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Prevalence of Diarrheal Pathogens in Two Anchorage Daycare Centers

In January 1986, the Epidemiology Office and the Department of Health and Human Services, Municipality of Anchorage, conducted a study to determine prevalence rates of enteric pathogens in two Anchorage daycare centers. Two daycare centers were selected arbitrarily; no illness was known to be occurring at the time of selection. Stool samples were collected on a total of 59 children, five years of age or under, who attended on a regular basis; 35 in daycare A and 24 in daycare B. Samples were analyzed in State laboratories for bacteria, parasites, and viruses known to cause diarrheal illness. Of the 59 participants, 21 (36%) submitted at least 3 stool specimens. We were able to test 85% of those at risk who were less than 2 years of age. However, as attendees increased in age, the number submitting stool samples dropped dramatically into the 10-25% range.

RESULTS

Among 59 children screened, no bacterial isolates were identified. Eight cases of giardia were confirmed; no other parasites were found (Table 1). Prevalence rates for giardia were 17% in daycare A and 8% in daycare B. Five of the eight giardia cases were in toddlers; giardia was not found in children less than one year of age (Table 2). A toddler is defined as a child between 13 and 30 months of age who is usually in diapers but can walk. In daycare A, the 6 cases of giardia were clustered in 2 rooms: 3 cases in the toddler area, and 3 cases in the 3-4 year olds. In daycare B, the 2 cases of giardia were among children in the toddler room also. Of the giardia cases, six were female, and two were male (Table 3). Four of the eight giardia cases including 3 symptomatics were also coinfecting with rotavirus. Four attendees, including one with giardia, were coinfecting with 2 viruses.

Follow-up of cases with giardia found six (75%) with symptoms of intermittent diarrhea, gas, bloating, stomach aches, or increased frequency of stools. The duration of the symptomatic cases ranged from three weeks to over one year. One individual, a 5-month-old male, previously evaluated for failure to thrive and milk allergy, began gaining weight after treatment for giardia. Associated family illness was found in three giardia cases.

Twenty-five viral isolates were identified from 21 participants (Table 1). Rotavirus was the most common viral isolate (N=11, 44%); Adenovirus 1 and 2 and Poliovirus 3 were also isolated. Prevalence rates for viral isolates were 43% in daycare A and 42% in daycare B (Table 1). Prevalence rates for rotavirus were 20% in daycare A and 17% in daycare B. Viral isolates were found in children from less than six months of age through greater than three years (Table 2). Of the viral cases, 13 were female, and eight were male (Table 3).

DISCUSSION

The prevalence rates for giardia (17% and 8%) in the two Anchorage daycares were lower than prevalence rates reported from other studies (21-26%). The prevalence rates of rotavirus (20% and 17%) were slightly higher than that seen in a survey of 30 daycare centers in Houston (12.4%).

As more children enter daycare, the risk of fecal-oral spread of enteric pathogens increases. Children in diapers are efficient transmitters of enteric pathogens. Aggressive follow-up of laboratory-confirmed cases of selected enteric diseases can stop the spread of disease in the daycare setting. Treatment of diseases in daycare participants coupled with follow-up of family members helps reduce person-to-person spread. Efforts need to be directed at case finding among family members and other young children, identification of both symptomatic and asymptomatic infected contacts, and consistent treatment of infected individuals. **The importance of handwashing after diapering and before meal preparation cannot be overemphasized.**

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Table 1. Results of Testing for Diarrheal Pathogens Among 59 Attendees at Two Daycares.

Daycare	Bacterial			Parasites			Viral		
	Number Positives	Number Tested	Rate %	Number Positives	Number Tested	Rate %	Number Positives	Number Tested	Rate %
A	0	35	0	6	35	17	15	35	43
B	0	24	0	2	24	8	10	24	42
Total	0	59	0	8	59	14	25	59	42

Table 2. Laboratory Positives Among 59 Children Screened at Daycares A & B.

Age (mo)	N	Bacteria	Parasites*	Viruses#
0-6	7	0	0	2
7-12	7	0	0	7
13-18	10	0	2	5
19-24	11	0	1	4
25-30	6	0	2	1
31-36	3	0	0	0
>36	15	0	3	2
Total	59	0	8	21

* All parasite positives were giardia.

Viral positives included the following:

Adenovirus 1 (5), Adenovirus 2 (4), Rotavirus (11), Polio 3 (4), and unspecified enterovirus (1). Four attendees were coinfecting with 2 viruses.

Table 3. Laboratory Positives by Sex (N = 59).

	Bacteria	Parasites*	Viruses	Total
Male (N=33)	0	2	8	10
Female (n=26)	0	6	13	19
Total	0	8	21	29

*All parasite positives were giardia.