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Computerized surveillance system quickly detects disease outbreaks among preschoolers

SAN DIEGO – A web-based system that allows preschools and child care centers to report illnesses to local public health departments could improve the detection of disease outbreaks and allow resources to be mobilized more quickly, according to research to be presented Saturday, Oct. 11 at the American Academy of Pediatrics (AAP) National Conference & Exhibition in San Diego.

Researchers who designed the biosurveillance system will describe how it can be used to track illness trends and improve public health response to outbreaks during a presentation at 2:09 p.m. PDT in Marina Ballroom Salon E at the San Diego Marriott Marquis.

“For example, if certain child care centers are reporting the beginning of stomach flu (vomiting and diarrhea), other centers can start taking steps to thoroughly clean to kill any viruses before symptoms occur or before a major outbreak takes place,” said Andrew N. Hashikawa, MD, FAAP, assistant professor in the Department of Emergency Medicine and Pediatrics at University of Michigan.

In addition, if child care providers see that larger centers in their community are reporting flu-like illness, they can use the data to emphasize to parents the need to have their children immunized against influenza sooner rather than later, Dr. Hashikawa said.

Children under age 5 generally become sick earlier and more frequently than school-aged children and adults because their immune systems are underdeveloped. Young children often are responsible for spreading viruses to the rest of the community.

Previously, some public health departments have found that school absenteeism as a marker for illness was imprecise, delayed and unavailable during summer and winter breaks. “However, child care or preschool absences are typically more likely to be associated with illness and most young children continue to need child care for most of the year,” said Dr. Hashikawa. Most public health departments do not electronically track influenza or stomach illnesses in preschools and child care centers settings. “Most illness reporting methods used by many public health departments are slow, paper-based and inefficient,” Dr. Hashikawa noted.

To improve reporting, Dr. Hashikawa and his colleagues created a computerized system and tested it at four early learning centers in Michigan. Staff were trained to use the system daily to report any ill child. No confidential or identifying information was collected. They entered data on illness type and symptoms in seven categories commonly seen in preschoolers: fever, influenza-like illness, pink eye, stomach illnesses (gastroenteritis), cold or respiratory symptoms, ear infections and rash. They also entered the age range of the ill child (infant, 0-12 months), (toddler, 13-35 months) or (preschooler, 36-59 months), daily attendance at their center, and action taken (e.g., child brought to a physician).

Researchers sent data electronically to the public health department weekly or more frequently if spikes in illness cases were seen.

Results showed centers reported 188 individual episodes of illness from Dec. 10, 2013, through March 28, 2014. Nearly 15 percent were infants, 32 percent were toddlers and 54 percent were preschoolers. The most common illnesses reported were gastroenteritis (37 percent), fever (31 percent), cold (17 percent) and influenza (3 percent).

Data also revealed an unusually large increase in gastroenteritis cases during a two-day period, which was comparable to a countywide spike among schools reported three weeks later.

“Preliminary data suggest that using the online biosurveillance in child care centers and preschools gives us an earlier detection and warning system because the younger children appeared to become sick first compared to middle school and high school aged children within the community,” Dr. Hashikawa said.

To view the abstract, “Implementation of Web-Based Surveillance of Illness in Early Learning Centers: A Pilot Study,” visit <https://aap.confex.com/aap/2014/webprogrampreliminary/Paper25005.html>.

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