

## SALMONELLOSIS ASSOCIATED WITH BABY CHICKS

**B**ABY CHICKS have become such popular Easter presents that they can be purchased by mail order. As pets, however, they join reptiles as sources of *Salmonella* for their owners as well as others who handle them and ingest their excreta. This issue of *CD Summary* describes chick-related cases of *Salmonella* infection in Oregon and elsewhere.

### MICHIGAN

In May 1999, the Michigan Department of Community Health (MDCH) was notified of an increase in *Salmonella* serotype Infantis infections with closely-related pulsed-field gel electrophoresis (PFGE) patterns; 21 cases were reported with an onset of illness during April 1-July 31, 1999. MDCH conducted a case-control study to identify exposures associated with illness.

Nineteen patients were matched by age and place of residence to 37 healthy controls using sequential-digit dialing. During the 5 days before illness onset, 14 (74%) of 19 patients had direct contact with young fowl or resided in a household that raised fowl (chicks, ducklings, goslings, pheasants, and/or turkeys) compared with six (16%) of 37 controls (matched odds ratio [MOR]=20; 95% confidence interval [CI]=3-378). In several households, young birds were kept inside the home. One child kept young birds in his bedroom, and another carried chicks inside his jacket.<sup>1</sup>

### MISSOURI

In April 1999, the Missouri Department of Health (MDOH) noted a cluster of *Salmonella* serotype Typhimurium infections with an identical PFGE pattern; 40 cases were identified with onset of illness during April 4-May 30, 1999.<sup>1</sup>

After exposure to young fowl emerged as a risk factor for infection, MDOH conducted a case-control study of persons exposed to chicks or ducklings to identify whether specific behaviors were associated with illness. Twenty cases were enrolled; 40 controls who had been exposed to chicks and ducklings during the same time period were identified through media advertisements and word of mouth.

During the four weeks before onset of patient illness, handling chicks or ducklings that were thought to be ill was associated with human illness (odds ratio [OR]=21; 95% CI=2-508); hand washing after handling fowl protected against illness ([OR]=0.0; 95% CI=0.0-0.2).<sup>1</sup>

### OREGON

Lest you think that chick-borne salmonellosis is only a Midwestern phenomenon, read on. In March-June, 1996, our state public health laboratory identified 16 cases of *Salmonella* serotype Montevideo, an unusually high number compared to the annual average of 9 cases during 1984-1995. In the case-control study which followed, 64% of persons with *S. Montevideo* infections compared with 5% of persons with other *Salmonella* infection had handled live poultry (chicks, hens or roosters) during the five days before onset of illness (odds ratio [OR]=31.5; 95% CI=2.5-1495). *S. Montevideo* case-control studies conducted by the Washington and Idaho health departments in 1995 and 1996 had similar results.<sup>2</sup>

That chick-borne salmonellosis is a recurring epidemiological phenomenon in Oregon and elsewhere is demonstrated by our latest cluster of cases.

Eight cases were reported in February and March, 2000 — a case count well above the average of the 2.6 cases during February and March in each of the years 1997-1999.

Preliminary investigation found that six of the eight cases had some kind of contact with baby chicks shortly before the onset of symptoms; recent survey data indicate that, on average, 0.9% of Oregonians confess to having had contact with a chick in any given seven-day period.<sup>3</sup> Given this background rate, the probability of finding, by chance alone, that at least 6 of 8 cases had recent chick contact is  $1.53 \times 10^{-11}$ . The six chick-associated cases were residents of five different counties, but all six had isolates with closely related PFGE patterns; these differed from the patterns of the non-chick-associated isolates. *Salmonella* serotype Montevideo was recovered from three of four baby chicks that belonged to one case; PFGE patterns from these isolates matched the outbreak pattern. All of the chick-associated cases had bloody diarrhea. Chick-associated cases ranged from three months to 36 years (mean, 13 years) of age; four were  $\leq 5$  years old, suggesting that young children are particularly at risk of acquiring this type of salmonellosis.

Of the implicated fowl that were traceable, 83% had been shipped from a single hatchery, and the eggs purchased at a single farm. Day-old chicks were shipped in lots of 25 to 100 birds, and usually were raised by the family purchasing them for meat and eggs. No environmental samples from the hatchery were obtained.



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Although most of the estimated 1.4 million human salmonellosis cases that occur annually in the United States are probably caused by foodborne sources,<sup>4</sup> direct contact with animals, particularly reptiles and occasionally birds, also may be a source of infection.<sup>2,5-6</sup> Most reptiles and many birds shed *Salmonella* in their feces. Humans become infected when fecally contaminated food, hands, or other objects are placed in the mouth. Outbreaks demonstrate that handling young fowl can be a risk for *Salmonella* infections, particularly in children who receive fowl as gifts during Easter season; children may have more frequent hand-to-mouth contact and be less likely to practice hand washing after handling fowl or having direct contact with their excreta.

To prevent the transmission of *Salmonella* from chicks, ducklings, and other young fowl to humans, persons should avoid contact with feces and carefully wash their hands with soap and water after handling young fowl or anything that they have contaminated. Chicks, ducklings, and other young fowl may not be appropriate pets for children and should not be kept in households with infants, children less than 5 years of age, or immunocompromised persons.

Consider the diagnosis of salmonellosis in patients presenting with diarrhea, abdominal cramps, and fever. Hydration is paramount in the treatment of non-typhoidal salmonellosis, and antibiotics have little, if any, bene-

fit in uncomplicated illnesses.<sup>7</sup> In fact, antibiotics may prolong excretion of the organism.<sup>8</sup>

More information about salmonellosis can be found on our web site at: <http://www.ohd.hr.state.or.us/acd/salmonella/home.htm>

And, as always, report salmonellosis cases to your local health department within one working day of identification.

#### REFERENCES

1. CDC. Salmonellosis associated with chicks and ducklings — Michigan and Missouri, spring 1999. MMWR 2000; 49:297-9.
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3. CDC. Foodborne Diseases Active Surveillance Network (FoodNet): Population Survey Atlas of Exposures: 1998-1999. Atlanta: Centers for Disease Control and Prevention; 1999, p. 228.
4. Mead PS, Slutsker L, Dietz V, et al. Food-related illness and death in the United States. Emerg Infect Dis 1999; 5:607-25.
5. Mermin J, Hoar B, Angulo FJ. Iguanas and *Salmonella* Marina infection in children: a reflection of the increasing incidence of reptile-associated salmonellosis in the United States. Pediatrics 1997; 99:399-402.
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#### WHAT'S NEW FOR FLU 2000/01

THE RECOMMENDATIONS of the CDC Advisory Committee on Immunization Practices on the use of influenza vaccine and antiviral agents were published on April 14, 2000 (MMWR 2000;49 [No. RR-3]:1-38).

These recommendations include five principal changes over those of last season:

- the age for universal vaccination has been lowered to 50 years from 65 years;
- scheduling of large, organized vaccination campaigns after mid-October may be considered because the availability of vaccine in any location cannot be assured consistently in the early fall;
- 2000-2001 trivalent vaccine virus strains are A/Moscow/10/99 (H3N2)-like, A/New Caledonia/20/99 (H1N1)-like, and B/Beijing/184/93-like strains. For the A/Moscow/10/99 (H3N2)-like antigen vaccine manufacturers will employ the antigenetically equivalent A/Panama/2007/99 (H3N2) virus and the B/Yamanashi/166/98 virus for the B/Beijing/184/93-like antigen; these viruses will be used because of their growth properties and because they are representative of currently circulating A/Sydney (H3N2) variants and B viruses;
- information on neuraminidase-inhibitor antiviral drugs has been added, and;
- a list of other influenza-related infection control documents for special populations has been added.

This report and other information on influenza can be accessed at the CDC website: <http://www.cdc.gov/ncidod/diseases/flu/fluvirus.htm>