Bloody Diarrhea (Dysentary)
Pre-decision Brief for Public Health Action

Key recommendations

■ The most effective control measures to prevent bloody diarrhea are maximizing access to sanitation, safe water, and safe food supplies, and improving personal hygiene practices. Water distributed via tanker operations or through piped networks should be effectively chlorinated. Soap and handwashing stations should be distributed in settlements of displaced persons, and handwashing with soap should be encouraged after caring for patients, toileting, cleaning other persons after toileting, and before preparing or eating food. These measures should be implemented before an outbreak occurs.

■ Surveillance for bloody diarrhea is a priority. A rapid increase in number of reported cases of bloody diarrhea should trigger a public health response to ensure rapid implementation of control measures in the affected area and access to appropriate laboratory testing.

■ Dehydration is not a common problem with bloody diarrhea, but patients with dehydration should be given oral and/or intravenous rehydration as needed.

■ Antimicrobial medications may be indicated for severe disease. When possible, antimicrobial treatment should be tailored to the pathogen and the local antimicrobial resistance pattern. Resistance to ampicillin and trimethoprim-sulfamethoxazole is common in *Shigella* strains from Haiti, so treatment of adults and children should begin with ciprofloxacin or azithromycin until local antimicrobial resistance patterns are known.

1. What was the situation in Haiti prior to the earthquake?

■ *Shigella*, the most common cause of bloody diarrhea, is highly endemic in Haiti. Data from 2005–2006 showed that approximately 5% of children younger than 5 years of age had bloody diarrhea in the preceding two weeks.[1]

■ Laboratory capacity for bacterial stool culture and for diagnosis of amebiasis was limited.

■ National surveillance data on bloody diarrhea in Haiti were not available.

2. What is the likelihood of cases/outbreaks of this disease developing in the near future?

■ Because bloody diarrhea is endemic to Haiti, an outbreak of bloody diarrhea is likely if water, sanitation, and hygiene infrastructure are not improved and if displaced persons remain in crowded encampments for prolonged periods. Outbreaks of bloody diarrhea have occurred in crowded refugee conditions when sewage containing *Shigella* contaminated the water used for drinking and/or washing food.[2] However, there were no recognized outbreaks of bloody diarrhea in Haiti following the hurricanes in 2005 and 2008.

3. Should an outbreak occur, how would it be detected?

■ The Health Cluster has established sentinel site surveillance for bloody diarrhea throughout Haiti. An outbreak of bloody diarrhea would be suggested by a rapid increase in number of persons with three or more loose, bloody stools in a 24-hour period.

■ The most likely etiologies of bloody diarrhea in Haiti would be *Shigella* or *Campylobacter*, and less commonly *Entamoeba histolytica, Salmonella, Yersinia*, or enterohemorrhagic *Escherichia coli*. These etiologies are clinically indistinguishable at presentation; therefore, if an outbreak is detected, stool specimens from a limited number of cases (approximately 10) should be tested in the National Public Health Laboratory (LNSP) or, if needed, in the U.S. Bacterial etiologies of bloody diarrhea can be distinguished by culture. Amebiasis is diagnosed by wet mount of fresh feces, but a wet mount examination does not distinguish between *Entamoeba histolytica* and the non-pathogenic *Entamoeba dispar*. Therefore, stool antigen test or polymerase chain reaction are preferred for diagnosis of amebiasis.[3] No rapid diagnostic tests are available for agents of bloody diarrhea, other than for Shiga toxin-producing strains of *S. dysenteriae* and *E. coli*. Lactoferrin and fecal leukocytes, which are usually elevated in inflammatory causes of diarrhea, have no practical application in the management of outbreaks.[4]

4. What options for public health action should be considered in the event of an outbreak?

- The most effective control measures for outbreaks of bloody diarrhea relate to improved water, sanitation, and hygiene. Chlorination of piped and tankered water supplies and/or point-of-use water treatment and safe water storage should be implemented widely. During outbreaks of amebiasis, small-pore (i.e., less than 1 micron) filtration or boiling drinking water supplies is preferred, if feasible, because chlorination may not inactivate amebic cysts. Increasing access to improved sanitation and vigorous promotion of handwashing with soap after caring for patients, toileting, cleaning another person after toileting, or before preparing or eating food will reduce the risk of outbreaks of bloody diarrhea and other enteric infections. Food should be cooked thoroughly, eaten while still hot, and protected from flies.

- Laboratory surveillance should be conducted at the LNSP to identify etiologic agent and plan appropriate interventions.

- Although WHO recommends empiric antimicrobial treatment for bloody diarrhea to decrease severe morbidity and mortality from *Shigella dysenteriae* infections,[5] *S. dysenteriae* is believed to be uncommon in the Caribbean. Therefore, antimicrobial treatment ultimately should be based on etiologic agent, clinical picture, and the outbreak context. Antimicrobial treatment of non-*dysenteriae Shigella* infections is rarely indicated on clinical grounds but can decrease duration of symptoms and shedding in stool. Resistance to ampicillin and trimethoprim-sulfamethoxazole is common in *Shigella* strains associated with Haiti.[6] Until antimicrobial resistance patterns are known, adult or pediatric patients with shigellosis may be treated with ciprofloxacin (adults: 500 mg by mouth twice daily for 5 days; children: 10 mg/kg by mouth twice daily for 5 days) or azithromycin (adults: 500 mg by mouth on day 1, then 250 mg by mouth daily for 4 days; children: 12 mg/kg by mouth on day 1, then 6 mg/kg by mouth daily for 4 days). During an outbreak, antibiotic susceptibility monitoring should be performed periodically. Antimicrobial treatment of diarrhea due to *Campylobacter, Salmonella*, or enterohemorrhagic *E. coli* is generally not recommended. In contrast, treatment of symptomatic amebiasis is routinely recommended to alleviate symptoms and prevent secondary transmission; asymptomatic patients should also be treated because they can shed cysts. Metronidazole (adults: 500 mg by mouth three times per day for 7–10 days; children: 30–50 mg/kg by mouth divided three times per day for 7–10 days) or tinidazole (adults: 2 g by mouth daily for 3 days; children: 50 mg/kg by mouth daily for 3 days) followed by a luminal amebicide (e.g., paromomycin or iodoquinol) can be used when amebiasis is strongly suspected.

- Dehydration is generally less common than with other types of diarrhea but can occur in some patients. Thus, availability of adequate supplies of low-osmolarity oral and isotonic intravenous rehydration solutions in health facilities and communities is important. In addition, children should continue to be fed as normally as possible, including continuing to breastfeed.

- Zinc (20 mg/day by mouth for 10–14 days; 10 mg/day by mouth for 10–14 days for patients less than 6 months of age) should be provided to children 1–59 months of age to decrease duration and severity of illness.[7]

References

1. Cayemittes, M., Marie Florence Placide, Soumaïla Mariko, Bernard Barrère, Blaise Sévère, Canez Alexandre. (2007). *Enquête Mortalité, Morbidité et Utilisation des Services, Haïti, 2005-2006*. Calverton, Maryland, USA, Ministère de la Santé Publique et de la Population, Institut Haïtien de l'Enfance et Macro International Inc.

2. Anon (1995). "Public health impact of Rwandan refugee crisis: what happened in Goma, Zaire, in July, 1994? Goma Epidemiology Group." *Lancet* 345(8946): 339-44.

3. Bercu, T. E., W. A. Petri, et al. (2007). "Amebic colitis: new insights into pathogenesis and treatment." *Curr Gastroenterol Rep* 9(5): 429-33.

4. Gill, C. J., J. Lau, et al. (2003). "Diagnostic accuracy of stool assays for inflammatory bacterial gastroenteritis in developed and resource-poor countries." *Clin Infect Dis* 37(3): 365-75.

5. WHO (2005). Guidelines for the control of shigellosis, including epidemics due to *Shigella dysenteriae* type 1. Geneva, Switzerland.

6. Strockbine, N., Devon V. Stripling, Haley J. Martin, Evangeline G. Sowers, Cheryl L. Tarr, and G. C. P. a. J. M. Whichard (2009). Characterization of Shiga toxin-producing *Shigella* Isolates Belonging to Subgroups A, B and C.

7. WHO (2006). Implementing the New Recommendations on the Clinical Management of Diarrhoea. Geneva, Switzerland, WHO.