

Acute and Persistent Diarrhea

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KEYWORDS

- Diarrhea • Enteropathy • Indigenous • Aboriginal
- Child • Management

GLOBAL DIARRHEAL DISEASE BURDEN

Infectious diarrhea remains one of the leading causes of childhood morbidity and mortality worldwide. It results from infection of the intestinal tract by a wide range of enteric pathogens that can disrupt intestinal function. The resulting symptom complex of diarrhea is characterized by an increased number of loose or watery (≥ 3 in 24 hours) stools. The term dysentery is used when blood, mucus, and white blood cells are present in the stool. The annual global burden of infectious diarrhea is enormous, involving 3 to 5 billion cases and nearly 2 million deaths, with the latter accounting for almost 20% of all deaths in children younger than 5 years.¹ Of these diarrhea-related deaths, acute watery diarrhea is responsible for 35%; dysentery, for 20%; and persistent or chronic diarrhea, 45%.² Most deaths are in young children from rural regions of developing countries where there is limited access to safe drinking water, sewage disposal, and health care, and reduced opportunities for personal sanitation, hygiene, and safe food preparation. In this setting, repeated episodes of enteric

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infection can contribute to malnutrition by interfering with nutrient absorption. As these episodes usually occur during the first few years of life, a period critical for physical growth and brain development, they can be followed by impaired linear growth, intellectual function, and school performance.³

In industrialized countries, where medical access is more readily available and modern standards of water quality, personal hygiene, sanitation, and food safety exist, deaths from diarrheal illness have decreased dramatically.⁴ However, sporadic diarrheal illness remains an important cause of morbidity, second only to respiratory infections as the most common cause of childhood infectious disease resulting in health-care attendance.^{5–8} Most episodes are caused by enteric viruses and are self-limited in nature, rarely resulting in persistent diarrhea, malnutrition, or death in a previously healthy child. Nevertheless, socially disadvantaged Indigenous children living in western industrialized countries experience high rates of severe diarrheal disease and, in some communities, the pattern of morbidity resembles that seen in developing countries.

BURDEN IN INDIGENOUS CHILDREN IN INDUSTRIALIZED SOCIETIES

In the United States, high rates of acute diarrheal disease are observed in American Indian (AI) and Alaskan Native (AN) infants residing in reservations or remote locations lacking adequate sanitation. **Table 1** summarizes 2 separate studies spanning 25 years conducted by the Centers for Disease Control and Prevention.^{9,10} During the early 1980s, the annual incidence of diarrhea-associated hospitalization for AI/AN infants younger than 12 months living in or near reservations was 1148 per 10,000 infants, which was more than 3 times that of other infants residing in the United States.⁹ However, by the 1990s, the annual incidence in AI/AN infants had fallen to 275 cases per 10,000 infants. Rates of hospitalization for diarrhea in older AI/AN children were also similar to that of the general US population. At the same time, the

	1980–1982			1993–1995			2000–2004		
	IHS ^a	US ^b	Rate Difference (%)	IHS	US ^b	Rate Difference (%)	IHS	US ^c	Rate Difference (%)
Age: <1y	1148	348	230	275	192	43	263	155	70
1–4y	81	78	4	36	64	-44	29	60	-52
Total	236	136	74	71	89	-20	66	79	-16

Age-specific incidence rates are per 10,000 children.

^a Indian Health Service hospital discharge data; rate estimates were calculated from the 1996 IHS user population.⁸

^b Rate estimates were calculated from the National Hospital Discharge Survey and the 1981 and 1994 national census data, respectively.⁸

^c National rate estimates for the US population were calculated from the 2003 Kids Inpatient Database and the 2003 national census data.⁹

Data from Holman RC, Parashar UD, Clarke MJ, et al. Trends in diarrhea-associated hospitalizations among American Indian and Alaskan Native Children, 1980–1995. *Pediatrics* 1999;103:e11; with permission and *from* Singleton RJ, Holman RC, Yorita KL, et al. Diarrhea-associated hospitalizations and outpatient visits among American Indian and Alaska Native children younger than five years of age, 2000–2004. *Pediatr Infect Dis J* 2007;26:1006–13.

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