SLIDES AND NOTES

Pre-Event Planning and Activities

From the training course titled "Smallpox: Disease, Prevention, and Intervention" (www.bt.cdc.gov/agent/smallpox/training/overview)

Slide 1
The principles of smallpox control include
- detecting outbreaks
- diagnosing and isolating cases
- containing the outbreak through active searching for cases and through appropriate management of contacts
- and, vaccinating to prevent further outbreak
The first step to establishing surveillance for smallpox is in training health care providers and public health staff on the disease itself, how to efficiently diagnose and differentiate the disease, and the laboratory testing used to confirm it.
Public health authorities should have systems and protocols in place to interview the case and manage their contacts and the contacts of contacts through a series of interviews and follow-up activities.
This is the clinical case definition for smallpox during a pre-event period. This definition is slightly more broad than the standard case definition in the hopes that it will be more sensitive in catching a first case.
Since varicella is the illness most commonly confused with smallpox, it is important to learn this definition, as well. Remember that the smallpox rash will have a different appearance and feel than varicella.
Since it’s the disease most often confused for smallpox, it will be important to understand the epidemiology of varicella in order to determine the likelihood of a rash illness being smallpox. In the United States, the comparison was found to break down in interesting ways.

Both diseases (at least when smallpox was naturally occurring) are most commonly seen in the spring. While smallpox age ranges can be in any group, current varicella epidemiology finds them mostly in children, with only a small percentage of cases occurring in adults.

With smallpox, we consider the entire population to be susceptible. However, previous immunity might remain among adults who were previously vaccinated. Although rapidly changing after the introduction of varicella vaccine, the most cases still occur among young children, with very few adults susceptible, except for adults in tropical countries.
Both diseases are more severe at the extremes of age and among the immunocompromised, yet smallpox causes ten times more fatalities. For all those fatalities, however, varicella is much more infectious.

And as we know, smallpox vaccine is no longer routinely recommended, whereas a relatively new varicella vaccine is rapidly gaining acceptance and changing the epidemiology of the disease.
Because very few healthcare providers currently working have experience with smallpox and the early symptoms are indicative of so many other diseases, we know we will miss the first few cases. However, the pursuit of false positives can cost public health a lot in both personnel and funding when, at this time, we know that many of the rashes we’ll see are more likely to be caused by varicella, disseminated herpes zoster or enteroviral infections.
If, after going through the rash illness algorithm, a case is considered to be suspect smallpox, it will mean a public health emergency. Laboratory testing should be obtained immediately so that the appropriate interventions can begin.
Public health authorities also need to prepare their surveillance systems by ensuring that there is someone dedicated to coordinating all surveillance activities and that there are several different mechanisms that are in place for reporting cases; such as standard physician reporting, as well as laboratory reporting. This may or may not be possible, but where it can be established, redundant mechanisms can help to capture suspicion as early as possible.
When planning for any public health emergency, public health planners need to consider several factors:

- What personnel and skills are available at the local and national level to assist in the outbreak?
- What kind of communications exist to work with these people?
- What kinds of medicines, vaccines, and supplies are available?
- And how will all these resources be transported?

Knowing these details will affect the strategy you plan for.
When identifying staff, the person designated to manage this activity should consider the population size and language(s) of their given area and estimate the number of teams that could respond to a case. They should also consider the number of supervisors and support staff they will need to support these teams. Estimates should take into account whether or not there will be enough contact tracing teams to conduct face-to-face interviews, which will take longer, or work via telephone.
After the teams have been identified, they should be trained in smallpox diagnosis so that they can evaluate contacts for suspect cases of smallpox. They should also receive training in contact interviewing methods, skills, and how to evaluate those contacts for level of risk. They should also have a thorough understanding of the vaccination arrangements to be used, how to screen for contraindications to the vaccine, how to monitor for severe adverse events, and how to evaluate a patient for a vaccination “take.” And essential to good epidemiology, they should understand all forms and databases that will be used.
Public health authorities should also develop forms before an event occurs. Forms should be developed that will track case information and contact information. And to further assist the case managers, educational materials will need to be developed that help in the description of the disease, as well as various vaccination issues.
A central entity that can help to coordinate the response and review how things are going will be essential. Response teams in the field will need support to confer on issues of all aspects of the investigation, including surveillance, laboratory issues, and vaccine safety. A central location will also need to be identified to monitor the availability of resources and get them out to those in need. And other members will be necessary to provide basic support to those in the field.
In order to quickly contain a smallpox outbreak, you will need teams that are already trained in smallpox disease and how to control it. A case of smallpox occurring will be a cause of quite a bit of alarm and pressure. Local resources could become quickly overwhelmed, not to mention concerned about the safety of their own families. With national-level response teams available, they could go in to assist when necessary.
There are quite a few activities authorities will need to undertake in order to be prepared to deal with a case of smallpox. Fortunately, these activities also lend themselves to having a staff prepared for the management of many communicable disease outbreaks.

A central leader should be identified to coordinate contact tracing activities. This person will be key if the outbreak should get so large that contact tracing will need to be prioritized. This person should also be responsible for identifying the number of teams that would be needed to do appropriate contact tracing, given the geography and population of the area, as well as getting those teams prepared to respond.

Additional considerations will be what other staff can be quickly mobilized from other parts of public health or the medical community to help in outbreak control and how the health and safety of the team members will be assured.
Well Functioning Teams

- Spirit of teamwork and sharing of information.
- "Get the job done" mentality.
- Recognize and utilize local experts.
- Share credit broadly, particularly with local counterparts. Make others look good.
- Use brief, succinct, and positive communications.
- Keep messages consistent among all team members.

The key to staffing response teams is to find members who can function well with other people and who are willing to do whatever tasks are given to them; even if it falls outside their particular area. Team members should also be willing to recognize the expertise and hard work of the local responders to avoid any hurt feelings that a national team is coming in. And the team members need to be able to communicate well. There will be long hours involved with any response, so those who can maintain a positive outlook and work out issues will make it easier.
If you do set up response teams to assist a local area, it’s important to remember that the local area health structure are the ones who should be responding to this. They’ll be the first on the scene, they know their area and will have a strong sense of ownership of the investigation.

Any national response should depend on the local area’s capacity to respond, although political realities may require national presence, even if a local area is capable of responding on their own.
Another confounding factor will be the involvement of other national agencies that deal with emergency response and criminal investigation. Response teams from all coordinating agencies should be trained to understand their roles and responsibilities in an outbreak so as to avoid unnecessary confusion during response.
In the United States, national response teams are comprised of eight different members with various skills and abilities. Depending on the local area’s capabilities, all or a combination of these positions will be deployed. Let’s take a closer look at what skill sets and responsibilities each member has.
The Physician Team Leader will coordinate all team activities. This position will most likely spend the bulk of his time coordinating with local and state policy makers in order to coordinate decisions consistent with national policy. Based on the needs of the local area, this position will also designate tasks for the other team members.
The Senior Public Health Advisor is an employee with management skills. While they are not usually a nurse or physician, they are trained in public health and medical issues and understand what needs to happen during a response.

The Senior Public Health Advisor helps to manage personnel issues, coordinate team member activities, assist team members in their own needs, and maintain reports for the national agency. Because of their management background, Senior Public Health Advisors are able to take care of the day-to-day problems that arise and can assist the team in getting their more mundane activities accomplished. Bringing along this position also frees up the Physician Team Leader for more of the policy and medical decisions.
The general Public Health Advisors are also management positions. However, their training in epidemiology consists of contact tracing and researching skills. They also have experience in doing trainings for other medical personnel, as well as translating scientific theories into lay language for the public. These positions can also be trained to administer vaccinations, if necessary. The number of Public Health Advisors sent out with a team will depend on the needs of the local area.

By doing all the footwork in the investigation, the public health advisors free up the medical staff to work on medical issues and evaluation of the outbreak.
The Medical Epidemiologists are either physicians, nurses, or PhD epidemiologists who serve as technical consultants in the response. They have a strong understanding of epidemiology and can assist the local area in investigation procedures, conducting surveillance and analyzing that surveillance. They can also help the local area understand technical information in order to make good decisions about how to manage the outbreak.
The Medical Epidemiologist coordinating vaccine safety issues assists with establishing surveillance for vaccine adverse events. They are trained to diagnose those events and advise on medical support for those cases. They also analyze all incoming data in order to monitor for any unexpected adverse events and to create safety and risk messages with the communication specialists.
The CDC also maintains a group of laboratory scientists and technicians who can deploy to help train medical providers and laboratories on all aspects of laboratory diagnosis, from specimen collection and handling to the processing of tests. They also help to coordinate the referral of specimens to the national laboratory.
The Communications Specialists help to coordinate all messages between the various health agencies, emergency response agencies, criminal agencies, and political offices. During a smallpox outbreak, rumor control and consistent messages will be key to keeping the public calm. These specialists can also help the local area with dealing with the press.
During the rush of an outbreak response, community partners sometimes get left out of the loop, despite the fact that they’ll be helping implement recommendations and dealing directly with the public. The Community Liaison Specialists can maintain contact with key partners and hold briefings for those partners to keep them up-to-date on the most current recommendations. This position can also assist those who are quarantined.
The Information Technology Specialists are key to assisting with technology issues. These positions should be familiar with database construction and have a broad understanding of various software and hardware in order to facilitate the exchange of data between various levels of government. They should be able to create and implement databases onsite, as needed.
The Occupational Health Specialist is key to ensuring that the controls are in place to protect all personnel, from the national response team to the local level healthcare providers. Some of their tasks should include training the teams and exposed workers on personal protect equipment, ensuring that negative pressure rooms are working correctly, and providing and developing guidance on occupational health issues.
Isolation

• Establish what laws exist.
• Enforcement.
• What facilities exist:
  – Negative air pressure rooms.
  – Facilities that can be converted into smallpox facilities.
• Training response team:
  – Case management.
  – Infection control.

Part of what the response teams will need to understand is what exists in terms of isolation in the area. They should understand the laws and regulations pertaining to isolation both at the national and local level, who is responsible for enforcement, what facilities exist, and how to protect themselves during the response.
 Authorities will also need to identify the vaccination resources available in order to understand how they will be able to respond. The availability of vaccine, bifurcated needles, and VIG will determine the type of vaccination strategy to be used, as well as the ability to get the vaccine out to the local area. They will also need to have a mechanism established for monitoring for adverse events.
Authorities will also need to understand what will trigger the implementation of their smallpox response plan. In the United States, it has been determined that triggering of the response plan will occur if there is confirmation of the virus in a specimen, a large outbreak of a clinically compatible illness, or the confirmation of smallpox virus in an environmental sample or distribution device.