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Neonatal Mortality in Ghana

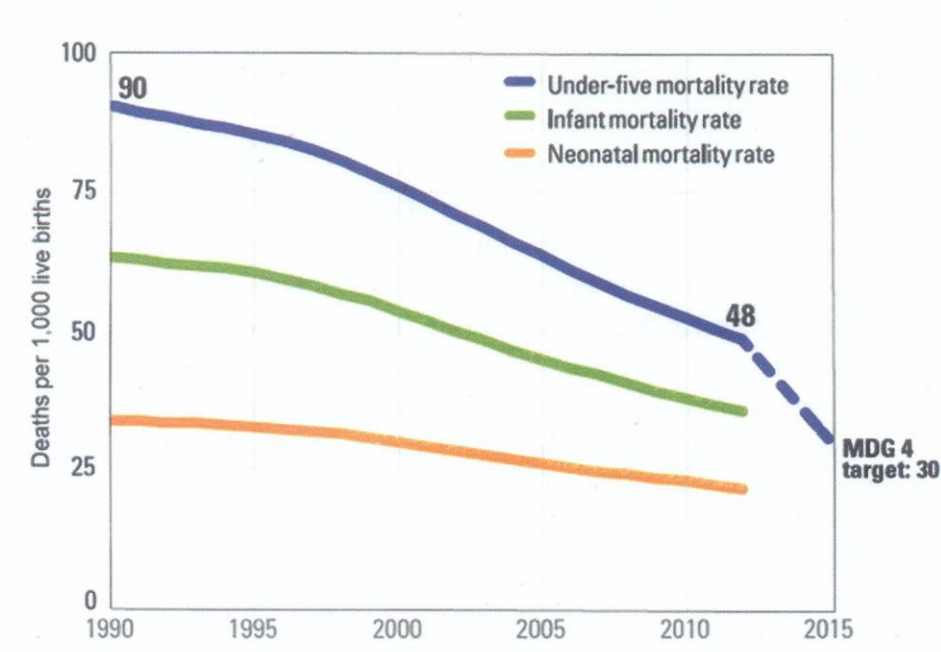
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Introduction

The healthcare field covers the life span of human beings from conception to death. For first world countries such as the United States, specific effort is put in to making sure neonates make it from the womb into the first month of life. Regular check-ups, ultrasound monitoring, and other diagnostic tests performed throughout a woman's pregnancy and once the baby is born help to prevent neonatal mortality. The World Health Organization and United Nations Children's Emergency Fund (UNICEF) work together to fight against infant and child mortality in the 1980's. Today the United Nation's has reduced the number of deaths under the age of five by fifty percent through the Millennium Development Goal Number 4 (United Nations, 2015). The reduction in child mortality has been rather impressive. However, the country of Ghana still experiences 30 neonatal deaths for every 1000 births within the first month of life (Kayode et. al, 2014). UNICEF (2014) states, "In Ghana a newborn dies every 15 minutes and about 30,000 die annually." The numbers are shocking and deserve our attention. In comparison to other West African countries such as Liberia with 24 neonatal deaths per 1000 live births and Cote d'Ivoire with 38, Ghana ranks right in between these two countries (The World Bank Group, 2016). In the United States of America, African Americans experience about 11 infant deaths per 1000 live births which is more than other races within the U.S. (Center for Disease Control, 2016). The trend downward for child mortality in Ghana since 1990 has been too gradual, and the country will not reach Millennium Development Goal 4 for neonatal mortality by 2015 (Ministry of Health Ghana, 2014).

Figure 1. Trends in global under-five mortality rate since 1990.



Source: UNICEF 2013. 2013 Statistical snapshot: Child Mortality¹⁰.

The country of Ghana is struggling to prevent neonatal mortality. The key factors that have been associated with neonatal mortality include infections, preterm births, low birth weights, birth trauma, and hypothermia (Kirkwood et. al, 2010). The largest of the factors, infections, are extremely preventable. The nursing profession focuses a majority of its current public health practice on prophylactic treatment and health-promoting education (ANA, 2007). Ghana's Ministry of Health has recently launched the Ghana National Newborn Health Strategy and Action Plan for 2014-2018 to help reduce the neonatal mortality rate (UNICEF, 2014). The main goal of the Ghana National Newborn Health Strategy and Action Plan is to take the neonatal mortality rate down to 21 newborn deaths per 1000 live births by the year 2018. The plan also aims to increase education of health care workers, timeliness of postnatal visits, early breastfeeding and exclusive breastfeeding for the first 6 months (Ministry of Health Ghana, 2014). This paper will pinpoint individual as well as community factors that contribute to

neonatal mortality in Ghana and identify nursing interventional methods to decrease the neonatal mortality rate.

Methods

A computer search utilizing CINAHL Complete and PubMed electronic databases was performed between 2005 and 2016. Key words included in the searches were “neonatal mortality,” “Ghana,” “education,” “health promotion,” “prematurity,” “nursing interventions,” and “prevention.” Preference was given to articles that focused on neonatal mortality prevention and neonatal health promotion. Another search method using Google Search for information relating to UNICEF, the United Nations, and the American Nurses’ Association. The focus of the literature review is on interventions currently or previously used in Ghana to decrease the neonatal mortality rate and potential prevention and health promotion strategies.

Literature Review

Infections

A prospective observational cohort study identified a link in Ghana between delayed breastfeeding and neonatal mortality. The study results showed a causal relationship between delayed breastfeeding and infection-specific neonate death. If a mother in Ghana delayed breastfeeding her newborn, the infant has a 2.6 fold increase in the chance that they will die from an infection (Edmond, Kirkwood, Amenga-Etego, Owusu-Agyei, & Hurt, 2007). Breastfeeding has been shown to have protective properties for the new born. The American Academy of Pediatrics states that breastfeeding protects against, “bacteremia, diarrhea, respiratory tract infection, necrotizing enterocolitis, otitis media, urinary tract infections, late-onset sepsis in preterm infants, type 1 and type 2 diabetes, lymphoma, leukemia, Hodgkins disease, and childhood overweight and obesity” (American Academy of Pediatrics, 2012). Preterm newborns

that are fed breastmilk have a much lower chance of becoming septic or developing necrotizing enterocolitis which points toward stronger immune system in breastfed infants (AAP, 2012).

17% of Ghanaian infants under six months receive complementary foods (Ghana Statistical Service and Ghana Health Service, 2009, p. 10). The recommendation for exclusive breastfeeding for the first six months is not just an easy food source; it provides the newborn with protection from a variety of infections.

Preterm Birth and Low Birth Weight

A retrospective cohort study conducted in Ghana at the Korle Bu Teaching Hospital on the effect of improved health care facilities on neonatal mortality resulted in a reduction of death in neonates weighing less than 2500g (changes shown below in Table). It also showed a large increase in the cost of care which could have deterred some of the population from utilizing this hospital due to finances. A key finding identified was that hospital improvement alone are not

Table 1 Status of equipment and staff at the neonatal intensive care unit before and after refurbishment

	<i>Before</i> (2003/04)	<i>After</i> (2004/05)
Infant care area	X ^a	2X
Hand washing facilities	2	12
Radiant warmers	2	7
Incubators+Bassinets (Cots)	3+45	20+20
Physiological (cardio-respiratory and SPO ₂) monitoring equipment	0	12
Blood gas and Hematocrit equipment	0	1 of each
Ventilators+CPAP ^b machines)	0	7+6
Total nurses (number per 8-hour shift)	28 (2–4)	28 (2–4)
Total doctors (1 pediatrician, 4 residents and 4 interns)	9	9

^aDenotes size of floor area for infant care.

^bContinuous Positive Airway Pressure.

enough to largely impact neonatal mortality. Rather, increased education and other interventions must occur (Enweronu-Laryea, Nkyekyer, & Rodrigues, 2008).

At Kintampo Municipal Hospital in Ghana, a cross-sectional study identified that hospital staff did not know how to classify an infant as premature or appropriate interventions for a premature infant. Prematurity accounts for 27% of the four million neonatal deaths each year. Kintampo was one of the hospitals that lacked adequate information on assessments and treatments for prematurity. The study showed that very few considered administration of Vitamin K after birth a standard of care for neonates. In premature infants, Vitamin K helps to prevent IVH (intraventricular hemorrhage). The real issue zooms out to be the entire system surrounding neonatal health guidelines in Ghana. A suggestion given would be to have hospitals conduct audits of their records regarding neonatal care practices and documentation. Another recommendation made is for increased education in nursing and midwifery schools related to newborn care as well as reeducation for health workers currently caring for newborns. The study also identified a major barrier to these changes as being cultural in nature. Ghana has dealt with newborn deaths so frequently that neonate and infant death is not seen as tragic anymore. The drawback to this study was its small sample size making it difficult to decipher the widespread use of this data (Parga, Udofia, & Punguyire, 2012).

A cross-cohort comparison was done on the associations between maternal age and low birth weight or preterm infants. The study took place in Brazil and the UK. Younger adolescent aged mothers showed an increase in preterm births compared to those aged 20-33. Even after accounting for different socioeconomic position for the adolescent mothers younger than 16, they still showed an increased risk for preterm birth. Final results of the study indicated that women age 16-19 have more preterm births and low birth weight infants due more to socioeconomic position rather than biological issues (Restrepo-Méndez, Lawlor, Horta, Matijasevich, Santos, Menezes, & Victora, 2015). The cross-cohort study shows that there is a

link between younger adolescent pregnancy and preterm/low birth weight infants. In Ghana, the number of premature and low birth weight infants has been rising (Ghana Statistical Service and Ghana Health Service, 2009). Finding a way to decrease teenage pregnancy could be a major contributor to reducing neonatal mortality in Ghana.

Birth Trauma and Hypothermia

A study was conducted in two separate health care locations in Ghana to find out if clinical training would increase health care provider knowledge and in return reduce the neonatal mortality rate. The results of the 278 tested participants indicated that further education did indeed lead to a vaster knowledge base which could contribute to a reduction in neonatal mortality (Brantuo, Cristofalo, Mehes, Ameh, Brako, Boahene, & Abdullah, 2014).

A study was conducted to investigate the effectiveness of a community based approach to provide five home visits, two in pregnancy and three in the first week of the baby's life. The study recognizes trained community workers as essential components of community members' health including pregnant women and neonates. Traditional birth attendants were contacted as well to ensure continuity of information (Kirkwood, Manu, Tawiah-Agyeman, Asbroek, Gyan, Weobong, & Hill, 2010).

Table 1: Visit schedule and content.

Early pregnancy	Key messages:
	- Promote and plan for a facility delivery
	- Plan for a clean home delivery
	- Plan for emergencies
	- Sleep under a treated bed net
	Supporting messages:
	- Encourage antenatal care attendance
	- Seek care for maternal danger signs

Early pregnancy	Key messages:
3rd trimester	- Dry, wrap & breastfeed immediately after delivery (plus 2nd assistant during home delivery to facilitate this)
	- Delay bathing for at least a day
Day of birth	- Weigh and assess the baby for danger signs
	- Refer very low birth weight (LBW) & potentially sick babies to hospital
	- Encourage exclusive breastfeeding (EBF)
	- Encourage good thermal care (bath with warm water, dry immediately and wrap well)
	- Encourage special care for LBW babies (Skin to skin contact, delay bathing at least 3 days, hygiene, frequent breastfeeding)
Day 3	- Assess baby for danger signs & refer sick babies
	- Reinforce EBF, thermal care
	- Teach newborn danger signs & encourage prompt care-seeking
Day 7	- Assess baby for danger signs & refer sick babies
	- Reinforce EBF, thermal care, prompt care-seeking
	- Encourage bed net use, immunizations
Other visits	- Follow-up visits within 24 hours for referred babies
	- Visit at 14 days for LBW babies

The study focused on analyzing the Ghana Demographic Survey for community versus individual factors relating to neonatal mortality. Results showed that factors in the community the neonate's mother lived combined with individual factors increased a neonates risk for mortality. Low socioeconomic communities are a major contributor to neonatal mortality. Other factors involving the mothers of the neonates included breastfeeding and the amount of time between pregnancies/births (Kayode, Ansah, Agyepong, Amoakoh-Coleman, Grobbee, & Klipstein-Grobusch, 2014).

Results

The objective of this thesis project was to conduct a literature review and perform a direct observational experience in Ghana. The literature review focused on causes of neonatal mortality in Ghana as well as possible educational and health promotional interventions. Neonatal causes identified and discussed were infections, preterm birth and low birth weight, birth trauma, and hypothermia. Education and health promotion interventions addressed were benefits of exclusive breastfeeding, improvement in neonatal facilities and equipment, increased education for health care workers, training for traditional birth attendants, decreasing teenage pregnancy as it relates to preterm and low birth weight infants, and increasing home visits in the community during pregnancy and after the birth of the infant. I was able to learn in-depth about neonatal mortality in Ghana through the literature I reviewed.

In my two weeks in Cape Coast, Ghana (see Appendix), I was able to have crucial conversations with health care workers and community members to learn about the current situation regarding neonatal mortality. I learned about the different types of interventions that are available for neonates by speaking with the head nurse at the NICU. Faculty at the University of Cape Coast also provided valuable insight into current methods of reducing neonatal mortality. I was unable to directly observe the labor and delivery process and newborn education due to time constraints, but I still had the ability to learn about the process through the traditional birth attendant and community health nurses. Direct observation of follow-up care for newborns was observed in a home visit for child welfare with the community health nurses. Although objectives were not met in the direct observation form, they were met through indirect observations and interviewing those who partake in newborn interventions.

Conclusion

The ultimate goal of this thesis was to identify causes of neonatal mortality in Ghana as well as health promotion methods and educational tools for nursing professionals to utilize to eradicate neonatal mortality. I have explored many aspects of neonatal mortality including causes, educational interventions, and health promotion interventions. From what I observed in my short time in Ghana, I conclude that the Ghanaian National Newborn Health Strategy and Action Plan requires more time to have its interventions reach the numerous community health settings, but the progress is continuing gradually.

The experience of this entire project has resonated deeply with me as I have recently become a member of the nursing team at the NICU. A key learning point in this project has been to utilize all your resources including people such as community leaders and traditional birth attendants. In my future practice of nursing, I hope to carry this project with me as a reminder of the wonderful resources I could utilize here in the United States. I also hope to return to Ghana at some point to work with nursing professionals to implement the educational interventions I have learned so much about.

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Appendix: Journal and Reflection



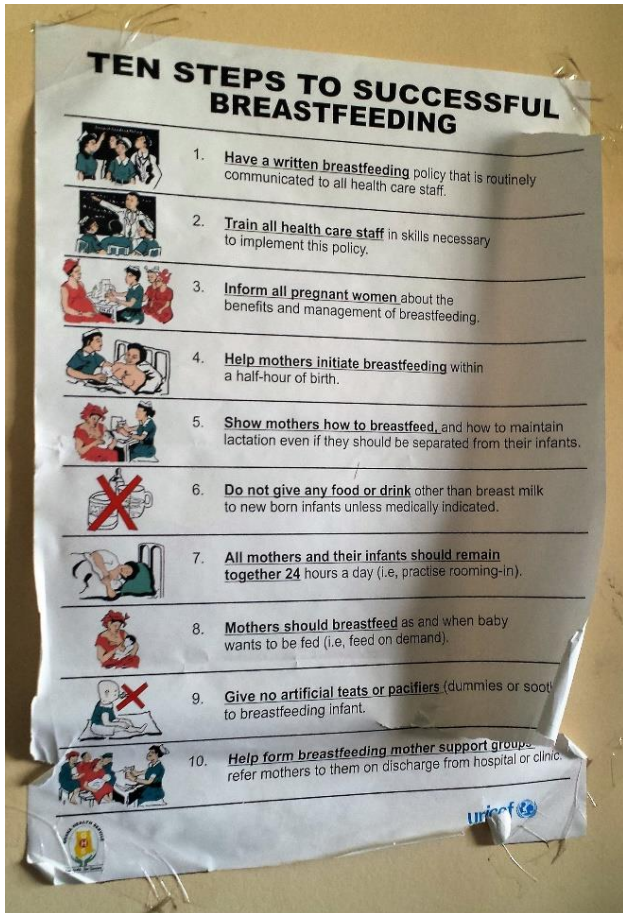
3-6-16 We traveled into town today to see Ghana's Independence Day celebration. The trek from the bus to the stadium was a decent one with people everywhere and cars trying to run us over. As we were walking I noticed multiple tents set up for free HIV testing! I thought this was such a great service to offer the people attending the celebration. One sign in particular struck me. (See left). It talked about how preventing HIV transmission to your unborn child was the surest way to help keep AIDS out of the next generation. Since neonatal mortality is a major issue in Ghana, it was a very positive experience seeing that sign.

I enjoyed seeing the signage as well as three separate tents all dedicated to health promotion. The

Ghanaian health system took advantage of such a huge public event to spread awareness and offer free testing to people in the Accra community.

3-8-16 This morning was quite a bit better compared to yesterday. We met with Nancy Ebu and the Provost of UCC. It was a fantastic conversation with plenty of time for questions and answers. I had the opportunity to learn about the causes of Neonatal Mortality and how they were working to prevent it. This was very important and beneficial for me.

3-9-16 We were able to tour the Cape Coast teaching hospital which gave me insight as to different types of education they provide to their patients and families. It was a very informative tour that enabled me to have an inside view of the Ghanaian health system.



I was only able to see the outside of the

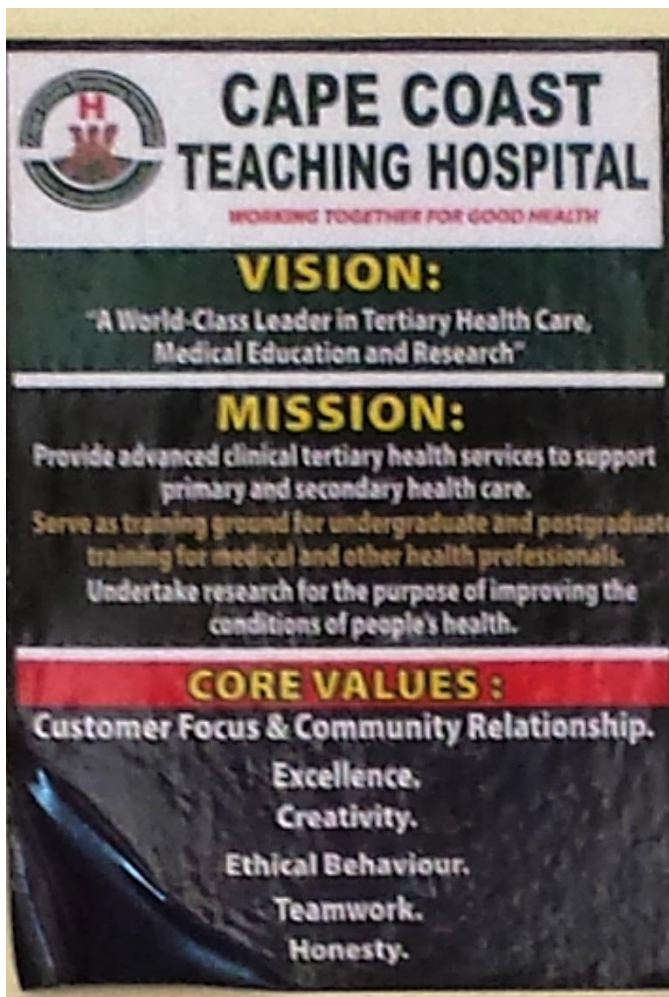
NICU, but it was later explained that the unit is not equipped like an ICU in the United States would be. It resembles more of a separate unit for premature babies that require more one-on-one care.



3-10-2016 Today was a terrific day! We went out into the community to work with the UCC



nursing students. I was able to collaborate and learn so much by working at the consultation table. It helped challenge my critical thinking skills and pull different aspect of health together such as physical environment, personal hygiene, and access to healthcare. I really loved the experience.



We also began our morning with a talk by Dr. Asare at Cape Coast Teaching Hospital. He provided valuable insight into the Ghanaian Health System. I thoroughly enjoyed comparing/contrasting the two different systems and finding the positive points in both.



3-11-16 We did our first rotation through the urban health clinic. Our group went to an all girls' school called St. Monica's. The other student nurses and I performed a skit about resisting peer pressure for the students. They loved it! It was such a blast finding a creative way to educate about health. Educating the students to resist peer-pressure may help to reduce the pressure to have sex at an early-age. "13% of women age 15-19 are already mothers or are

pregnant with their first child" (Ghana Statistical Service and Ghana Health Service, 2009, p. 3).

Less education is linked with early childbearing.

3-14-16 Today we went back to the urban community health sites. At the Metro site we split into 3 different groups to go with the community health nurses on home visits. Melissa and I had the opportunity to sit down with a traditional birth attendant (TBA). I learned so much in such a

short amount of time! The traditional birth attendant walked me through her practices of infection control, mother education regarding the newborn, and dealing with complications. The traditional birth attendant has the mother bring in her own supplies including soap and a new blade to cut the cord. I wonder how often the blade is truly new. An old blade could mean tetanus or infection for the baby. If the traditional birth attendant spots any signs of complications, she will get the delivering mother to a hospital as soon as possible which is a definite positive to her role. The government now recognizes and provides training to traditional birth attendants which has decreased neonatal mortality. In Ghana the rate of neonatal mortality based on 2008 demographics is 30 deaths before the age of one month per 1,000 live births. 30 % of births from 2003-2008 were assisted by a traditional birth attendant (Ghana Statistical Service and Ghana Health Service, 2009, p. 7-8).

In Mozambique a story was reported about a woman who had the same birth attendant for both of her children's births. The traditional birth attendants in this area have worked out an agreement with the nurses and midwives to bring women in for antenatal care and complicated deliveries. Traditional birth attendants have also become a source of community education by staying up-to-date with current diseases and issues and communicating those to the health care facilities (WHO Africa, 2015). Traditional birth attendants in other parts of Africa are describing a similar role to the traditional birth attendant I spoke with in Cape Coast, Ghana.

With the Community Health Nurse we were able to see a home visit after the talk with the traditional birth attendant. The visit focused on the care of a two month old who was being fed porridge. The mother stated she could not feed the baby with breastfeeding all the time, so she began using porridge as well. She followed the advice of her mother who also did not

exclusively breastfeed. The nurse took the mother through appropriate hygiene practices when caring for a newborn/infant.

3-15-16 Another student and I went with two community health nurses to a preschool to do child-welfare visits. Unfortunately only some of the parents had brought the preschoolers' health record. The ones that did have it were able to be weighed. We plotted their weight on the growth chart and looked for any trends. Two of the children were overweight, and another one was losing weight. We also updated three of the children's immunizations with the Measles vaccine and a Vitamin A supplement. It was one of the small boys first day at preschool, so he was very upset. Then head to get a vaccine! It took multiple people to keep him still enough. The nurse poked the boy three times in one arm and finally succeeded in the other arm. It was kind of hard to watch.

Observations and Key Informants

In Ghana there were multiple situations where I had to opportunity to converse with or observe health care workers. These individuals were members of the community, faculty at UCC, employees at the teaching hospital, or nurses at the Metro Clinic. I summarized my findings into categories of potential risks for neonates and infection control and education for neonates.

Potential Risks

Major risks for neonates included malaria, diarrheal diseases, infection, and lack of respiratory support. The major risk that was identified through key informants for neonates was Malaria. It is mainly a cause of concern for all children under five years of age but also infants and newborns. Malaria leads to low birth weight during pregnancy. Fifty-six of pregnant women

received preventative treatment during antenatal care and 44% received two doses of the antimalarial drug (Ghana Statistical Service and Ghana Health Service, 2009, p.12).

Diarrheal diseases are less of an issue than they were before, but they still exist. Women were unsure of what to feed their babies, but this has decreased since the institution of the health policy stating exclusive breast feeding only for up to six months.

One of the students also had the opportunity to observe in the NICU. She was able to give me some insight into their current practices and resources. In the teaching hospital NICU they lack respiratory support for the newborns. The closest respiratory support is over 3 hours away from the hospital. They have oxygen, but it is not pressurized. There is also no wall hook-up for ventilators. Feedings are done with the cup feeding method and not with a bottle. No protocols or stipulations are put on the feedings; the babies are fed until what was put in the cup is gone. Diaper changes are performed whenever the baby is wet; no set schedule is in place for care times. These are all potential risks for newborns as they involve inadequate resources for life-sustaining measures and increased risks for other infections such as aspiration pneumonia and skin breakdown.

Infection Control and Education

Although there are many risks involved regarding newborn care, there is also a lot of infection control and education that has been integrated into the health care practices. Currently antenatal care for mothers and newborns includes teaching on prevention of cord sepsis with use of spirits for cleaning, keeping babies warm to help prevent respiratory infections, and instruction on benefits of kangaroo care.

Traditional birth attendants have become a positive addition to the healthcare system since the United States Agency for International Development conducted a study that found

women avoiding going to the hospital for birthing because they were afraid of being abused by the nurses and midwives. Typically there is one midwife on duty for about eight women in labor which stretches the midwife to the breaking point. Now that traditional birth attendants have been trained they keep the number of complications with newborns and laboring mothers to a minimum.

The traditional birth attendant I had the opportunity to speak with walked me through her method of infection control, overall care, and education. The mother is instructed to use a clean cloth to cover herself after her water breaks. Then the birth attendant follows these steps: washes hands with soap and water, puts on gloves, finds the baby's placement, washes hands again, puts on more gloves, and then checks for dilation with 2 fingers. If the baby is in the wrong position or the birth attendant sees a lot of bleeding, then she will send the mother to the hospital right away. When the baby is born, the birth attendant ties the cord, wraps the baby in a clean blanket, rubs on the belly to feel the placenta, and pulls the cord slowly to remove the placenta. The traditional birth attendant gives kenke, fermented maize, with salt to drink for energy to the mom and also to prevent bleeding by contracting the uterus. Everything is decontaminated with chlorine before it is washed with soap and water. The traditional birth attendant typically aids in five to six births per week. The women who come to the birth attendant must bring a new blade (for cord cutting), three soaps, and a clean cloth for the baby. Other teaching after the birth involves advising mothers to breastfeed 30 minutes after birth, a song about the protective properties of breastfeeding when exclusively breastfeeding for the first six months, and daily cord cleaning with mineral spirits.

Mothers are taught in the hospital that if they cannot breastfeed exclusively they should boil water and add formula to ensure safe water for the baby. The mothers also must bring in

supplies from home and show they can perform safe feedings three times before discharge can occur from the NICU. Kangaroo care is a major point of education from the nurses in the NICU as well.

Conclusion of Appendix

The above information is a detailed recount and explanation of my time in Ghana. I learned an abundance of information during my Study Abroad, and I was able to fulfill my objectives of journaling observations and hands-on learning in Cape Coast, Ghana.