeter, a T-piece resuscitator (which allows for controlled pressure, regardless of operator), and a portable thermal mattress (with a polyethylene plastic wrap or covering for less than 32 week gestation infants)11 can provide all of the most vital support that a SSNB needs to be moved safely with attention to thermoregulation and respiratory support.

In many countries, nurses and midwives provide the majority of care to neonates. They are an integral part of a multidisciplinary team tasked with improving neonatal outcomes. Increasing human resource capacity for specialized newborn care providers has become globally recognized as a necessary path to reaching the SDG by 2030, and is a prominent feature of the Every Newborn Care Action Plan.[4] It is a complex undertaking as many different areas must be addressed such as, but not limited to, policy and accreditation, knowledge and skill development, leadership development, workforce shortages, rotation of staffing and limited compensation. With the launch of the State of the World Nursing, the State of the World Midwifery, the WHO Human Resource for Health Nursing Roadmap and the Neonatal Nurse Competencies the human resource gap is further emphasized as critical. Ensuring midlevel providers are well trained in high-quality newborn care and the "Golden Hour" of care has the potential to significantly improve neonatal mortality and morbidities.

According to the Convention on the Rights of the Child, newborns have the right to the highest attainable standard of health and care, and therefore should not only be living because it is possible to prevent their deaths, but because it is their right, and our responsibility to ensure that this right is protected. According to the Every Newborn Progress Report 2019, Pakistan has a newborn health agenda in place from 2015, but does not yet have reported research on the state of progress of its agenda, including issues related to stillbirth, and social, behavioral, and community engagement interventions for maternal newborn health.[4] Interventions aimed at quality improvements to reduce poor neonatal outcomes need to be well assessed, monitored, evaluated and documented to ensure that they are purposefully implemented and will have the capacity to be sustainable.

Overall, focusing on high-quality initial care in the neonatal period can lessen healthcare costs because this leads to a decrease in preventable causes of mortality and morbidity which then decreases the need for advanced treatments and hospital admissions. Efforts aimed at high-quality essential and special newborn care for the SSNBs, particularly moderate to late preterm infants in the critical times during their first day of life, has the potential to be a successful approach in obtaining efficacious low-cost and low-tech improvements. Therefore, reaching first for initiatives such as these, that are more easily attainable with the greatest impact, will be beneficial toward Pakistan and the world's goal of improving neonatal outcomes.

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