Nurturing newborns in South Sudan series: Essential care of the newborn

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Introduction

The first 28 days of life is the neonatal or newborn period. Most children who die do so in their first month of life and most especially in the first week. The global rate of newborn deaths is 18 per 1,000 live births as of 2018. South Sudan has one of the highest neonatal mortality rates (NMR) estimated at more than 40 per 1,000 live births.[1] There is need to improve the knowledge base of health workers and caregivers in caring for newborns at health facilities and in the community in South Sudan. Clinical guidance reviews help in disseminating current evidence, best practices and recommendations for health workers.

Essential care of the newborn is the first of a series on Nurturing Newborns in South Sudan, a clinical guidance review series on newborn care which will feature topics like: Newborn Resuscitation, Newborn Examination, Fluids and Feeds, Drugs and Treatment of Common Newborn Conditions and The Small Baby. This review will describe standard recommendations for all births and deliveries and discuss low cost, high impact essential newborn care interventions relevant to South Sudan.

Standard recommendations for birth and delivery of newborns

The four basic needs of all newborns at birth and in the newborn period are to be protected, to breathe normally, to be warm and fed. All babies must be delivered in a clean and warm environment (at 25°C), preferably onto the mother's abdomen or into her arms. Hygienic care at birth through the use of clean birth kits, hand washing with soap, and the use of gloves and disinfectants, are important in protecting the mother, her baby and the health worker from infections. Thorough drying of the baby with a dry, warm, clean towel, discarding all wet cloths, covering with a clean, dry cloth and early initiation of breastfeeding ensures that newborns are kept warm and fed.[2]

Neonatal resuscitation equipment consisting of a flat firm surface and a newborn bag and mask must be available and in good working condition at all deliveries should there be a need to support a newborn unable to breathe normally. Assessment of a newborn's ability to breathe normally should be done in the first 60 seconds of life which is referred to as the golden minute.[3] This determines the next steps to be taken in the care of the newborn requiring resuscitation and other emergency care.

Essential Newborn Care Interventions

Much of this review will go into discussing well researched, low cost, high impact essential newborn care interventions relevant to all newborns regardless of the place of birth. These interventions are administered immediately after birth for newborns that do not require emergency care because they are either small or very ill. Care of small or very ill newborns will be discussed in later reviews.

a. Thermal care

Hypothermia is defined as a core body temperature of less than 36.5°C. Complications associated with hypothermia are hypoglycaemia (low blood sugar) and hypoventilation leading to hypoxia (low blood oxygen levels) and hypercarbia (high blood carbon dioxide levels) which can lead to death. Newborns lose heat through radiation, convection, evaporation and conduction at a much faster rate than adults because they have limited heat regulating mechanisms.[4] see Figure 1.

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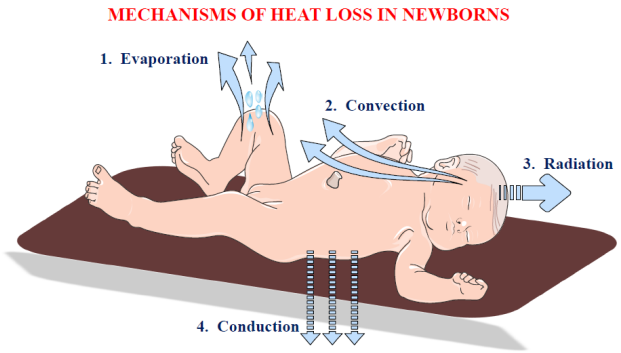

Figure 1. Mechanisms for heat loss among newborns. Adapted with the permission of the World Health Organization from Thermal Control of the Newborn: a practical guide. World Health Organization. Chapter 3. Thermal control of newborn infants; Pages 7-11. 1993. Newborn Image from SMART Medical.

Despite the hot climate in South Sudan, newborns are still at risk of hypothermia and must be kept warm at all times. Keeping newborns warm does not need sophisticated equipment like incubators. Appropriate clothing of the baby for ambient temperature should be 1–2 layers more than adults and include protective head gear.[5] Table1 describes the various ways of preventing heat loss in newborns through the mechanisms described in Figure 1.

The effect of thermal care practices like delayed bathing, immediate head covering and skin to skin care could avert 10% of neonatal deaths caused by infections and 20% of neonatal deaths associated with preterm birth complications.[6] These thermal care practices are part of the 'warm chain' interventions; a set of 10 evidence based, low cost, high impact interventions to minimize hypothermia.[4] (Figure 2)

Table 1. Prevention of heat loss in newborns

Mechanism	Prevention
1. Evaporation	• Dry thoroughly with a warm dry towel. • Discard all wet cloths. • Cover with clean, dry cloths.
2. Convection	• Keep away from draughts, open windows and doors.
3. Radiation	• Keep newborn in a warm environment and room.
4. Conduction	• Place newborn on dry, warm surfaces and covered with clean, warm, dry cloths.

b. Cord clamping and care

Cord clamping is the cutting of the umbilical cord after birth. During cord clamping, sterile cord ties or a clamp should be used. The cord ties or clamp should be placed tightly around the cord at two finger breadths from the newborn's abdomen and the second tie at another two finger breadths from the first tie.[7] The cord stump should be left uncovered.[5]

Delayed cord clamping and anaemia

Current evidence now supports delayed cord clamping for all births while initiating simultaneous essential newborn care. Delayed cord clamping (DCC) is defined as cutting the umbilical cord after 1-3 minutes after birth. Early cord clamping (<1 minute after birth) is not recommended unless the neonate is asphyxiated and needs to be moved immediately for resuscitation.[5]

Delayed cord clamping (DCC) is a cost-free intervention that prevents infant anaemia for up to 8-12 months[8] and through placental transfusion provides the term baby with about 20–30 mg/kg of iron.[9] DCC should be combined with the administration of oxytocin immediately after delivery of the infant to reduce maternal blood loss. Evidence shows that DCC has not been associated with increased maternal blood loss at delivery, postpartum haemorrhage or anaemia.[10] Although there is minimal risk of jaundice as a result of DCC, this has not been consistently shown to increase the need for treatment by phototherapy or exchange transfusion.[11] Other benefits of DCC to the neonate are:

- Increased tissue oxygenation.[12]
- Improved blood pressure and circulatory stability, increased circulating volume.[13]
- Reduced relative risk of need for blood transfusions by 34%.[13]
- Reduced risk of intraventricular haemorrhage (41%).[13]

Continued cord care

Clean cord care practices are critical in the prevention of neonatal mortality due to infections like neonatal tetanus. This is in addition to tetanus immunization which is given to women of child bearing age and during pregnancy. There is general lack of knowledge on correct cord care practices among caregivers in South Sudan as seen by a study in Juba Teaching Hospital where only 18.2% answered correctly that the umbilical stump should be left uncovered after cleaning. Among those preferring to apply substances to the cord, 43% applied powder, 14.4% ashes and 2.8% oil and alcohol respectively.[14]

Daily chlorhexidine (4%) application to the umbilical cord stump during the first week of life is recommended for newborns born at home in settings with high neonatal

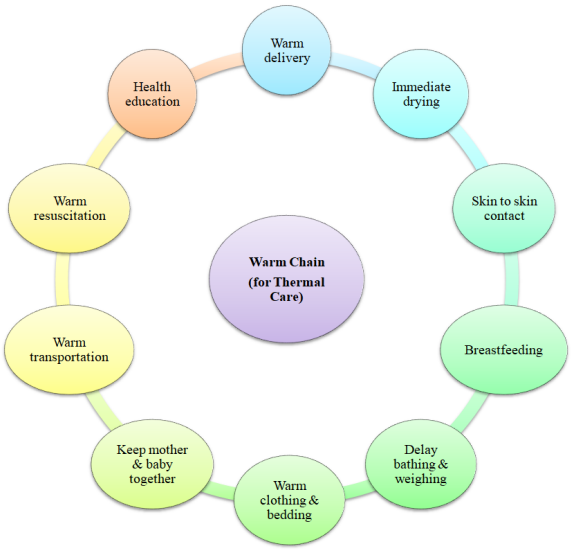

Figure 2. The 10 Step 'Warm Chain' for thermal care. Adapted with the permission of the World Health Organization from Thermal Control of the Newborn: a practical guide. World Health Organization. Chapter 4. The prevention of hypothermia; Pages 17-25. 1993.

mortality (NMR >30 per 1000). Clean cord care is recommended for newborns born in health facilities or at home in low neonatal mortality settings.[5]

A situational recommendation for the use of chlorhexidine for cord care in health facility births is as a replacement for the application of harmful traditional substance such as cow dung to the cord stump.[5] This is an important contextual recommendation that should be considered for implementation in South Sudan where harmful cultural cord care practices exist in the backdrop of high neonatal mortality.

c. Nutrition in neonates

Early initiation of breastfeeding is the initiation of breastfeeding as early as the third stage of labour, before the placenta has been delivered and not beyond one hour of birth as long as both mother and baby are clinically stable.[5] During this period, the baby should have received essential care outlined above and weighed.

The initiation of breastfeeding has been shown to reduce 22% of neonatal deaths if initiated within the first hour and 16% of neonatal deaths if initiated from the first day of life.[15] Rates of reported early initiation of breastfeeding (within an hour after birth) are low in South Sudan at 45%.[16] Key steps to promote early initiation of breastfeeding include breastfeeding counselling and education in the antenatal and postnatal periods and early and consistent 24-hour contact between mothers and newborns. Health workers need to be able to assess breastfeeding by ensuring that there is good attachment and positioning of the baby for breastfeeding. Assessment of breastfeeding will be discussed in the series on feeding newborns.

d. Eye care

Eye care for all newborns immediately after birth includes wiping the eyes and the application of tetracycline eye ointment once on both eyes.[7] This is effective in preventing neonatal conjunctivitis due to gonococcal or chlamydial infection which causes ocular disease and blindness in children.[17]

e. Vitamin K Prophylaxis

Vitamin K is an essential cofactor for clotting and newborns have low stores and inefficient utilization by the immature liver leading to deficiency. This is the basis of routine vitamin K prophylaxis of all newborns with 1 mg of vitamin K intramuscularly (IM) after birth to prevent haemorrhagic disease of the newborn. Haemorrhagic disease of the newborn can cause bleeding within the first few hours to months of life. Neonates with birth trauma, preterm newborns and those undergoing surgical procedures are at higher risk of bleeding and should always receive prophylaxis.[5]

f. HIV prophylaxis

Dual prophylaxis with zidovudine (azidothymidine, AZT; twice daily) and nevirapine (NVP; once daily) for the first six weeks of life should be given to all infants born to mothers with HIV regardless of their chosen method of feeding. Prophylaxis should continue in the postpartum period for an additional six weeks up to a total of twelve weeks if the baby is breastfeeding.[5]

g. Immunization

All infants should receive BCG and oral polio vaccine at birth due to the high endemicity of tuberculosis and polio in South Sudan. Neonatal vitamin A supplementation is not recommended as a public health intervention to reduce infant morbidity and mortality.[5]

h. Post-natal visits

Healthy mothers and newborns should be observed for at least 24 hours after birth following an uncomplicated vaginal birth in a health facility. The first postnatal care should be given within this period before discharge.[5]

Three additional postnatal contacts are recommended for all mothers and newborns, on day 3 (48–72 hours), between days 7–14, and six weeks after birth. Preterm and low-birth-weight babies should be identified immediately after birth and provided special care as per existing WHO guidelines.[5]

i. Identification of danger signs and when to return to a health facility

Caregivers should be educated on and empowered to

Figure 3. Danger signs in newborns. Adapted with the permission of the World Health Organization from WHO recommendations on newborn health: guidelines approved by the WHO Guidelines Review Committee. World Health Organization. Page 5. 2017; (May):20.

identify the following danger signs and seek health care early. These danger signs should be assessed during each postnatal visit and referrals made for further evaluation should they be present as they may indicate neonates at risk of sepsis or other serious illness.[5] (Figure 3).

Conclusion

This review has demonstrated that low-cost high impact interventions for newborn care are available (Figure 4). These interventions if implemented will result in greater steps towards the reduction of neonatal mortality in South Sudan. Scaling up of the coverage of these interventions, increasing the knowledge and decreasing skill gaps among caregivers and health workers respectively will aid in realizing these goals.

References

1. The United Nations Inter-agency Group for Child Mortality Estimation (UN IGME). Neonatal mortality-UNICEF DATA 2018.
2. WHO. Essential newborn care course: Clinical Practice Guide. World Health Organization 2010;1–56.
3. Healthy Newborn Network. Helping Babies Breathe – Healthy Newborn Network 2018.
4. World Health Organisation. Thermal Control of the Newborn: a practical guide. 1993;1–48.

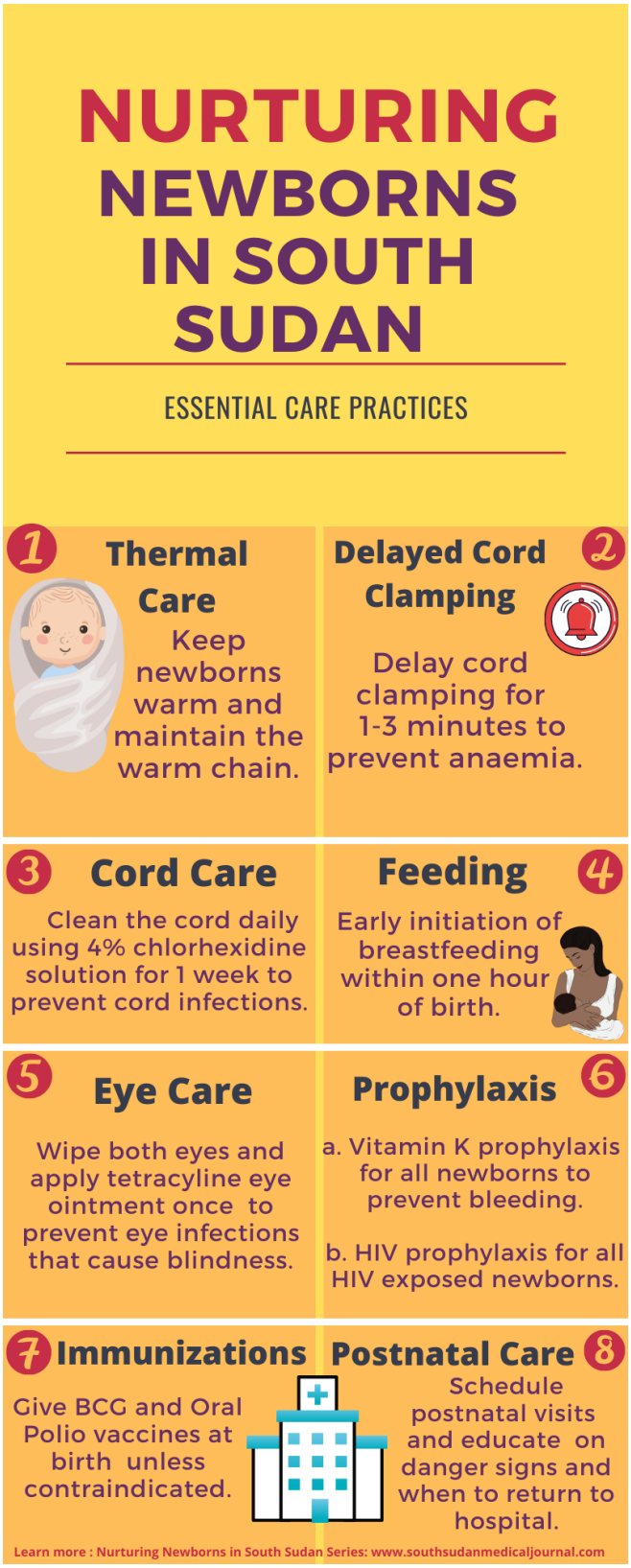

Figure 4. Poster. Summary of essential care practices for nurturing newborns in South Sudan. Source: Soma, G. (Author).

5. World Health Organization. WHO recommendations on newborn health: guidelines approved by the WHO Guidelines Review Committee. World Health Organization. 2017;(May):20.
6. Bhutta ZA, Das JK, Bahl R, Lawn JE, Salam RA, Paul VK, et al. Every Newborn 3 : Can available interventions end preventable deaths in mothers , newborn babies , and stillbirths , and at what cost ? Lancet. 2014;8–22.
7. Ministry of Health Republic of South Sudan. Guideline on integrated management of newborn and childhood illnesses. 2019;18(7).
8. Ashish KC, Rana N, Malqvist M, Ranneberg LJ, Subedi K, Andersson O. Effects of delayed umbilical cord clamping vs early clamping on anemia in infants at 8 and 12 months a randomized clinical trial. JAMA Pediatr. 2017 Mar 1;171(3):264–70.
9. Royal College of Obstetricians and Gynaecologists. Scientific Impact Paper No. 14: Clamping of the Umbilical Cord and Placental Transfusion. Obstet Gynaecol. February. 2015; 17(3):216–216
10. American College of Obstetricians and Gynaecologists. Delayed umbilical cord clamping after birth. Committee Opinion No. 684. American College of Obstetricians and Gynecologists. Obs Gynecol. 2017;129(684):e5-10.
11. Andersson O, Hellström-Westas L, Andersson D, Domellöf M. Effect of delayed versus early umbilical cord clamping on neonatal outcomes and iron status at 4 months: A randomised controlled trial. BMJ. 2011;343(7836):1244.
12. KC A, Singhal N, Gautam J, Rana N, Andersson O. Effect of early versus delayed cord clamping in neonate on heart rate, breathing and oxygen saturation during first 10 minutes of birth - randomized clinical trial. Matern Heal Neonatol Perinatol. 2019;5(1):1–7.
13. Heike Rabe Gillian ML Gyte José L Díaz-Rossello Lelia Duley View. Effect of timing of umbilical cord clamping and other strategies to influence placental transfusion at preterm birth on maternal and infant outcomes. Cochrane Syst Rev - Interv. 2019;5–7.
14. Meseka LA, Mungai LW, Musoke R. Mothers' knowledge on essential newborn care at Juba Teaching Hospital. South Sudan Med J. 2017;10(3).
15. Edmond KM, Zandoh C, Quigley MA, Amenga-Etego S, Owusu-Agyei S, Kirkwood BR. Delayed breastfeeding initiation increases risk of neonatal mortality. Pediatrics. 2006;117(3):e380–6. doi: 10.1542/peds.2005-1496
16. Countdown to 2030. South Sudan Maternal Newborn & Child Survival. 2013;9 (January): 381–8.
17. Gindalaa WM, Lewis K. Management of common eye conditions in a primary health care setting: A guide for South Sudan health workers. South Sudan Med J. 2017;10(1):17-22.