LESSONS LEARNED
From School Crises and Emergencies

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RESPONDING TO INFECTIOUS DISEASE: MULTIPLE CASES OF STAPH INFECTIONS IN A RURAL SCHOOL DISTRICT

Studying infectious disease outbreaks in the school context provides important lessons for all-hazards emergency management planning. Infectious diseases may be more easily transmitted and spread more rapidly in school settings than most because students are in proximity to one another and tend to more easily spread infectious diseases than adults. Schools need to be prepared to respond quickly at the first indication of infectious disease to assess the situation and take necessary steps to limit or mitigate disease transmission.

This document focuses specifically on an incident involving several cases of Methicillin-resistant *Staphylococcus aureus* (MRSA) at a rural high school. MRSA is a specific strain of *Staphylococcus aureus* bacteria—often called *staph*—that is resistant to antibiotics commonly used to treat staph infections. About one-third of the population is a carrier for staph on the skin or in the nose; however, being a carrier does not equate with infection. Because a MRSA infection is hard to treat and often causes serious infection, it can sicken or even kill those it infects. MRSA infections are not new and have existed in the community for some time.

The Incident

The School District

The Parkson School District is a small district located in a rural community setting with approximately 940 students. Two schools comprise the district: Parkson High School, with less than 400 students in grades 8–12, and Parkson Elementary School, with approximately 550 students in grades K–7. The two schools are located within several miles of each other and share some athletic teams. At Parkson High School, three members of the football team were hospitalized and treated for confirmed MRSA infections. Several other students from Parkson High School were also sent to a hospital to be examined for MRSA, but these cases were unconfirmed. One confirmed case was also later reported at the neighboring Parkson Elementary School, which shared some athletic teams with the high school. Both schools took precautions immediately upon hearing about the first three confirmed cases to prevent further transmission of the disease.

How the Incident Began

Towards the end of the summer vacation, a Parkson High School student was hospitalized with a MRSA infection in his knee. Once school began, a second student was hospitalized for a strange bump on his arm that turned out to be a MRSA infection. A third student visited a hospital for a similarly suspicious bump and was diagnosed with MRSA. These three students had gone to different doctors initially, so no one noticed the potential links between the students or their conditions. According to the state department of health's policies at the time, doctors were not required to report individual cases of MRSA to the health department, which could then have potentially investigated and shared information with the schools.

This issue of lessons learned is based on the reflections from one specific school district that experienced an incident related to infectious disease. The suggestions are not intended to be prescriptive best practices for all schools, but instead are meant to provide suggestions that schools may want to consider in emergency management planning. Information about this incident was obtained through a site visit and a series of interviews with representatives from the involved schools and the school district. Pseudonyms are used for the schools, school locations, and all personnel and students in this specific incident.

The father of the second student with MRSA to visit a hospital was a former administrator at Parkson High School and happened to know one of the other two students diagnosed with MRSA. All of the three students initially infected students were on Parkson High School's football team. The father thought this might be a pattern to look into and contacted the high school.

The Schools' Response

Information

When Parkson School District found out about the three students who had been diagnosed with MRSA, the superintendent immediately contacted the regional public health office for guidance about how the schools should respond. The superintendent shared the information about the three MRSA cases with staff at both Parkson High School and Parkson Elementary School. Additional information about MRSA was obtained from public health officials, doctors, hospitals, and other community health professionals, as well as background resources from reliable sources, such as the Centers for Disease Control and Prevention (CDC).

Actions the schools took to prevent the spread of MRSA

Communication to staff, students, parents, community members, and media

Since the three affected students were members of the Parkson High School football team, the high school nurse, coaches, and administrative staff immediately gathered the team and talked to them about what was happening. They made them aware of what a MRSA infection may look like and actions they should take if they suspect they have an infection. The high school nurses then checked team members to see if they had anything that resembled MRSA. Students with anything suspicious were sent to the same doctor to be tested.

Because of concerns about the *Family Educational Rights and Privacy Act (FERPA)* and the *Health Insurance Portability and Accountability Act (HIPAA)* privacy regulations,[1] the schools did not believe they could directly communicate with, and obtain information from, the doctors treating the affected students. Thus, there was limited, if any, direct communication between the schools and the doctors treating the affected students regarding the outbreak of MRSA. In addition, because of privacy concerns, for all students who were sent to the doctor, the schools enforced an infectious disease policy that required these students to have a doctor's note stating they could return to school before they were allowed to come back. The note did not have to say whether or not they had had MRSA or any other diagnosis or had been treated, only that it was safe for them to return.

At the high school, administrators and the school nurse went from room to room and talked to every class about open wounds, what MRSA looks like, and other symptoms. They asked students to see the nurse if they noticed anything suspicious. The nurse could then recommend to parents whether or not students should visit a hospital. The same hospital was recommended so that students would get the same information and doctors could readily detect and keep track of additional cases.

Administrators at the elementary school sent information home in "Tuesday Folders." Also, at a school board meeting already scheduled for that day, administrators from both schools communicated to parents and community members about what was happening at the schools, actions they were taking, and educational information about MRSA. Several members of the local media also attended this board meeting. Because Parkson High School was the first school in the larger area to publicly announce multiple confirmed cases of MRSA, it received a wealth of media coverage.

1 *FERPA* is a federal law that protects the privacy of students' *education records* and applies to education agencies and institutions that receive funds under any program administered by the U.S. Department of Education. (See 20 U.S.C. § 1232g; 34 CFR Part 99). *HIPAA* is a federal law that protects the privacy of patients' individually identifiable health information and applies to health plans, health care clearinghouses, and certain health care providers. (See the *HIPAA* Privacy Rule at 45 CFR Parts 160 and 164).

In addition, the district immediately sent e-mails to staff, parents, local media contacts, and other community members, providing educational information from the CDC about the nature of MRSA, symptoms, and treatments. Later, they regularly sent e-mail updates about the schools' responses and their cleaning efforts. Parkson School District listed this same educational information and a record of district e-mails on its Web site.

A few weeks later, the regional health director and regional epidemiologist came to visit the high school to conduct an informational seminar on MRSA. Around 20–30 parents attended this training. Many of those involved thought turnout would likely have been higher had the seminar occurred earlier.

Closing and cleaning the schools

The district decided to close the schools for a day to regroup and clean the schools. The state department of health did not recommend that the schools close. However, district and school administrators believed that closing schools would allow them the necessary time to clean and disinfectant the schools and thereby reassure the school community that all possible steps were being taken to prevent the spread of infection. They announced their decision immediately to students in school, to parents through e-mail and listservs, to the wider community at the school board meeting mentioned earlier, and through local news media. School staff cleaned both schools (desks, chairs, doorknobs, etc.) and school buses with either a 1:10 bleach solution or MRSA-targeted cleaning supplies. The high school also used disinfectant foggers and chemical bombs deemed safe by the Environmental Protection Agency (EPA). Coaching staff took all football uniforms to a company that specializes in sanitizing uniforms. Parkson High School also bought a commercial washer and dryer and washed all uniforms at the school. Additionally, the high school put a ventilation system into the locker/wrestling room, provided cleaning wipes for the weight machines, and installed wall hooks in this room so students could hang up their uniforms in their own separate places. Hand sanitizing solution was placed in the hallways of both the elementary and high schools and in the cafeteria of Parkson High School.

Educating students and others about good hygiene

In advising schools about how to deal with the incident, the state department of health representative's main recommendation was to educate students about personal hygiene and hand- washing because, although cleaning the school environment can be helpful, it is only a short-term solution. At the start of the school year and before the MRSA incident occurred, the nursing staff at both schools had begun an educational campaign about the importance of hand-washing and good hygiene. The schools were then able to build on the campaigns they had begun to educate students in this regard.

Working with the sports league

Some sports teams refused to play Parkson High School in athletic games because they feared the spread of MRSA. As a result, Parkson High School worked with the state sports league to address other schools' concerns and assure them that playing Parkson did not pose a health risk to their students. The high school talked with health officials and confirmed that students were safe to play in games as long as any open wounds were bandaged with non-breathable bandages and the correct dressing. One game was cancelled, but because of the work with the sports league, it was rescheduled a few days later.

How the schools recovered

The district and schools did not have any type of follow-up meeting about lessons learned with administrators, staff, or health officials. The schools did decide to keep in place permanently some of the changes they had implemented, such as making hand-sanitizing solutions widely available and providing weight room wipes and a commercial washer and dryer at the high school. The schools also planned to continue reinforcing good hygiene measures, such as hand-washing.

Lessons Learned in the Four Phases of Emergency Management

Prevention-Mitigation

Good hygiene practices and policies should be put into place early to prevent the onset or mitigate the spread of infectious disease. Prior to this incident, at the beginning of the school year, nursing staff at both schools had been promoting good hygiene and hand-washing. Because of this, they had already laid some good groundwork when the incidence of MRSA occurred. Also, in response to the MRSA incident, both schools placed hand sanitizers throughout the buildings, and the high school provided wipes for the weight room. Promoting hand-washing or sanitizing, providing appropriate supplies and time for students to wash hands or clean up, bandaging open wounds, and keeping students with open wounds that cannot be bandaged from playing contact sports can prevent or mitigate the incidence of MRSA. Also regularly cleaning and disinfecting commonly used surfaces in the school with appropriate products has the potential to prevent a range of infectious diseases, particularly gastrointestinal viruses and some respiratory viruses. Schools should implement practices such as these as a matter of course and before a disease outbreak ever occurs.

Preparedness

Regularly review and update the school emergency management plan and work with staff to ensure that they are familiar with it and able to use it in the event of emergency situations. In the Parkson schools, the staff did not rely on their schools' emergency management plans. Many said later it would have been helpful if school leadership had held regular trainings and drills on how to implement emergency plans.

Include information about infectious disease in the school emergency management plan. Although the schools had emergency management plans, their plans did not include any information about infectious disease. They later realized that there was a policy about infectious disease written into the school board policy. Information about infectious disease should be included not only in the school board policy but also in the district's and schools' emergency management plans. Many schools already have information about pandemic influenza preparedness that can be modified to meet the needs of planning and responding to other infectious disease outbreaks.

Understand federal privacy laws and develop emergency management policies accordingly. Schools should be aware of how federal privacy laws apply during an emergency. In this case, the school did not believe it could directly communicate with, and obtain information from, the doctors treating the affected students. However, both *FERPA* and the *HIPAA* Privacy Rule permit the exchange of protected information during an emergency under certain conditions. For example, *FERPA*, which applies to schools that receive funding under any program administered by the U.S. Department of Education, permits a school to disclose, without the written consent of a parent, personally identifiable information from any education record to appropriate parties in connection with an emergency, if knowledge of the information is necessary to protect the health or safety of the student or other individuals. Similarly, the *HIPAA* Privacy Rule, which applies to most health care providers, allows a health care provider, consistent with law and standards of ethical conduct, to disclose patient health information without the written authorization of the patient, if the provider in good faith believes the disclosure is necessary to prevent or lessen a serious and imminent threat to the health or safety of a person or the public. In addition, the *HIPAA* Privacy Rule permits a covered health care provider to disclose protected health information without patient authorization to another health care provider, such as a school nurse, for treatment purposes. For additional information on how *HIPAA* and *FERPA* apply to student health records, see the joint guidance developed by the Department of Education and the Department of Health and Human Services at http://www.ed.gov/policy/gen/guid/fpco/index.html (last accessed Jan. 26, 2009).

Establish good relationships and collaborate with key community members as a matter of course and in advance of an incident. In this case, the schools had connections to the regional health epidemiologist and regional health office and

worked closely with these offices to ensure they were receiving the appropriate information and guidance about MRSA. Schools should collaborate with public health officials and involve them in all-hazards planning efforts. Additionally, the schools had good relationships with the local media, which helped them to get important information out to the community.

Response

In coordination with public health partners, schools and districts should evaluate their own situations before deciding to close school. Closing down schools in response to a MRSA incident is not necessary from a health perspective and can be very costly; however, closing a school for a MRSA infection may be important for other reasons. For example, closing for a day or two might help to diffuse panic or allow time to clean frequently touched areas, thereby reassuring parents that it is safe to send their children back to school. Closing down school for a day allowed the Parkson district schools time to sanitize and talk with health officials. The schools were satisfied with their decision because closing gave them time to regroup, gather information, and ensure that the schools would be clean when students returned. While it is not medically necessary to close a school, it is considered best practice by health officials to regularly clean and disinfect commonly touched areas in a school, to reduce transmission of not only MRSA but also a variety of respiratory and gastrointestinal viruses. Ultimately schools and districts have to evaluate their own situations before deciding the best steps and actions to take. Creating good relationships with public health partners in advance of a disease outbreak can help schools determine appropriate responses to infectious disease situations.

Rely on the expertise of school nurses to recognize emerging trends in infectious disease. In this case, doctors were not required to report MRSA to the health department at the time the infections were first detected. As a result, the district and the schools did not immediately realize there were multiple cases from the same school. Fortunately the high school was notified by a parent about two cases and was then able to realize that multiple students had MRSA infections. For many infectious diseases, however, school nurses may be able to notice similar complaints among students that could be symptomatic; they can use this information to inform the school and the regional health office if necessary. In this case, the regional health office found out about MRSA through a call from the district superintendent. The regional health office encourages schools to call if they have a concern, regardless of whether or not a disease is required to be reported. If a school does not have a school nurse, emergency planners should include individuals who are responsible for sick students during the school day in emergency management planning efforts.

Get information out about the incident to staff, students, parents, and community members as soon as possible. Fortunately, a school board meeting was planned for the evening that information about MRSA occurrences began to surface, which provided a forum for informing parents and community members immediately. School e-mail blasts were another means of quick communication. The schools' decision to "go public" with the incident meant the situation received media attention, which helped to keep the community informed. In addition, training conducted by the regional health director and epidemiologist provided parents and community members with information on the signs and symptoms of the disease. The training, however, was somewhat poorly attended, possibly because was it held two to three weeks after the outbreak began. Organizing a training or information session immediately would likely be more effective.

Be aware of potential media attention for such an event and have a plan for working with the media. The schools maintained one central media contact, the district superintendent, who ensured that consistent information was communicated to the public and that students were not being exploited. This role should be pre-assigned in the emergency management plan. Because those students most impacted by MRSA were athletes, they were occasionally approached by reporters pretending to interview them about a game when their real motive was to talk to them about the MRSA incident.

Ensure that school staff who answer phone calls from the public are knowledgeable about the incident and what they should say to those who call. In this case, school staff answering the phones knew where to refer the media, but they did not always know what to say to concerned parents who called. They knew more about clean-up efforts than about MRSA, a frequent topic of questions from parents. They took many messages but would have found some sort of protocol or guide helpful for answering calls. Also, a Public Information Officer (PIO) should be identified to address infectious disease incidents in schools, as this person may differ from the school's usual PIO.

Set policies for students' return to school that comply with FERPA and HIPPA. Based on the specific case, each school should set clear policies for the return of students. In this specific case, parents and students did not have to report to the schools whether or not they had MRSA because of their privacy rights. As a result, the schools had to find a solution that did not violate privacy rights but still ensured it was safe for a student to return to school. Their solution was to have each student provide a doctor's note stating he could return to school. The note did not have to say whether or not he had received a diagnosis or treatment, only that it was safe for him to return.

During clean-up, be cautious of supplies used to clean. Parkson High School used chemical bombs and disinfectant foggers in addition to the spray solutions used to clean the schools. While these products were deemed as safe to use by the Environmental Protection Agency (EPA), some students experienced rashes or irritations from the chemicals. Although chemical bombs and disinfectant foggers may be helpful in some situations, products for cleaning surfaces, such as bleach solutions, may be just as effective, less expensive, and have fewer side effects. Cleaning products should be appropriate for the situation and used according to manufacturer's directions by qualified professionals. Areas with visible dirt should be thoroughly cleaned first before being disinfected. More information about appropriate cleaning products that are effective against MRSA can be found at http://epa.gov/oppad001/chemregindex.htm (last accessed Jan. 26, 2009).

Incidents affecting sports teams may cause additional barriers. Because students with MRSA were on the football team at Parkson High School, there were special considerations. The school had to work with the state sports league to reassure other schools it was safe to play them. Additionally, Parkson High School is located in a rural community where community members feel very connected and affected by incidents that happen to local teams. Because the media had access to sports teams, the school had to work hard to protect the privacy rights of team members in interview situations.

Recovery

Prepare for potential costs the school may incur in response to an outbreak of infectious disease. Fortunately for these schools, parents donated supplies such as non-breathable bandages for cuts and cleaning and hand-sanitizing supplies. Other costs, such as for the ventilation system, the washer and dryer, and the school cleaning, however, were borne by the schools and could have seriously impacted their operating budgets. Schools need to consider where money might come from in emergency situations such as these and how they might build suitable cash reserves.

Plan to have a meeting with staff involved about what was learned from an event such as this and how to use the knowledge gained in the event of future emergencies. While the Parkson schools did not have a follow-up meeting to discuss and evaluate the schools' responses, they agreed it would be helpful for possible future emergencies. A meeting of this type would give all those involved an opportunity to share their perspectives and improve emergency management planning for the schools.

Conclusion

The Parkson School District's experience with infectious disease emphasizes the need for districts and schools to create emergency management plans that address all potential hazards, including infectious disease. As part of these plans, schools should set attendance policies and protocols in the event of infectious disease. Schools should also be aware of privacy laws such as *FERPA* and *HIPAA* and how these laws may apply during an emergency.

Districts and schools should develop good relationships with key community members including the media, so that when an incident occurs, they can communicate quickly and accurately with staff, students, parents, and community members. Schools should also set aside sufficient resources in the event they will need to purchase supplies or equipment during an emergency incident. Reinforcement of good hygiene practices and school cleanliness can help to prevent or mitigate an infectious disease incident. Timely, regular, and accurate communication can help inform community partners, families, and media and thereby reduce panic caused by the spread of false rumor.

This *Lessons Learned* publication was written by the REMS TA Center and was produced from information gathered during a series of interviews conducted in April and May 2008 with numerous staff and administrators from an elementary and high school and the school district, as well as the regional epidemologist who worked with the district. To keep participants anonymous, pseudonyms were used for the schools, school location, and all personnel and students in this specific incident. The REMS TA Center would like to thank the staff of the schools, school district, and regional health office for contributing their time and input to this publication.

The REMS TA Center was established in October 2007 by the ED's OSDFS. The center supports schools and school districts in developing and implementing comprehensive emergency management plans by providing technical assistance via trainings, publications and individualized responses to requests. For additional information about school emergency management topics, visit the REMS TA Center at http://rems.ed.gov or call 1-866-540-REMS (7367). For information about the REMS grant program, contact Elizabeth Argeris (Elizabeth.Argeris@ed.gov), Tara Hill (tara.hill@ed.gov), Michelle Sinkgraven (michelle.sinkgraven@ed.gov), or Sara Strizzi (sara.strizzi@ed.gov).

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