In early 2014, due to a combination of lax vaccination and boosters among the general public and religious prohibition within the Amish and Mennonite to the east, west and north of Central Ohio, the highly infectious virus that causes mumps reemerged in Ohio. Communities such as the northern Columbus exurb of Delaware County were affected, with cases appearing both on the campus of Wesleyan University in the City of Delaware and in the various school systems in Delaware County. Vaccination efforts were undertaken at the local health department, while the Ohio Department of Health and the CDC were mobilized for support and case tracking and tracing efforts. The Delaware Gazette attempted in-house near-daily coverage – something it previously would have left to wire services – with a local angle. Here is a selection of that coverage.

County inquiry into mumps cases continues

DGHD epidemiologist is leading probe

March 29, 2014

By Stacy Kess
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When there is a possible outbreak of a disease in Delaware County, Delaware General Health District epidemiologist Travis Irvan is on the case.

Irvan isn't a field detective, but it is his job to investigate when diseases are reported to DGHD. Right now, he's focused on mumps.

Seven suspect cases of mumps – meaning they have not yet been confirmed by a lab result – have been reported to DGHD as of Friday afternoon. Irvan's job is to monitor the situation, review the data, analyze the results and put the puzzle together.

"An epidemiologist is a staff person at (a health department) and their main job is disease investigation and surveillance," he said. "We're not looking through a microscope."

The Ohio Department of Health requires that certain diseases such as the mumps be reported to the health department so an investigation into the cause, possible spread and effect on the community can be conducted.

"The investigation typically starts out with a phone call," Irvan said.

Those calls are his first tip, and they come from a variety of sources: doctors, school nurses or other health care providers. It's Irvan's job, with the help of his infectious disease team, to follow up.

"We want to confirm the diagnosis," he said. "We want to talk to the doctor, talk to the parent or guardian, get the signs and symptoms and see if there are any lab results pending."

He also tracks if the affected person had contact with others who are symptomatic and if they have had the vaccine.

Irvan's background is in public health, an area in which he and most epidemiologists hold a master's degree. They are trained to look at diseases from flu to obesity from a standpoint prevalence in the community. They are data crunchers – analyzing the statistics and assessing the situation to find the answers.

In the case of mumps, Irvan is watching the number of reports he receives from the community and waiting on the lab results to find out if any of the cases are confirmed.

“With seven cases, we would say it’s a community-wide outbreak, but we have to have lab confirmation before we say that,” he said.

If one case is confirmed by the Centers for Disease Control and Prevention (CDC), all other cases in an area are then considered probable.

As of Friday, he said, none of the seven suspect cases have any known links to each other, and none have links to the central Ohio outbreak now affecting 103 people in six counties. Most of those cases are in Columbus and 81 have been linked to an outbreak that started at The Ohio State University.

At Columbus Public Health, a small team of epidemiologists, doctors and nurses meets regularly. This Outbreak Response Team grows when an outbreak is found. For situations like the current mumps outbreak, Health Commissioner Dr. Teresa C. Long, Medical Director Dr. Mysheika Williams Roberts and Chief Nursing Officer Nancie Bechtel are brought in to help with the investigation, along with Jose Rodriguez, the director of public affairs and communications to keep the media informed and the public educated.

CPH is leading the investigation in collaboration the Franklin County Health Department because 91 percent of the cases were reported in Columbus. CPH also investigated cases in other counties to see if they were related to the initial OSU outbreak, but those counties’ health districts will conduct their own investigations if new cases occur. Rodriguez said no matter what, all the health districts will remain in close contact because it’s their job to investigate while they contain the outbreak.

In Delaware, the cases remain under the watchful eye of Irvan and his team.

For now, Irvan must wait on lab results before he can say there is an outbreak. During that wait, he said he’s pushing prevention: vaccination, hand washing and isolation if symptoms occur. He is also has contacted schools, a place where a disease like mumps, that is spread through droplets from the nose or mouth in the air, can easily transmit from one person to another.

“We want to continue protecting the community,” he said.

Multiple factors allowed for outbreak

April 2, 2014

Vaccination rates cited as a major cause for spread of mumps

In just a matter of weeks, a rarely seen viral infection has spread to more than a hundred people in central Ohio.

Mumps was first reported at The Ohio State university in early February and spread into the community in March. Columbus Public Health declared an outbreak on March 24. At that time, the Delaware General Health District had received report of a few possible cases, none of which was confirmed by lab testing.

Ohio counties typically see at most one or two cases a year.

U.S. outbreaks are often small, but they are occurring.

The last mumps outbreak in Ohio affected only 18 people in Lake and Cuyahoga counties in 2010. A large-scale outbreak starting in Iowa in 2005 grew to more than 6,500 cases across the Midwest in 2006, affecting mostly college campuses.

“People ask the question: I got the mumps vaccine, so why (is there an outbreak)?” said Dr. Joseph Gastaldo, an infectious disease physician from the Riverside Infection Consultants and a doctor at Grady Memorial Hospital. “It’s hypothesized, the real reason we have a mumps outbreak is multi-factorial.”

To get a large-scale outbreak such as that affecting central Ohio, “all the stars have to be aligned,” he said.

Losing immunity

The measles, mumps and rubella vaccine was first introduced to the public in 1968. People born before 1957 are considered to have a natural immunity to mumps because of the likelihood of having contracted the illness prior to the availability of the vaccination.

Now vaccination is recommended between 12 and 15 months of age, with a second dose between 4 and 6 years of age for children.

“The mumps vaccine in the MMR is 80 to 90 percent effective,” said CPH Medical Director Dr. Mysheika Williams Roberts. “We are only as strong as our weakest link, so whenever we have a potential individual unvaccinated, any of us can be at risk.”

The CDC recommends some adults receive a booster shot, and Gastaldo said it is a good idea for those living in close quarters, such as college students. Health care workers and military personnel are also encouraged to be vaccinated with MMR.

“That’s something that needs to be recommended more for the public: are you a candidate for a repeated dose as an adult,” he said. “What I tell primary care physicians is if people are concerned, just give it to them because who can remember what vaccines they’ve have.”

The vaccine booster is available to all adults because, like any vaccine, it does lose effectiveness over time, though there is no certainty about how long that takes. For others, despite vaccination, their bodies never convert to immunity.

“Although vaccines are imperfect, but I can tell you they do save lives,” Gastaldo said.

In the Columbus outbreak, Roberts said 25 cases had confirmation of two doses of the vaccine, while 28 stated they had both doses but did not have confirmation. Thirteen cases reported were vaccinated with only one dose.

“The rest are a mix,” she said.

The statistics are why public health officials promote vaccination. The more people vaccinated, the less likely for mumps to spread. The idea is to create a “herd immunity” – enough people immune to a virus to protect those that cannot receive the vaccine.

That concept can be a problem, Gastaldo said.

“That’s always been an excuse for people not to get it, but that’s a naive statement,” he said. Herd immunity is not reached unless roughly 90 percent of the population is immunized against a virus.

Children are usually required to be vaccinated before they begin attending school in Ohio. There are medical exemptions to receiving MMR, such as a compromised immune system and pregnancy. Some may choose not to vaccinate on religious grounds. Ohio allows for such exemptions for children with a written form to be provided to schools. That form also includes an exemption option for “Good cause,” which includes any other objection to vaccination.

Some of those objections include fear of side effects of vaccination.

“I think I would tell people I’d be more afraid of mumps and the virus than the vaccine,” Gastaldo said.

The anti-vaccination movement

Gastaldo said one of the biggest problems doctors and public health officials are facing when it comes to outbreaks of preventable diseases is vaccination rates.

“There are people who don’t get the vaccine,” he said. “People choose to not vaccinate their kids.”

He said a vocal anti-vaccination movement has been growing in the U.S. since an article in the 1998 British medical journal, The Lancet, suggested a link between problems such as autism and the measles, mumps and rubella vaccine (MMR). The paper has since been discredited by doctors and researchers around the world; has been renounced by the U.S. Centers for Disease Control and Prevention (CDC) and the World Health Organization; and was retracted by The Lancet in 2010. The lead researcher, Andrew Wakefield, lost his license to practice medicine in 2010 based on falsification of information in the 1998 paper.

“These (links) have been debunked by credible science, but unfortunately not everybody understands or remembers the science, they just remember the headlines,” Roberts said.

The paper spurred a growing anti-vaccination community in the U.S. and Great Britain.

“When you have such a profound public statement made, there are other people who believe it,” Gastaldo said. “And the damage is done.”

According to the CDC, vaccination rates since 2006 for one of more doses MMR given to children 19 to 35 months of age have remained relatively flat, fluctuating between 89 percent and 93 percent both in Ohio and nationally. The data is collected from providers and random-sampling telephone calls (including cell phones) and corrected for non-response or for unreliable records. The CDC said while the numbers exceed the goal of 90 percent, unvaccinated groups are often clustered in communities and create a potential for outbreak. These small clusters can include religious communities or others who object to vaccination.

While vaccination rates are good in the U.S., England has continued to battle anti-vaccination sentiment and the number of mumps cases reflects the shift in attitude after the 1998 Lancet report.

In England and Wales, fewer than 150 lab-confirmed mumps cases were reported in 1996, 1997 and 1998, when the Public Health England began tracking and compiling such data. That number more than doubled in 1999, when 373 lab-confirmed cases were reported. The number of cases has remained in the thousands since then, skyrocketing to more than 43,300 lab-confirmed cases in 2005. Provisional data shows more than 4,000 lab confirmed cases in 2013.

Data from the U.S. and Ohio is more sporadic. Mumps reports dropped from in the 600s in 1997 and 1998 nationally to less than 350 from 1999 to 2005. Reported cases hit a low in 2003 with 231. Ohio had 29 reported cases in 1998, 21 in 1999, 9 in 200, then maintained zero reported cases from 2001 to 2004. Only two cases were reported in Ohio in 2005. In 2006, reported cases jumped to 45 – the year of the multi-state outbreak –then dropped into the 20s for 2007 and 2008. Only six cases were reported in 2009 and 1 case in 2010. Eleven cases were reported in 2011 and only eight were reported in 2012. Twelve cases were reported state-wide in 2013.

Close quarters

“The third reason (the mumps outbreak) is occurring is the way mumps is transmitted,” Gastaldo said.

Mumps is a contagious virus that spread through droplets from the nose and mouth, but it requires close contact, much like mononucleosis. Transmission occurs through sharing silverware or cups or other direct transmission.

“You really have to have close intimate contact with (an infected person),” Gastaldo said. “When you say spread from person to person, you can’t get it from looking someone at a distance. It doesn’t float in the air.”

The current central Ohio outbreak began at OSU and has mainly affected OSU students because of this. The multi-state 2006 outbreak also mainly affected college campuses because of close living quarters such as dorms.

Though most patients are symptomatic 14 days after catching the virus – patients often experience fever, body aches, fatigue, swelling of salivary glands, or pain with chewing or swallowing – Gastaldo said about a third of patients will be sub-clinical, showing very few symptoms or no symptoms at all. These people still shed the virus and can still infect others.

Though severe side effects such as deafness or encephalitis (swelling of the brain) are rare, it does occur.

“Those are the ones you hear about it in the news,” Gastaldo said.

But there are other costs to getting the mumps. Ohio requires that those symptomatic of mumps be quarantined for five days after symptoms begin. When a person is contagious with the mumps, it is easily spread from person to person.

“The lesson is get your vaccine and know the symptoms,” Gastaldo said.

Classifying mumps

• Outbreak: three or more probably or confirmed cases clustered in a time and place, and the cases are likely related. (Ohio Department of Health)

• Suspect: symptoms of parotitis (acute salivary gland swelling) is present without another apparent cause. A case may also be considered suspect if the laboratory test is suggestive of mumps without clinical information, whether or not it has a likely link to a confirmed or probable case.

• Probable: a laboratory test confirms an antibody against the mumps or if the case is linked to a probable case, confirmed case or defined group during an outbreak.

• Confirmed: the patient presents clinically as the mumps and laboratory tests confirm the virus. During an outbreak, once one case is confirmed, all subsequent cases are categorized as probable.

Mumps in Delaware County

• 7 suspect cases

• Lab results are still pending on all cases

• No established link between cases or to the Central Ohio outbreak reported

Mumps outbreak in Central Ohio

• 116 cases of mumps

• 93 of the total number of mumps cases have been linked the OSU outbreak

Lessons from past outbreaks vital mumps spreads

April 7, 2014

By Stacy Kess
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While the public focuses on the current mumps outbreak in central Ohio, experts are using lessons from the past to manage the present.

Local health districts, the Ohio Department of Health, and the Centers for Disease Control and Prevention (CDC) are working together to monitor and control the viral infection now affecting 150 people in Ohio.

ODH noted the boundaries of the outbreak are in Delaware and Franklin counties. Late Friday, ODH adjusted the number of cases in Delaware County to nine residents and Columbus Public Health reported 135 cases are now identified in Franklin County. Of the cases reported to CPH, 99 are linked to The Ohio State University, where the first cases were identified in January.

ODH noted isolated cases of mumps in Athens, Belmont, Fairfield and Hamilton counties, and two cases in Licking County, and said these outlying cases are related to the outbreak in Delaware and Franklin counties as all those identified attend school or work in the outbreak area.

CPH has also identified a case of mumps in Union County related to the OSU outbreak.

The most recently identified patient had symptoms begin on March 30, ODH reported.

“I think the key to any outbreak handling (is to) have that rapid response and strong community communication,” said Amy Parker Fiebelkorn, an epidemiologist with CDC’s Division of Viral Diseases.

Fiebelkorn has studied the history of the mumps and its outbreaks, and said as far as outbreaks go, ODH, CPH and the Delaware General Health District are managing it well.

“We have been in close contact with your state and local health departments,” she said. “They have done a phenomenal job. They’ve been very proactive.”

That’s where history comes into play.

Ohio faced its last outbreak in 2010, but several other outbreaks occurred in the last decade in other areas of the U.S., including a large resurgence in 2006, during which more than 6,000 individuals across the Midwest were identified as infected with mumps.

“It occurred among vaccinated individuals, and we saw it primarily on college campuses,” Fiebelkorn said. “That brought mumps back into focus. It had become sort of the forgotten disease.”

It was forgotten because of the control placed on it by the vaccine introduced in 1967 that was soon after offered to the general public.

Before 1957, it was generally accepted as a common illness. Fiebelkorn said epidemiologists believe more than 90 percent of individuals born before 1957 had the mumps before age 14. She said the number of identified cases is a 99 percent reduction from the number of cases reported prior to 1957.

Though general vaccination with the measles, mumps and rubella vaccine (MMR) began in the late 1960s, it wasn’t until the mid-1970s when it was recommended all children receive one dose of MMR. Immediately, there was a decline in reported cases.

In 1989, the recommendation became two doses of MMR for children due to continued issues with measles, but the unintended reduction in mumps cases was welcomed by health care professionals.

“We started having a much higher percent of children and babies that were vaccinated,” she said. From that year through 2001, identified mumps cases showed a “dramatic decline.”

From 2001 to 2005, the CDC recorded an average of 200 to 300 mumps cases a year. Occasionally, a small outbreak would occur, Fiebelkorn said, but that would mainly affect small pockets of vaccinated groups.

In 2006, when mumps spread across the Midwest from college to college, the CDC recommended isolation for five days for symptomatic patients and that people receive two childhood doses for best protection. Still, the virus spread.

“One of the features of mumps is asymptomatic transmission,” Fiebelkorn said. “Even if you’re vigilant about isolation, you can still spread it before parotitis (gland swelling).”

That ability to spread mumps before a patient shows symptoms became a central feature of the 2006 multi-state outbreak – especially with college students living in close quarters where bedrooms, bathrooms and many other spaces are shared.

“The college campuses tried to (contain) it the best that they could,” Fiebelkorn said.

Eventually the outbreak slowed and the virus seemed to die out.

But in 2009, the CDC recorded two other outbreaks: 3,000 cases in the Northeast in an isolated religious group and 500 cases in Guam.

“Both of these populations had had the recommended two doses,” Fiebelkorn said. “We thought we’d see if a third dose (of MMR) would help.”

She said the data of whether a third dose does make a difference has been hard to collect because the virus is often self-limiting and the outbreaks remain small.

Ohio’s last outbreak in 2010 was somewhat different in that it affected a tradition-observant religious community in Lake County. Some cases were identified in Cuyahoga County as well. In total, the outbreak was limited to 18 individuals.

Chris Kippes, Director of Epidemiology, Surveillance and Informatics at the Cuyahoga County Board of Health said obtaining immunization status of affected individuals was important then and remains important in any investigation, even if the population is not likely to be vaccinated as it was in the 2010 outbreak.

He said the health department did many things as they normally would in any outbreak investigation – recommend appropriate vaccines, restrict individuals from settings where it would be easy to spread and educate the public on symptoms and transmission.

It was communication that became the lesson for Lake and Cuyahoga counties.

“Sometimes we don’t have all the information reported to us… so that leaves us reaching out to providers in the community,” Kippes said.

Kevin Brennan, director of communications for the Cuyahoga Department of Health, said that required creating a bridge to the affected community.

“One of the biggest lessons learned from it was identifying or developing advocates in the community who are community stakeholders,” he said. “Finding that advocate or liaison who best understands that community and translating the information to the communities, that was one of the biggest lessons learned.”

Although the current outbreak affected college students, not an isolated religious community, Brennan said reaching out to the affected group in a way best understood by those in the group is still important.

“I think it parallels how best we communicate among college students versus a religious community,” he said.

DGHD epidemiologist Travis Irvan said communication between health departments remains an essential lesson from outbreaks of past that is still applied today.

“It is also important to stay in collaboration and communication with other surrounding health departments and other community partners,” Irvan said. “In order to limit any confusion on the public’s part, it’s also good to have a unified message and case definition between those health departments on what qualifies as a suspect, probable or confirmed case.”

In the current outbreak, ODH has maintained an eye on suspect cases (those not confirmed by lab results) and kept an up-to-date list of probable and confirmed cases.

Brennan said CPH and ODH maintained contact with individual health departments such as his despite the distance from the outbreak.

Kippes said that was essential as the disease could easily travel with students as they returned home for spring break.

“What we like to say is disease knows no boundary,” he said.

Even as epidemiologists work through the current outbreak, lessons are still being learned as well as applied. The biggest lesson was the first lesson learned in after 1957: vaccination.

“So far, a beneficial lesson in handling such outbreaks like the mumps is the importance of vaccination,” Irvan said. “Disease prevention is key to public health. It is always better to prevent a disease than to treat it. Vaccines can protect both the people who receive them and those with whom they come in contact.”

History of mumps outbreaks

1967: MMR vaccine introduced

1977: CDC Advisory Committee on Immunization Practices (ACIP) recommends all children receive one dose of MMR

1989: ACIP recommends all children receive two doses of MMR before school age

1998: British medical Journal The Lancet publishes a paper suggesting a link between MMR and autism; the paper is retracted in 2010 and the lead researcher is stripped of his license to practice medicine

2005: England and Wales experience outbreak of mumps with more than 43,300 lab-confirmed cases; effort to vaccinate children is renewed

2006: 6,584 mumps cases identified nationally, affecting mostly Midwest colleges

2009-2010: An outbreak affecting begins at a religious summer camp and spreads to others in the religious community in New York and New Jersey; an outbreak is identified in Orange County, Calif.

2010: Ohio mumps outbreak in Lake and Cuyahoga Counties affect 18 people, many from a small observant religious community

2012: ACIP recommends MMR booster for college students and others living in high transmission areas

Jan. 7, 2014: Symptoms begin in the first patient identified with the mumps at The Ohio State University

March 24: Columbus Public Health announces the outbreak is considered community-wide

March 27: Delaware County General Health district it is investigating six suspect (not confirmed by lab results) cases of mumps in area

April 2: Ohio Department of Health declares community-wide mumps outbreak in Franklin and Delaware counties