Isolating *E. coli* O157 Cases May Halve Its Spread

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The immediate isolation of children with acute *Escherichia coli* O157 infection could potentially decrease the number of secondary cases by half, according to results of a retrospective study of 89 primary cases in a 2005 outbreak.

In particular, the researchers estimated that by quarantining patients who are at the highest risk of transmitting the infection (those aged 10 years and younger who have a sibling), the number needed to be isolated to prevent one case of life-threatening hemolytic uremic syndrome (HUS) is only 47.

In comparison, the number of household contacts needed to be treated with prophylaxis to prevent one secondary case of meningococcal disease is 218, and the secondary attack rate for that disease is 10 times lower than the secondary attack rate for HUS (4%), Dr. Dirk Werber and his associates reported (Clin. Infect. Dis. 2008;46:1189-96).

In an editorial comment accompanying this report, Dr. Christina K. Ahn and her associates said that if these findings are confirmed in further studies, "we should carefully consider the compelling empirical data from Werber et al. in favor of the commonsense practice of quarantine … of all patients with plausible or definite *E. coli* O157:H7 infection during acute illness."

Dr. Werber of the National Public Health Service of Wales, Cardiff, and his associates observed that in a 2005 outbreak of *E. coli* O157 infection primarily involving Welsh children who ate tainted meat in school meals, the source of infection was rapidly identified and removed. Yet many secondary infections occurred among household contacts of infected children.

Because the prevention of household transmission of this infection has not yet been investigated, the researchers conducted a retrospective cohort study to assess whether the immediate isolation of primary case patients would have prevented transmission.

There were 89 primary case patients in the study. All 25 cases of secondary infection developed in family members of the primary cases, the majority of them in younger siblings. HUS developed in four of these siblings, one of whom died.

A risk analysis showed that the presence of a sibling and young age (younger than 5 years) in the primary case patient were independent predictors that a secondary case would develop. Children aged 5-10 years also were liable to transmit the infection to family members.

Complete information was available for only 15 secondary cases. Seven of these were deemed to have been preventable, if the primary case patient had been isolated when diagnosed. All four secondary cases in which HUS developed were among these preventable cases.

Dr. Werber and his associates estimated that in future outbreaks, the isolation of all primary case patients as soon as they are diagnosed would cut the rate of secondary cases by half. And in at-risk households, only 47 primary cases patients would need to be quarantined to prevent one case of HUS from developing in a family member.

The researchers added that hospitalizing these patients would be the easiest and most effective means of isolating them. A substantial portion of patients with *E. coli* O157 (20% in this outbreak) will require hospitalization anyway, and quicker access to IV fluids may mitigate the risk of HUS.

In their editorial comment, Dr. Ahn and her associates agreed that hospitalization is the best method of quarantine because medical professionals are better able to manage infection control than are parents (Clin. Infect. Dis. 2008;46:1197-9).

"It is unreasonable to expect families to implement measures that even begin to approximate [a hospital's] hygienic standards at home. … [Also,] caregiver fatigue must be considered, because infected children are often awake for much of the night, because they are in pain. Exhausted parents might be less able to adhere to sanitary practice," Dr. Ahn and her associates said.

Moreover, preventing even one case of secondary infection leading to HUS "justifies hospitalizing many additional infected children while they are acutely ill. … The vascular injury that presumably precedes and leads to renal injury following *E. coli* O157:H7 infection is already well underway by the time such patients present for medical attention," they added. ■