

ID CONSULT

Multidrug-Resistant Shigellosis Outbreaks

As my community battles another large *Shigella* outbreak, I wanted to point out a few aspects of the infection that are often overlooked.

An estimated 450,000 cases of shigellosis occur every year in the United States, the majority among children who are not yet toilet trained. Here in the Kansas City area, we've had an ongoing *Shigella sonnei* outbreak since November 2009, with more than 250 cases diagnosed to date.

While the diarrhea is usually mild and self-limited, it is highly contagious through the fecal-oral route. Treatment is recommended for confirmed cases, both to stem transmission and to shorten disease duration. Of concern, resistance to trimethoprim-sulfamethoxazole has risen dramatically, from 47% in 1999-2003 to 89% in 2006. Ampicillin resistance also jumped, from 80% to 86%, while strains resistant to both drugs rose from 38% to 89% (MMWR 2006;55:1068-71).

However, azithromycin remains a good choice for treatment and is recommended in the Red Book as a potential treatment option for shigellosis. Dosing is 10 mg/kg one time on day 1 and then 5 mg/kg once a day for 4 more days (maximum 500 mg on day 1 and 250 mg thereafter). Microbiology labs do not routine-

ly report azithromycin-susceptibility data, but randomly selected isolates have been tested during our current outbreak and thus far all are susceptible.

Most isolates are also susceptible to both ceftriaxone and ciprofloxacin, but both of those drugs are approximately five times more expensive than azithromycin is, and fluoroquinolones aren't approved for treating shigellosis in children younger than 18 years of age unless there are no other choices.

Some data also support the use of oral cephalosporins, but eradication rates are lower than with other drugs, so they currently are not recommended.

The last *Shigella* outbreak in Kansas City, in 2005, involved more than 400 cases over a period of 6 months and also featured a multidrug-resistant strain. Most children had mild disease, but we encountered an obstacle in that Missouri state law requires two negative stool cultures after treatment before the child can return to school or day care, which typically took 2-3 weeks to achieve. Appropriate treatment was often delayed because of empiric therapy with drugs to which strains were resistant and/or preauthorization requirements for using alternative drugs. Getting the families to come back for the repeat culture also was often a challenge.



BY MARY ANNE JACKSON, M.D.

There are few data to support exclusion policies that mandate two negative cultures. In contrast, some data suggest that such policies prolong the outbreak, in part because some parents will simply move their child to another day care center without mentioning the infection or drop them off at the local water park.

In some states, children with a single negative stool culture may attend child care but are excluded from interacting with other children. Such "cohorting" of convalescing children is better than excluding them entirely. This makes sense because data suggest that if the first convalescent stool culture is negative, the second one almost always is as well (Pediatr. Infect. Dis. J. 2010 May [doi: 10.1097/INF.0b013e3181e4e6e]). I would like to see a change in the regulations that would allow children to re-enter day care sooner.

Of course, it isn't surprising that day care attendance could facilitate transmission of *Shigella*. Ingestion of as few as 10 organisms is sufficient to produce infection. In a study a few years back, Dr. Andi Shane, a pediatric infectious disease specialist at Emory University, Atlanta, identified several risk factors for prolonged transmission in such settings, many of which are modifiable: soiled diapers accessible to children, water activities involving kiddie pools, volunteers who diapered infants, employed staff who had not received formal hand-wash-

ing education, hand-washing supplies that were kept out of the reach of children (and presumably the adults too!), and no adult supervision provided for hand washing in young children (Arch. Pediatr. Adolesc. Med. 2003;157:601-3).

The key to minimizing the transmission of shigellosis in day care centers is clear. Appropriate hand washing and diapering practices must be adhered to. This should include scheduled hand washing for everyone on arrival at the day care center, before meals, or after playing outdoors, along with supervised hand washing for young children. Banning kiddie pools could go a long way too but may not be a good idea on these hot summer days.

Just to note: Shigellosis isn't exclusive to children. After our last day care outbreak, I alerted our community to the history related to the Rainbow Family Gathering, a national event orchestrated by a group promoting world peace. Poor sanitation coupled with common sources for food and water facilitated person-to-person spread and one of the largest outbreaks ever reported (J. Infect. Dis. 1990;162:1324-8).

DR. JACKSON is chief of pediatric infectious diseases at Children's Mercy Hospital, Kansas City, Mo., and professor of pediatrics at the University of Missouri-Kansas City. Dr. Jackson said she had no relevant financial disclosures to make. E-mail her at pdnews@elsevier.com.

Perceived HPV Vaccine Safety, Efficacy May Drive Uptake

BY SUSAN LONDON

FROM THE ANNUAL MEETING OF THE PEDIATRIC ACADEMIC SOCIETIES

VANCOUVER, B.C. — Parental beliefs regarding both vaccine safety in general and the effectiveness of the human papillomavirus vaccine appear to be one of the main drivers of this vaccine's receipt among adolescent girls from a predominantly Latino population, according to the results of a small study.

A physician recommendation to vaccinate is also key, Dr. Nava Yeganeh reported in a poster at the meeting.

In a survey of 95 parents of adolescent girls who visited a free clinic in Los Angeles, 37% of the daughters had been vaccinated. Compared with parents of nonvaccinated daughters, parents of vaccinated daughters were more likely to believe that vaccines in general are safe (94% vs. 76%) and that the human papillomavirus (HPV) vaccine prevents cervical cancer (91% vs. 50%).

Parents most often cited the

prevention of cervical cancer and a physician's recommendation as their reasons for having vaccinated their daughter, or for wanting her to get the vaccine.

"Our findings support that clinical physicians should emphasize the vaccine, recommend it, and talk about its safety as well as its efficacy in preventing cervical cancer," Dr. Yeganeh said in an interview.

HPV-related disease disproportionately affects Latino Americans. "And they have the highest morbidity and mortality with it," she noted.

Hence, understanding the facilitators of and barriers to HPV vaccination in this population is especially important.

She and her colleagues approached parents who were waiting for an appointment at the clinic, where the HPV vaccine had been offered at no charge for more than 1 year.

Those having daughters aged 11-17 years were asked to complete a verbally administered questionnaire in private.

Of the 95 parents who par-

VITALS

Major Finding: Compared with parents whose adolescent daughters had not been vaccinated for HPV, parents with vaccinated daughters were more likely to believe that vaccines are safe (94% vs. 76%) and that the HPV vaccine prevents cervical cancer (91% vs. 50%).

Data Source: A survey of 95 parents of adolescent girls who were visiting a free clinic that serves a largely Latino population.

Disclosures: None was reported.

ticipated, most were the mothers (98%) and were Latino (91%), reported Dr. Yeganeh, an infectious disease fellow at the University of California, Los Angeles. On average, the daughters were 14.6 years old.

Overall, 77% of the parents had heard of the HPV vaccine, and 37% had already had their daughters vaccinated.

In analyses that were restricted to the parents who had heard of the vaccine, those with vaccinated daughters were more likely to be Latino (100% vs. 82%; $P = .01$), and to believe that vaccines in general are safe (94% vs. 76%; $P = .03$) and that the HPV vaccine prevents cervical cancer (91% vs. 50%; P less than .01).

In contrast, the groups did not differ significantly with respect to other demographic factors (education, household income, or political views) and other health-related factors (having a primary care provider, having health insurance, believing that the HPV vaccine prevents warts, having received a Pap test in the past year, or being concerned about cervical cancer, among others).

The leading sources of information about the HPV vaccine were the TV, news, and the Internet, cited by 70% of parents, followed by doctors and clinics, cited by roughly 60%. None of the parents mentioned their daughter's school as an information source.

The leading reasons for having vaccinated their daughters or wanting them to receive the vaccine were to prevent cervical cancer, cited by 97% of parents, and because a doctor recommended it, cited by about 55%.

"That, I think, is really key," Dr. Yeganeh commented. "A lot of studies have shown that if a doctor recommends it, people are more likely to vaccinate their child."

When the parents who had heard of the vaccine but had not had their daughters vaccinated were asked why, 55% said they needed more information and 29% cited missed opportunities (for example, the clinic did not have the vaccine or their doctor did not recommend it).

"There has been a lot of backlash in the media about this being a sexually transmitted disease," she continued.

However, only 8% of these parents said that they had not had their daughters vaccinated because they were worried that doing so would encourage promiscuity. About 18% had concerns about safety.