

Exclusive Breastfeeding in the Prevention and Treatment of Cholera in Haiti

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It has been two years since an earthquake devastated Haiti, and over a year since the outbreak of cholera. On a recent medical mission to a rural village in Haiti, the authors staffed a medical clinic and made home visits on motorcycle into the remote mountain regions to treat patients who were unable to attend the clinic. Their major emphasis was patient education including the prevention of cholera. Because there is no hospital and no doctor in the area and most births occur in the home, the authors were also charged with teaching homebirth classes to untrained midwives who spoke only Creole. During the clinics, home visits, and classes, they became extremely aware of the importance of breastfeeding in the prevention of cholera. A banner over the main intersection in the village stated in Creole, Bay tibebe yo tete pou pwoteje yo kont malady Kolera (English translation: "Give small babies your breast to protect them from the malady of Cholera"). The banner bears the logos of the Ministry of Public Health and Population (MSPP) and that of UNICEF (see Figure 1). Despite the obviously robust breastfed babies, the authors encountered a pervasive lack of knowledge about breastfeeding, and fielded many questions related to recommended duration of breastfeeding and ways to build a waning milk supply. Many opportunities arose for promotion of exclusive breastfeeding for extended periods to preserve the lives and ensure the health of their infants. The purpose of this article is to describe the conditions in Haiti, the effects of the earthquake and cholera outbreak of 2010, and the importance of promoting exclusive breastfeeding in these extraordinary circumstances.

Keywords: Haiti, breastfeeding, earthquake, cholera
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Haiti is located on the western one-third of the island of Hispaniola between the Caribbean Sea and the North Atlantic Ocean. It is slightly smaller than the state of Maryland, and its terrain is mostly rough and mountainous. It lies in the middle of the hurricane belt and is subject to severe storms, occasional flooding and earthquakes, and periodic droughts. The climate is tropical. The estimated population in 2011 was over 9.5 million, half of which were children, making the median age 21 years. The maternal mortality rate is 300 deaths/100,000 live births compared to 24 for the U.S., and the infant mortality rate is 54 deaths/1,000 live births compared to 6 for the United States (Central Intelligence Agency [CIA], 2011). Ninety percent of rural births take place at home, often hovels of thatch with mud floors, with no skilled care. Homebirth, the lack of transportation to distant hospitals, and inability to pay for care partially accounts for the high maternal and infant-mortality rates (Haitian Health Foundation [HHF], 2010). Life expectancy is 62 years and only 4% of

the population is over 65. Ninety-five percent of the Haitian people are black of African descent, with the



Banner over a main intersection in Haiti, which states in Creole, *Bay tibebe yo tete pou pwoteje yo kont malady Kolera*. (English translation: "Give small babies your breast to protect them from the malady of Cholera"). The banner bears the logos of the Ministry of Public Health and Population (MSPP) and that of UNICEF.

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remainder being mulatto or white. The official languages are Haitian Creole and French (CIA, 2011).

Haiti is the poorest country in the Western Hemisphere. Access to sufficient quantities of food is a problem for millions of Haitians. Approximately half of the population lives in extreme poverty, on less than \$1 a day, and three-quarters on less than \$2 a day (World Food Programme [WFP], 2012). According to the United Nations Development Programme (UNDP), there are multidimensional deprivations not evidenced by income alone. Even those living above the income poverty line may have deprivations in education, living conditions, and health (UNDP, 2011). Half of Haiti's children do not attend school. The average length of education is less than five years, with a literacy rate of only 53%. Two-thirds of the Haitian population live in rural areas. Only 45% of the rural population has access to clean drinking water, and only 10% have access to sanitation facilities (CIA, 2011). One third of families have more than seven members, and half of families have only one room to sleep in (Pan American Health Organization [PAHO], 2012). The Haitian Health Foundation (2010) describes living conditions in rural areas as "dehumanizing," with families living in shacks unsuitable for human habitation, and children rooting with animals through the garbage for scraps of food. When international health and population experts devised the "human suffering index" in 1991, Haiti was the only nation in the Western Hemisphere categorized by "extreme human suffering" (Farmer, 2005).

According to UNICEF (2006), Haiti has the highest death rate for children less than 5 years of age. One in 14 children in Haiti never survives to their first birthday. There is also a disproportionate death rate for children ages 1 to 4. Haiti accounts for only 2% of the birth rate in the Latin America and Caribbean region, but accounts for 19% of the deaths in this age group. Rates of chronic malnutrition are high among Haitian children, especially in rural areas. One quarter of all children less than 5 years of age suffer moderate-to-severe malnutrition.

Many children in Haiti spend hours fetching water from distant rivers or wells. Unless it is boiled or treated, the water is unsafe for consumption (PAHO, 2012). These conditions in Haiti existed before the devastation caused by the 2010 earthquake and subsequent cholera outbreak. Haiti was off track on nearly all targets set under the Millennium Development Goals. These threats from the earthquake and cholera only exacerbated the problems (UN News Center, 2011; UNICEF, 2011).

Breastfeeding in Haiti

Breastfeeding is the norm for Haitians (Kemp & Rasbridge, 2004), but as few as 3% breastfeed exclusively (HHF, 2010). Many Haitian women do not feed their babies until after meconium is passed, discard the colostrum (yellow milk), and purge the baby with *lok* containing castor oil (Roman, 2007). They have many misconceptions and concerns about breastfeeding, and believe it causes infant problems, such as intestinal parasites, diarrhea, or tetanus. The milk being "too thick" is believed to cause impetigo. Maternal worry or fright is thought to make the milk too thin, which causes infant diarrhea, failure to thrive, and maternal headaches and depression. If the baby has diarrhea, the baby is weaned (Kemp & Rasbridge, 2004; Thomas & DeSantis, 1995). Maternal illness or emotional upset is believed to cause the milk to spoil. Some breastfeeding women give other fluids including water, milk, tea, coffee, or lemonade to young infants (Roman, 2007).

A survey of Haitian women found they did not breastfeed if they had breast pain or engorgement, the baby was not growing or developing, the baby or the mother was ill, the mother was dehydrated, the baby was "gassy," or had dry skin. The main reasons they stated for an inadequate milk supply were maternal illness or emotional upset, and not eating or drinking enough. These women indicated that eating foods, such as mirliton (squash), cucumbers, chux palmist (palm hearts), and mangos were ways to improve the milk supply (Roman, 2007).

Several promotional campaigns have attempted to increase breastfeeding rates in Haiti. LINKAGES is a global program supported by the Bureau for Global Health of the United States Agency for International Development (USAID) aimed at improving breastfeeding through informed decision-making regarding infant feeding. This program promotes optimal feeding of infants and young children during and after illness. Its recommendations include breastfeeding more frequently, and for longer duration at each feeding, to prevent and treat dehydration. It considers illness as a key moment for emphasizing the special qualities of breastmilk, and helping mothers to establish or re-establish exclusive breastfeeding for infants less than 6 months of age (LINKAGES, 2006).



Haitian mother breastfeeding her 11-month-old infant. She sought information about how long to breastfeed, and how to build her waning milk supply.

The Haitian Health Foundation utilized a USAID grant in an effort to reduce maternal and infant mortality through several measures, including exclusive breastfeeding. This program accomplished an 80% exclusive breastfeeding rate for infants under 6 months in the area around Jeremie, compared to the national Haitian average of less than 3% (HHF, 2012).

Diarrheal Diseases

Diarrhea is the leading health problem in Haiti, and the second leading cause of death in children under the age of 5 (PAHO, 2012). Diarrhea is defined as having three or more loose or watery stools a day resulting in significant fluid loss and dehydration. Common causative pathogens include *rotavirus*, *E. coli*, *Shigella*, *Camphylobacter*, *Salmonella*, *Cryptosporidium*, and *Vibrio cholerae*. The pathogens are transmitted by the fecal/oral route. Worldwide, 88% of diarrheal deaths are attributed to unclean water, inadequate sanitation, and poor hygiene. Diarrhea is the leading cause of death during natural disasters as populations are displaced into temporary, overcrowded shelters, often accompanied by polluted water sources, and poor sanitation and hygiene practices (UNICEF & World Health Organization [WHO], 2009a).

Globally, nearly 20% of child deaths are due to diarrhea (WHO, 2010). Children are at greater risk of life threatening dehydration because of their greater proportion of water to body weight, their higher metabolic rates, and the decreased ability of their kidneys to conserve water (UNICEF & WHO, 2009a). Lessening the burden of childhood diarrhea is essential to achieving Millennium Development Goal 4: to reduce child mortality. UNICEF and WHO (2009b) propose a seven-point plan for comprehensive diarrhea control. It includes five elements of prevention: rotavirus and

measles vaccinations; promotion of early and exclusive breastfeeding, and vitamin A supplementation; promotion of handwashing with soap; improved water supply and storage; and community-wide sanitation promotion. The remaining two points of the plan relate to treatment of diarrhea: fluid replacement and zinc treatment. Researchers, using the [Lives Saved Tool](#), estimated the potential lives saved if recommended diarrhea prevention measures were implemented in 68 high-child-mortality countries. They calculated a reduction in diarrhea mortality up to 92%, nearly five million deaths averted over a five-year period (Walker, et al., 2011).

Earthquake and Cholera in Haiti

In the midst of existing poverty, poor water and sanitation conditions, and poor healthcare, Haiti suffered a devastating earthquake in January 2010. These factors combined to make Haiti vulnerable to the outbreak of cholera for the first time in a century. The 7.0 magnitude quake reduced much of Haiti to rubble and debris, killed an estimated 220,500 people, left 500,000 homeless, and displaced 2.3 million, 300,000 of whom were children (Brown et al., 2012). While the country was still reeling from the quake, a cholera outbreak in October 2010 further devastated the country. The first case was traced to a man who lived in a rural village downstream from the suspected source of the outbreak—a United Nations peacekeepers' camp. Faulty sanitation practices in the camp, and the fact that the victim drank water from the river, account for the transmission (Moszynski, 2012). As of July 10, 2011 there have been 380,000 reported cases and 5,800 deaths from this disease (Chunara et al., 2012).

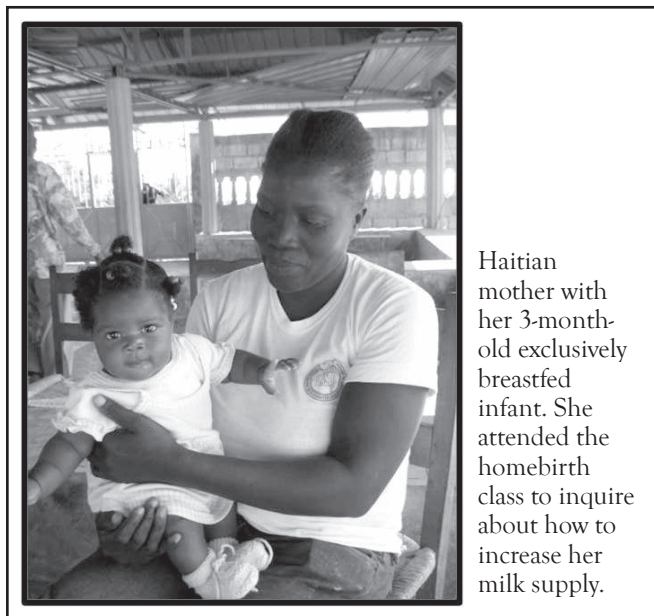
Cholera is an acute, diarrheal illness that affects three to five million people, with over 100,000 deaths occurring annually worldwide. About 75% of cases are mild and asymptomatic, while an estimated 5% of severe cases have profuse watery diarrhea, vomiting, and leg cramps. Symptoms can occur from a few hours to almost a week after exposure, with an average of two to three days. Even in previously healthy persons, patients with extreme cases can have a rapid loss of body fluids that can lead to dehydration, shock, and even death within hours (Centers for Disease Control and Prevention [CDC], 2011; College of Physicians of Philadelphia [CPP], 2012).

In 1849, John Snow, an English physician, recognized that cholera was occurring when people “ingested certain tiny particles in water” (CPP, 2012). He identified that contaminated water was the source of the disease,

even without the definite visible contaminant. In 1854, Filippo Pacini, an Italian Scientist, discovered that the disease was caused by infection of the intestine by a bacterium, *Vibrio cholerae* (Bentivoglio & Pacini, 1995). Sources of cholera include water or food that has been contaminated with feces from an infected person. It is usually spread directly from person to person in areas that have limited access to adequate water treatment, and good sanitation and hygiene practices. The infection can also be acquired through eating raw or undercooked shellfish that have been exposed to contaminated water sources (CDC, 2011). Treatment of cholera can include oral rehydration solutions, which are a mixture of sugar and salts dissolved in clean water, for mild cases, or intravenous rehydration fluids for more severe cases. Antibiotics are given to combat the infection (CDC, 2011). Early recognition and treatment are essential to survival.

Breastfeeding, Diarrheal Disease, and Cholera

Infant survival begins with breastfeeding. Breastmilk contains nutrients, antioxidants, hormones, and antibodies needed by a child to survive and develop. Exclusively breastfed infants develop fewer infections, including diarrhea, and have less severe illnesses than formula-fed infants (UNICEF, 2010c). This protection is higher where maternal literacy is lower, and where sanitation is worse. Infants who are not breastfed have six times the risk of dying from infectious disease in the first two months of life compared to breastfed infants (UNICEF, 2008; UNICEF, 2009b).



Haitian mother with her 3-month-old exclusively breastfed infant. She attended the homebirth class to inquire about how to increase her milk supply.

If the vast majority of babies were exclusively breastfed in their first six months of life, the lives of at least 1.4 million children would be saved every year (UNICEF, 2008). Primary prevention of infant diarrhea depends on exclusive breastfeeding to eliminate the consumption of contaminated water. Through secondary prevention, breastfeeding reduces the severity of the disease should it occur, and tertiary prevention prevents and/or treats the dehydration resulting from diarrhea. UNICEF and WHO (2009) encourage development and implementation of change interventions, such as face-to-face counseling, to encourage exclusive breastfeeding. The living conditions following the 2010 earthquake, and the cholera outbreak later that year, prompted many national and international breastfeeding-promotion campaigns.

After the quake, Haitian mothers were feeding their babies other liquids or solids, or had stopped breastfeeding because of their beliefs about the effects of stress and poor diet. There was also a massive influx of donated powdered formula that created a hazard because the water supply was not safe. Action against Hunger, with support from UNICEF, set up “baby tents,” where hundreds of lactating mothers sought a safe and calm place to breastfeed their infants, as well as advice on how to prevent cholera. This resulted in an 80% rate of exclusive breastfeeding for those utilizing the tents (UNICEF, 2010a). According to Dr. Mohamed A. Ayoya, the UNICEF Haiti Chief of Nutrition, “... exclusive breastfeeding is one of the most effective child-survival interventions” (UNICEF, 2010b).

Sanitation and potable water problems in Haiti make breastfeeding an important cholera- prevention strategy. Immune factors against cholera are present in the breast milk of mothers who have contracted the disease. This boosts the babies’ immune systems while eliminating the risks of consuming contaminated water (PAHO, 2010). If the mother has cholera, her dehydration is not severe, and she is conscious, she should continue breastfeeding. *Vibrio cholera* is not transmitted through breastmilk. Exclusively breastfed infants rarely develop the disease (CARE, 2004). If mothers who are breastfeeding their babies are admitted to a treatment center, the babies should be admitted with them, and breastfeeding should continue (Cutting, 2002). The mother may need oral rehydration solution and/or intravenous fluids. Because maternal dehydration may reduce milk supply, the infant may also need additional fluids. Antibiotics should be given to the mother, not the uninfected baby (CARE, 2004).

Disaster and Emergency Preparedness

Disasters, such as the earthquake and cholera outbreak in Haiti, necessitate preparedness plans for emergency-response organizations. In emergency situations, breastfeeding saves lives (International Lactation Consultant Association, 2009; UNICEF, WHO, & WFP, n.d.; United States Breastfeeding Committee, 2009). During these crises, healthcare workers must understand the vital importance of breastfeeding, and dispel myths that are false or inaccurate. While stress might temporarily interfere with letdown, it will not affect the milk supply if the mother continues to nurse at frequent regular intervals. The breastfeeding hormones actually reduce maternal tension and stress. Even malnourished mothers can breastfeed (Emergency Nutrition Network [ENN], 2007). Milk production continues as milk is produced from the mother's own body stores. It is important to give top priority to feeding the mother so she can feed her baby. Breastfeeding can be re-started if she has weaned the baby.

With regular nursing, mothers who have been giving complimentary feeds can resume exclusive breastfeeding. Even if the baby has weaned completely, re-lactation is not only possible but recommended in emergency situations. Breastfeeding should continue especially when the infant is sick. Even though breastfeeding is natural, special support is necessary. Mothers breastfeeding in emergency and disaster situations need advice and support to maintain or re-establish lactation. Mothers must be given priority in order to provide for their infants. Emergency-response teams must include lactation consultants who can educate relief workers in how to advocate for and promote breastfeeding to prevent unnecessary disease and death (American Academy of Pediatrics [AAP], 2007; ENN, 2007; International Lactation Consultant Association [ILCA], 2009a, 2009b, 2009c; UNICEF, 2009; USBC, 2009, 2011;).

Even before the earthquake, Haiti had the highest rate of orphans, accounting for 16% of the population (UNICEF, 2006). It is estimated that that number has doubled since the quake (Wylie, 2011). Since breastfeeding is the key to survival for all infants, even orphans, consideration should be given to promotion of cross-nursing or wet nursing of orphaned infants, or to informal milk sharing by lactating mothers (ILCA, 2009a; USBC, 2011). According to the International Lactation Consultant Association's *Position on Infant Feeding in Emergencies*,

Protecting, promoting and supporting breastfeeding in these areas will ensure that those infants affected by these disasters will not be twice victimized by long-term health and developmental problems that could be prevented by breastfeeding (ILCA, (n.d.).

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For Further Information on Breastfeeding in Emergencies

American Academy of Pediatrics

Infant nutrition during a disaster: Breastfeeding and other options.

<http://www2.aap.org/breastfeeding/files/pdf/InfantNutritionDisaster.pdf>

International Lactation Consultants Association

Background information: Breastfeeding: A vital emergency response—Are you ready?

http://www.ilca.org/files/in_the_news/Emergencies/Background09_print.pdf

Facts about breastfeeding in an emergency: Especially for relief workers

http://www.ilca.org/files/in_the_news/Emergencies/FACTSforReliefWorkers.pdf

Facts about breastfeeding in an emergency: Especially for health workers.

http://www.ilca.org/files/in_the_news/Emergencies/FACTSforHCP.pdf

Position on infant feeding in emergencies.

http://www.ilca.org/files/resources/ilca_publications/InfantFeeding-EmergPP.pdf

United States Breastfeeding Committee

Statement on infant/young child feeding in emergencies.

<http://www.usbreastfeeding.org/LinkClick.aspx?link=Position-Statements%2fEmergencies-Statement-2011-USBC.pdf&tabid=36&mid=378>

WHO / UNICEF

Call for support for appropriate infant and young child feeding in Haiti.

http://www.who.int/hac/crises/hti/appeal/haiti_joint_call_for_support.pdf

Infant and young child feeding during diarrhoea and cholera: Guide for health workers at cholera treatment centres.

<http://www.enonline.net/pool/files/ife/child-feeding-at-cholera-treatment-centre-zimbabwe.pdf>



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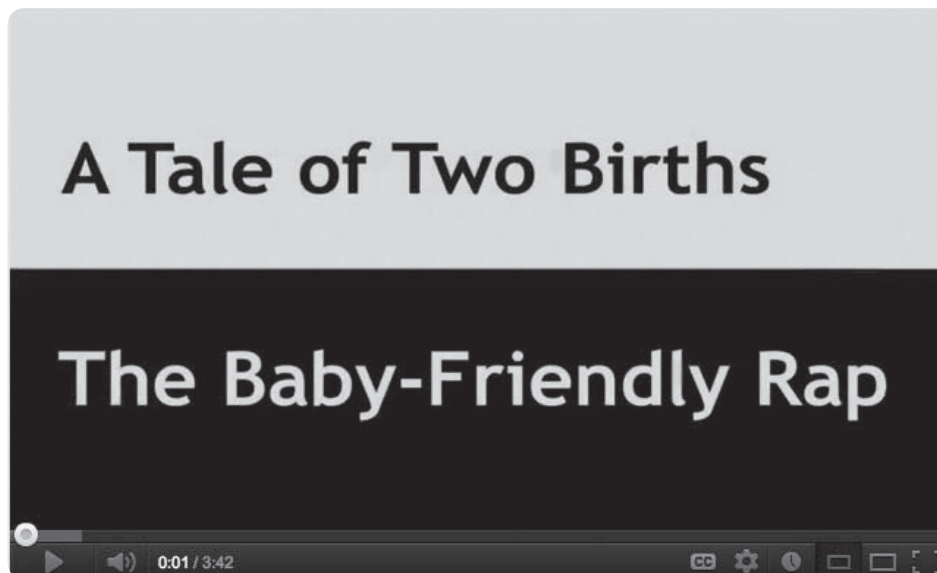
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More Women Than Ever Are Choosing Home Births

According to recent data on home births published by the U.S. Centers for Disease Control (CDC), based on 26 states (comprising 50% of U.S. births) reporting data on planning status of home birth in 2009, there were 29,650 home births in the United States, the highest level since data on home births began to be collected in 1989. After a decline from 1990 to 2004, the percentage of U.S. births that occurred at home increased by 29%, from 0.56% of births in 2004 to 0.72% in 2009. The percentage of home births in 2009 was three-to-five times higher for non-Hispanic white women than for any other racial or ethnic group.

Louisiana and the District of Columbia had the fewest number of home births, 0.2% and Oregon, 2.0% and Montana, 2.6% had the highest. In 2009, 62% of home births were attended by midwives: 19% by certified nurse midwives and 43% by certified professional midwives or direct-entry midwives. Home births are more common among women aged 35 and over, and women with several previous children. The report found that home births have a lower risk profile than hospital births, with fewer births to teenagers or unmarried women, and with fewer preterm, low birthweight, and multiple births.

New Baby-Friendly Rap on YouTube.



<http://www.youtube.com/watch?v=N9KptD3t110&feature=youtu.be>