Bioterrorism Preparedness in Iowa

Published by the Iowa Department of Public Health

Protecting, Preparing Iowa

There is little risk of smallpox here in Iowa, and there are no plans at this time to vaccinate the general population. Still, the risk is real, and the department and its partners across the state are working to prepare Iowa for the highly unlikely appearance of smallpox.

Instead of mass vaccinations, the state is preparing to begin a voluntary program to vaccinate a strategic reserve of health care and public health workers in advance of any actual cases. These vaccinations are part of a larger plan outlining the state's preparation for the unlikely event of a smallpox outbreak, including broader vaccinations in the event of a confirmed case in Iowa.

The state is beginning a voluntary program to vaccinate a strategic reserve of health care and public health workers.

The Iowa Department of Public Health is working with local health departments, the Iowa Hospital Association, the Iowa Emergency Management Division, University of Iowa Hygienic Lab, and state medical and nursing associations to determine the most appropriate front line health-care professionals who would respond. They would be involved in the investigations or treatment of cases, and would track contacts and vaccinate those who have been exposed and those who will help prevent the spread of the disease.

"While vaccinations of key public health and medical personnel across the state may begin in the coming months, there is no recommendation to offer the vaccine to the general public," said Dr. Patricia Quinlisk, Iowa state epidemiologist. "This vaccine is very different from children's and the flu vaccine. This vaccine has a lot of complications and side effects."

A complicated vaccine

The current smallpox vaccine is very different from other flu vaccines. Based on historical data, it's expected that 14 to 52 people per million vaccinated will suffer life-threatening reactions, and one to two people per million vaccinated will die. As such, decisions about which Iowans to be offered the vaccine will not be made lightly.

Besides the complications, about 25 percent of the population cannot receive the vaccine because of health conditions. Those include pregnancy, skin disorders, organ transplantation, or treatment for cancer or HIV. It will also not be offered to anyone who is a family or household contact of someone with the above conditions.

The department is forming regional smallpox response teams to be the first offered the smallpox vaccine. One group includes six regional public health response teams including disease investigators, epidemiologists, health lab workers and public health nurses and administrative personnel. Another group includes hospital-based teams.

Iowa's smallpox response proposal has been submitted to the federal Centers for Disease Control and Prevention (CDC). No vaccinations will begin in the state until the CDC allocates vaccine to Iowa and the Homeland Security Act becomes effective. The earliest, therefore, that vaccinations for anyone in Iowa could begin is January 24, 2003.

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Iowa Department of Public Health
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Online resources

Iowa Department of Public Health
http://www.idph.state.ia.us

Iowa Emergency Management Division
www.state.ia.us/emergencymanagement

Iowa Homeland Security
www.iowahomelandsecurity.org

Dept. of Health & Human Services
www.smallpox.gov

Centers for Disease Control and Prevention
www.bt.cdc.gov

Homeland Security Advisory System

Severe	■ **Complete recommended actions at lower levels** ■ Listen to radio/TV for current information/instructions ■ Be alert to suspicious activity and report it to proper authorities immediately ■ Adhere to any travel restrictions announced by local governmental authorities ■ Be prepared to shelter in place/evacuate and assist neighbors who are elderly or have special needs to do the same
High	■ **Complete recommended actions at lower levels** ■ Be alert to suspicious activity and report it to proper authorities immediately ■ Check on neighbors who are elderly or have special needs to ensure they are okay. Review disaster plan with them ■ If a need is announced, contact nearest blood collection agency and offer to organize a neighborhood blood drive
Elevated	■ **Complete recommended actions at lower levels** ■ Be alert to suspicious activity and report it to proper authorities immediately ■ Have neighborhood meeting in order to identify neighbors who are elderly or have special needs. Assist them in development of a personal disaster plan and disaster supplies kit if requested.
Guarded	■ **Complete recommended actions at lower levels** ■ Be alert to suspicious activity and report it to proper authorities immediately ■ Ask the local Red Cross chapter to offer a presentation called "Preparing for the Unexpected" at an upcoming neighborhood meeting
Low	■ Obtain copies of *Terrorism: Preparing for the Unexpected* brochure from your local Red Cross chapter and distribute at neighborhood meeting ■ Promote or arrange for people in the neighborhood to take a Red Cross CPR/AED and first aid course

These recommendations for individuals, courtesy of American Red Cross, pertain to threat conditions of the National Homeland Security Advisory System. Details available at www.whitehouse.gov

Homeland Security in Iowa

The State of Iowa's homeland security mission is to detect, prepare for, prevent, protect against, respond to, and recover from terrorist attacks within the state. Governor Tom Vilsack appointed Ellen M. Gordon Iowa's Homeland Security Advisor in October of 2001, to oversee the state's homeland security efforts. Since that time, Gordon and the Iowa Emergency Management Division, of which she is administrator, have been working closely with government and private-sector partners to enhance the security of the citizens of our state.

The Iowa Homeland Security Initiative: Envisioning the Future is the foundation of the state's homeland security efforts. The Initiative evaluates the state's current security activities and makes recommendations to maximize the strengths and eliminate any weaknesses. The plan establishes Iowa's homeland security priorities and is the foundation on which to build a long-term security management program. Gordon, along with her partners in this endeavor, is currently working to prioritize and implement the plan's recommendations within the next three years.

While the Homeland Security Initiative will be a compass for future activities, the state of Iowa has already made major strides to prepare for and prevent terrorism. The Iowa Emergency Management Division, along with other state government agencies, local governments, and the law enforcement, fire, public health, and emergency medical communities, are collaborating to meet the myriad challenges facing the state. Among the many homeland security efforts completed or underway are the development of a plan to protect the state's critical assets, creation of a system for sharing of crucial intelligence information, updating the state emergency response plan to encompass a terrorist incident, delivery of terrorism-related training to first responders throughout the state, and development of plans to respond to bioterrorism incidents.

To learn more about Iowa's homeland security efforts or to view the Iowa Homeland Security Initiative, visit www.iowahomelandsecurity.org.

Courtesy of Iowa Emergency Management Division

Individuals, Communities Play a Role in Homeland Security

Homeland security is not just about what government is doing. It's something in which every Iowan can become involved. Whether it's forming a neighborhood watch group, or sitting down with your family to make a disaster plan, Iowans can do much to be safer and more prepared for a terrorism incident or any disaster.

To help citizens protect themselves and prepare for disasters, whether natural or human-made, a Community-Based Tool Kit has been created. The Tool Kit, designed to equip individuals and communities with the knowledge and resources to empower them, was created by the Iowa Emergency Management Division, local emergency management personnel, state agencies, law enforcement, and others from across the state.

There are things all Iowans can do to be safer and more prepared

"Since the September 11 attacks, there has been a heightened awareness of family security and public safety," said Iowa Homeland Security Advisor Ellen M. Gordon. "Iowans have asked what they can do to protect their families and their communities. A community-based approach will help to bolster our security efforts, providing a multi-faceted partnership that will empower Iowans, raise public awareness, and provide critical information in case of emergencies."

The Community-Based Tool Kit encourages citizens to work with local emergency-management coordinators to start neighborhood-watch programs; provides families with a checklist of supplies to have on hand for emergencies and provides information that can help all citizens feel better prepared to cope with potential disaster.

For more information on Iowa Homeland Security or to download the Community-Based Tool Kit, visit www.iowahomelandsecurity.org. For more information on disaster preparedness, contact your local emergency-management coordinator.

Courtesy of Iowa Emergency Management Division

Message from Iowa's Governor

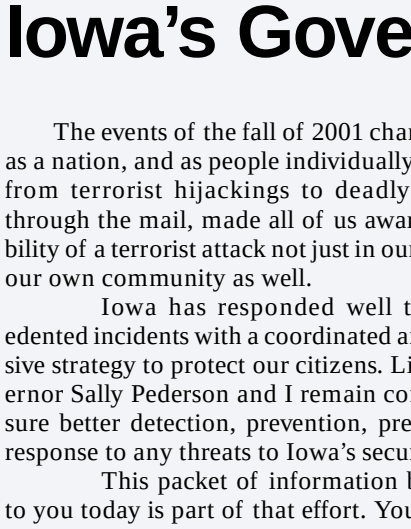
The events of the fall of 2001 changed us forever as a nation, and as people individually. Those events, from terrorist hijackings to deadly bacteria sent through the mail, made all of us aware of the possibility of a terrorist attack not just in our own state, but our own community as well.

Iowa has responded well to the unprecedented incidents with a coordinated and comprehensive strategy to protect our citizens. Lieutenant Governor Sally Pederson and I remain committed to ensure better detection, prevention, preparedness and response to any threats to Iowa's security.

This packet of information being provided to you today is part of that effort. You'll find several articles that tell you what you need to know about smallpox, as well as what plans the state has to deal with it in the highly unlikely event it should occur. Please keep it and refer to it should you have questions about smallpox and the vaccination program that is underway.

The dedication and cooperation shown throughout the state in putting together our smallpox response plan has been tremendous. While the state public health and medical communities have led the effort, their work would have been much more difficult without the assistances of the public safety, emergency management, and local county health officials. They are all part of Iowa's efforts to respond to the president's call to protect our health and safety.

Although the state is moving forward with a voluntary smallpox vaccination program, it is being done in the absence of a clear and direct threat. The nature of public health requires that front-line health workers be pre-vaccinated, so they are prepared to respond to any suspected outbreak without putting themselves at risk.



Governor Thomas J. Vilsack

At this time, we are not recommending vaccinations for everyone. Should a clear threat or actual outbreak be reported anywhere, the state is prepared to protect our residents.

However, homeland security is not just about what government is doing. This publication includes important information about what you could be doing at home.

Iowans have shown many times they have the resiliency and resourcefulness to deal with crises. I'm confident that in the same spirit with which we've helped each other cope with past disasters, we will successfully deal with any cards nature or humans might deal us.

What is Smallpox?

Smallpox is a contagious virus with no specific treatment that kills as many as 30 percent of those infected. The name *smallpox* is derived from the Latin word for "spotted" and refers to the raised bumps that appear on the face and body of an infected person.

There are two clinical forms of smallpox – variola major and variola minor. In either form, initial symptoms include fever, fatigue, and head and back aches. A characteristic rash, most prominent on the face, arms, and legs, follows in 2-3 days. The rash starts with flat red lesions that evolve at the same rate. Lesions become pus-filled and begin to crust early in the second week. Scabs develop and then separate and fall off after about 3-4 weeks. Variola major is the severe and most common form of smallpox, with an extensive rash and high fever. Variola minor is less common and a much less severe disease with death rates historically of 1 percent or less.

Smallpox outbreaks have occurred periodically for thousands of years, but the disease is now eliminated after a successful worldwide vaccination program. The last case of smallpox in the United States was in 1949. The last naturally occurring case in the world was in the African nation of Somalia in 1977. After the disease was eliminated from the world, routine vaccination against smallpox among the general public was stopped because it was no longer necessary for prevention.

Though the disease has been eliminated, there are still some stockpiles of the smallpox virus that exist in the world. However, in the aftermath of the terrorist events of September and October 2001, there is heightened concern that the variola virus might be used as an agent of bioterrorism. For this reason, the U.S. government is taking precautions for dealing with a smallpox outbreak.

Transmission

Generally, direct face-to-face contact is required to spread smallpox from one person to another. Smallpox also can be spread through direct contact with infected bodily fluids or contaminated objects such as bedding or clothing. Rarely, smallpox has been spread by virus carried in the air in enclosed settings such as buildings, buses, and trains. Humans are the only natural hosts of smallpox. Smallpox is not known to be transmitted by insects or animals.

A person with smallpox is sometimes contagious with onset of fever (prodrome phase), but the person becomes most contagious with the onset of rash. At this stage the infected person is usually very sick and not able to move around in the community. The infected person is contagious until the last smallpox scab falls off.

Smallpox Disease Progression

Incubation Period Not contagious	Exposure to the virus is followed by an incubation period during which people do not have any symptoms and may feel fine. This incubation period averages about 12 to 14 days but can range from 7 to 17 days. During this time, people are not contagious.
Initial Symptoms Sometimes contagious	The first symptoms of smallpox include fever, malaise, head and body aches, and sometimes vomiting. The fever is usually high, in the range of 101 to 104 degrees Fahrenheit. At this time, people are usually too sick to carry on their normal activities. This is called the prodrome phase and may last for 2 to 4 days.
Early Rash Most contagious	A rash emerges first as small red spots on the tongue and in the mouth. These spots develop into sores that break open and spread large amounts of the virus into the mouth and throat. At this time, the person becomes most contagious. Around the time the sores in the mouth break down, a rash appears on the skin, starting on the face and spreading to the arms and legs and then to the hands and feet. Usually the rash spreads to all parts of the body within 24 hours. As the rash appears, the fever usually falls and the person may start to feel better.By the third day of the rash, the rash becomes raised bumps. By the fourth day, the bumps fill with a thick, opaque fluid and often have a depression in the center that looks like a bellybutton. (This is a major distinguishing characteristic of smallpox.) Fever often will rise again at this time and remain high until scabs form over the bumps.
Pustular Rash Contagious	The bumps become pustules-sharply raised, usually round and firm to the touch as if there's a small round object under the skin. People often say the bumps feel like BB pellets embedded in the skin.
Pustules and Scabs Contagious	The pustules begin to form a crust and then scab. By the end of the second week after the rash appears, most of the sores have scabbed over.
Resolving Scabs Contagious	The scabs begin to fall off, leaving marks on the skin that eventually become pitted scars. Most scabs will have fallen off three weeks after the rash appears.The person is contagious to others until all of the scabs have fallen off.
Scabs resolved Not contagious	Scabs have fallen off. Person is no longer contagious.

SMALLPOX QUESTIONS AND ANSWERS

What should I know about smallpox?
Smallpox is an acute, contagious, and sometimes fatal disease caused by the variola virus (an orthopoxvirus), and marked by fever and a distinctive progressive skin rash. In 1980, the disease was declared eradicated following worldwide vaccination programs. However, in the aftermath of the events of September and October, 2001, the U.S. government is taking precautions to be ready to deal with a bioterrorist attack using smallpox as a weapon. As a result of these efforts: 1) There is a detailed nationwide smallpox response plan designed to quickly vaccinate people and contain a smallpox outbreak and 2) There is enough smallpox vaccine to vaccinate everyone who would need it in the event of an emergency.

How serious is the smallpox threat?
The deliberate release of smallpox as an epidemic disease is now regarded as a possibility, and the United States is taking precautions to deal with this possibility.

How dangerous is the smallpox threat?
Smallpox is classified as a Category A agent by the Centers for Disease Control and Prevention. Category A agents are believed to pose the greatest potential threat for adverse public health impact and have a moderate to high potential for large-scale dissemination. The public is generally more aware of category A agents, and broad-based public health preparedness efforts are necessary. Other Category A agents are anthrax, plague, botulism, tularemia, and viral hemorrhagic fevers.

If I am concerned about a smallpox attack, can I go to my doctor and get the smallpox vaccine?
At the moment, the smallpox vaccine is not available for members of the general public. In the event of a smallpox outbreak, however, there is enough smallpox vaccine to vaccinate everyone who would need it.

The Disease

What are the symptoms of smallpox?
The symptoms of smallpox begin with high fever, head and body aches, and sometimes vomiting. A rash follows that spreads and progresses to raised bumps and pus-filled blisters that crust, scab, and fall off after about three weeks, leaving a pitted scar.

If someone comes in contact with smallpox, how long does it take to show symptoms?
After exposure, it takes between 7 and 17 days for symptoms of smallpox to appear (average incubation time is 12 to 14 days). During this time, the infected person feels fine and is not contagious.

Is smallpox fatal?
The majority of patients with smallpox recover, but death may occur in up to 30% of cases. Many smallpox survivors have permanent scars over large areas of their body, especially their face. Some are left blind.

How is smallpox spread?
Smallpox normally spreads from contact with infected persons. Generally, direct and fairly prolonged face-to-face contact is required to spread smallpox from one person to another. Smallpox also can be spread through direct contact with infected bodily fluids or contaminated objects such as bedding or clothing. Indirect spread is less common. Rarely, smallpox has been spread by virus carried in the air in enclosed settings such as buildings, buses, and trains. Smallpox is not known to be transmitted by insects or animals.

How many people would have to get smallpox before it is considered an outbreak?
One confirmed case of smallpox is considered a public health emergency.

Is there any treatment for smallpox?
Smallpox can be prevented through use of the smallpox vaccine. There is no proven treatment for smallpox, but research to evaluate new antiviral agents is ongoing. Early results from laboratory studies suggest that the drug cidofovir may fight against the smallpox virus; currently, studies with animals are being done to better understand the drug's ability to treat smallpox disease (the use of cidofovir to treat smallpox or smallpox reactions should be evaluated and monitored by experts at NIH and CDC). Patients with smallpox can benefit from supportive therapy (e.g., intravenous fluids, medicine to control fever or pain) and antibiotics for any secondary bacterial infections that may occur.

The Vaccine

Many vaccinations are required. Why don't people have to get the smallpox vaccine?
The last case of smallpox in the United States was in 1949. The last naturally occurring case in the world was in Somalia in 1977. After the disease was eliminated from the world, routine vaccination against smallpox among the general public was stopped because it was no longer necessary for prevention.

If someone is exposed to smallpox, is it too late to get a vaccination?
Vaccination within 3 days of exposure will completely prevent or significantly modify smallpox in the vast majority of persons. Vaccination 4 to 7 days after exposure likely offers some protection from disease or may modify the severity of disease.

How long does a smallpox vaccination last?
Past experience indicates that the first dose of the vaccine offers protection from smallpox for 3 to 5 years, with decreasing immunity thereafter. If a person is vaccinated again later, immunity lasts longer.

What is the smallpox vaccine made of?
The vaccine is made from a virus called *vaccinia*, another "pox"-type virus related to smallpox but that does not cause smallpox.

Is it possible for people to get smallpox from the vaccination?
No. The smallpox vaccine does not contain smallpox virus and cannot spread or cause smallpox. However, the vaccine does contain another virus called vaccinia, which is live in the vaccine. Because the virus is live, it can spread to other parts of the body or to other people from the vaccine site. This can be prevented through proper care of the vaccination site (e.g. hand washing and careful disposal of used bandages).

Is it possible to get vaccinia, the virus in the vaccine, from someone who has recently been vaccinated?
Yes. Vaccinia is spread by touching a vaccination site before it has healed or by touching bandages or clothing that have become contaminated with live virus from the vaccination site. Vaccinia is not spread through airborne contagion. The vaccinia virus may cause rash, fever, and head and body aches.

How safe is the smallpox vaccine?
The smallpox vaccine is the best protection you can get if you are exposed to the smallpox virus. Most people experience normal, usually mild reactions that include a sore arm, fever, and body aches. In recent tests, one in three people felt bad enough to miss work, school, or recreational activity or had trouble sleeping after receiving the vaccine. However, the vaccine does have some risks. In the past, about 1,000 people for every 1 million people vaccinated for the first time experienced reactions that, while not life-threatening, were serious. Rarely, people have had very bad reactions to the vaccine. Based on past experience, it is estimated that between 1 and 2 people out of every 1 million people vaccinated will die as a result of life-threatening reactions to the vaccine. Careful screening of potential vaccine recipients is essential to ensure that those at increased risk do not receive the vaccine.

Who should NOT get the vaccine?
Some people are at greater risk for serious side effects from the smallpox vaccine. Individuals with any of the following conditions, or living with someone who does, should not get the smallpox vaccine unless they have been exposed to smallpox. People who should not get the vaccine include anyone who is allergic to the vaccine or any of its components; pregnant women; women who are breastfeeding; anyone under 12 months of age; people who have, or have had, skin conditions (especially eczema and atopic dermatitis); and people with weakened immune systems, such as those who have received a transplant, are HIV positive, are receiving treatment for cancer, or are taking medications that suppress the immune system.

Is there any way to treat bad reactions to the vaccine?
Two treatments may help people who have certain serious reactions to the smallpox vaccine. These are Vaccinia Immune Globulin (VIG) and cidofovir. VIG and cidofovir are both administered under investigational new drug protocol.

Recommendations for Your Family

The terrorist attacks on the World Trade Center and the Pentagon have left many concerned about the possibility of future incidents in the United States. You can prepare for the unexpected and reduce the stress that you may feel now, and later should another emergency arise. Taking preparatory action can reassure you and your children that you can exert a measure of control even in the face of such events.

What You Can Do to Prepare

Finding out what can happen is the first step. Once you have determined the possible events and their potential in your community, discuss them with your family or household and develop a disaster plan together.

1. Create an emergency communications plan.

Choose an out-of-town contact your family or household will call or e-mail to check on each other should a disaster occur. Your selected contact should live far enough away that they would be unlikely to be directly affected by the same event, and they should know they are the chosen contact. Make sure every household member has that contact's, and each other's, e-mail addresses and telephone numbers (home, work, pager and cell). Leave these contact numbers at your children's schools, if you have children, and at your workplace. Your family should know that if telephones are not working, they need to be patient and try again later or try e-mail. Many people flood the telephone lines when emergencies happen but e-mail can sometimes get through when calls don't.

2. Establish a meeting place.

Having a predetermined meeting place away from your home will save time and minimize confusion should your home be affected or the area evacuated. You may even want to make arrangements to stay with a family member or friend in case of an emergency. Be sure to include any pets in these plans, since pets are not permitted in shelters and some hotels will not accept them.

3. Assemble a disaster supplies kit.

If you need to evacuate your home or are asked to "shelter in place," having some essential supplies on hand will make you and your family more comfortable. Prepare a disaster supplies kit in an easy-to-carry container such as a duffel bag or small plastic trash can. Include "special needs" items for any member of your household (infant formula or items for people with disabilities or older people), first aid supplies (including prescription medications), a change of clothing for each household member, a sleeping bag or bedroll for each, a battery powered radio or television and extra batteries, food, bottled water and tools. It is also a good idea to include some cash and copies of important family documents (birth certificates, passports and licenses) in your kit.

Copies of essential documents – like powers of attorney, birth and marriage certificates, insurance policies, life insurance beneficiary designations and a copy of your will – should also be kept in a safe location outside your home. A safe deposit box or the home of a friend or family member who lives out of town is a good choice.

4. Check on the school emergency plan of any school-age children you may have.

You need to know if they will they keep children at school until a parent or designated adult can pick them up or send them home on their own. Be sure that the school has updated information about how to reach parents and responsible caregivers to arrange for pickup. And, ask what type of authorization the school may require to release a child to someone you designate, if you are not able to pick up your child. During times of emergency the school telephones may be overwhelmed with calls.

For more information, contact your local American Red Cross chapter or visit http://www.redcross.org.

Courtesy of American Red Cross

National Pharmaceutical Stockpile Ready

In the event of a bioterrorism attack, the Iowa Department of Public Health (IDPH) has joined forces with the Iowa Emergency Management Division and the Centers for Disease Control and Prevention (CDC) to ensure the availability and rapid deployment of life-saving pharmaceuticals, antidotes, other medical supplies, and equipment necessary to counter the effects of nerve agents, biological pathogens, and chemical agents. This joint effort has been dubbed the National Pharmaceutical Stockpile Program (NPS).

The CDC has stockpiles stationed around the country to get supplies to areas in need quickly. Since the NPS could take anywhere from two to 12 hours to arrive, it is important to note that the NPS was designed to provide medical supplies in the event that supplies at the local level are exhausted.

A request for the NPS may follow a terrorist attack in which results are extremely visible. It is more likely, however, that subtle signs, such as unusual patterns of sickness and death identified through the nation's disease outbreak surveillance and epidemiology network, will alert health officials to the possibility (and confirmation) of a biological or chemical terrorism incident. To receive the NPS, Iowa can directly request the Director of CDC to send it. Once requested, the Director of CDC has the authority, in consultation with the Surgeon General, and the Secretary of Health and Human Services, to send the NPS.

The public will be informed of distribution sites to receive treatment. There will be alternate sites for those already experiencing symptoms. People will be allowed to pick up medicine for family members, but will need to provide medical information on their behalf. It will be extremely important for those receiving medications to follow the health care professional's directions to avoid infection. Also note that there are several different medications that can be used to treat one particular disease. Not everyone will receive the same medication for the same disease.

UI College of Public Health Serves as Preparedness Resource

Ensuring that Iowa's public health workforce has the skills to prepare for, promptly identify, and respond to current and emerging health threats is the mission of the Iowa Center for Public Health Preparedness (ICPHP), based in the University of Iowa College of Public Health.

UI College of Public Health

"The center serves as an important resource for upgrading the training and education of the state's health and emergency providers," said ICPHP director Christopher Atchison. "Our goal is to enhance the skills of frontline public health workers to deal effectively with challenges such as bioterrorism, terrorism, and other public health emergencies."

The center sponsors a variety of learning opportunities, including conferences and an eight-month "train-the-trainer" program in public health preparedness. Applications are now being accepted from individuals interested in being certified as trainers and assisting with training efforts at the community level. An ongoing series of free "Grand Rounds" lectures on preparedness issues are broadcast statewide via the Iowa Communications Network. Previous Grand Round speakers have included the Assistant Surgeon General of the United States, an Ebola virus outbreak expert from the World Health Organization, and an expert in agroterrorism. Each lecture is digitally recorded and can be downloaded from the center's web site or is available on VHS tape or CD ROM.

Funded by the Centers for Disease Control and Prevention through a cooperative agreement with the Association of Schools of Public Health, the ICPHP is one of 19 academic Centers for Public Health Preparedness located throughout the United States.

The center's program partners include the Iowa Association of Local Public Health Agencies, Iowa Department of Public Health, Iowa Emergency Management Division, Iowa Hospital Association, Iowa Medical Society, Iowa Nurses' Association, Iowa Pharmacy Association, Iowa State University College of Veterinary Medicine, Iowa State University Extension and the University of Iowa Hygienic Laboratory.

For more information about the Iowa Center for Public Health Preparedness, visit the center's website at www.public-health.uiowa.edu/icphp/.

Courtesy of the University of Iowa

Vaccination – Method, Safety and Reactions

The smallpox vaccine helps the body develop immunity to smallpox. It is made from a virus called *vaccinia* which is a "pox"-type virus related to smallpox. The vaccine contains the "live" vaccinia virus – not dead virus like many other vaccines. For that reason, the vaccination site must be cared for carefully to prevent the virus from spreading. The vaccine does not contain the smallpox virus and cannot give you smallpox. Still, the vaccine can have side effects.

Currently, the United States has a big enough stockpile of vaccine to vaccinate everyone who might need it in the event of an emergency.

Length of Protection

Smallpox vaccination provides high-level immunity for 3 to 5 years and decreasing immunity thereafter. Historically, the vaccine has been effective in preventing smallpox infection in 95% of those vaccinated. In addition, the vaccine was proven to prevent or substantially lessen infection when given within a few days of exposure.

It is important to note, however, that at the time when the smallpox vaccine was used to eradicate the disease, testing was not as advanced or precise as it is today, so there may still be things to learn about the vaccine and its effectiveness and length of protection.

Receiving the Vaccine

The smallpox vaccine is not given with a shot as most people have experienced. It is given using a bifurcated (two-pronged) needle that is used to prick the skin a number of times in the upper arm.

Components of a smallpox vaccination kit including the diluent, a vial of Dryvax® smallpox vaccine, and a bifurcated needle.

If the vaccination is successful, a red and itchy bump develops at the vaccine site in three or four days. In the first week, the bump becomes a large blister, fills with pus, and begins to drain. During the second week, the blister begins to dry up and a scab forms. The scab falls off in the third week, leaving a small scar. People who are being vaccinated for the first time have a stronger reaction than those who are being revaccinated.

Post-Vaccination Care

Because the virus is live, it can spread to other parts of the body or to other people. It may cause rash, fever, and head and body aches. In certain groups of people, complications can be severe.

Benefit of Vaccine Following Exposure

Vaccination within 3 days of exposure will prevent or significantly lessen the severity of smallpox symptoms in the vast majority of people. Vaccination 4 to 7 days after exposure likely offers some protection from disease or may modify the severity of disease.

Smallpox Vaccine Safety

The smallpox vaccine is the best protection you can get if you are exposed to the smallpox virus. Anyone directly exposed to smallpox, regardless of health status, would be offered the smallpox vaccine because the risks associated with smallpox are far greater than those posed by the vaccine.

There are side effects and risks associated with the smallpox vaccine. Most people experience normal, usually mild reactions that include a sore arm, fever, and body aches. However, other people experience reactions ranging from serious to life threatening.

Specifically, these people are most likely to have serious side effects and should not be given the vaccine:

- People who have had, even once, skin conditions (especially eczema or atopic dermatitis)
- People with weakened immune systems, such as those who have received a transplant, are HIV positive, are receiving treatment for cancer, or are currently taking medications that suppress the immune system
- Pregnant women because of the risk it poses to the fetus
- Women who are breastfeeding
- Children younger than 12 months of age and, for non-emergency use, children younger than 18 years of age
- Those allergic to the vaccine or any of its components

Reactions to the Vaccine

In the past, about 1,000 people for every 1 million people vaccinated for the first time experienced reactions that, while not life-threatening, were serious. These reactions included a toxic or allergic reaction at the site of the vaccination, spread of the vaccinia virus to other parts of the body and to other individuals, and spread of the vaccinia virus to other parts of the body through the blood. These types of reactions may require medical attention.

In the past, between 14 and 52 people out of every 1 million people vaccinated for the first time experienced potentially life-threatening reactions to the vaccine. Based on experience, it is estimated that 1 or 2 people in 1 million who receive the vaccine may die as a result. Careful screening of potential vaccine recipients is essential to ensure that those at increased risk do not receive the vaccine.

For more information, visit www.cdc.gov/smallpox, or call the CDC public response hotline at (888) 246-26 75 (English), (888) 246-2857 (Español), or (866) 874-2646 (TTY)

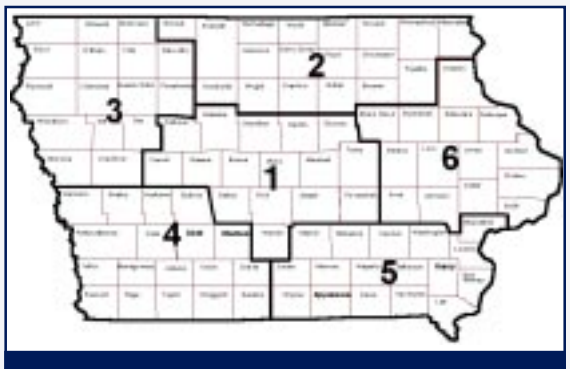
The Role of Iowa's Hospitals

Just as they do when preparing for tornadoes, aircraft accidents, and other events that could result in multiple casualties, Iowa's hospitals are working closely with federal, state, and local agencies to ensure Iowa is prepared and protected against smallpox. All of the state's hospitals regularly train and prepare for large-scale disasters and public health emergencies. Since the September 11 attacks, hospitals have in particular emphasized readiness for the possibility of bio-terrorism, including the use of smallpox.

Iowa's smallpox plan calls for one or two hospitals in each of six regions to prepare medical teams that can quickly respond to a smallpox outbreak. Hospitals included in the plan must meet certain criteria, such as having two isolation rooms. The plan also includes vaccinating all team members for smallpox. Iowa's hospitals support this regionalized effort because it minimizes the risks that are part of any smallpox inoculation while providing the medical professionals and facilities needed to respond should there be a smallpox outbreak. Physicians, nurses, and other hospital staff from across the state have volunteered for these medical teams because they recognize that while the threat to Iowa is low, Iowans and their hospitals should be prepared and protected .

Iowa's hospitals are proud and ready to do their part to assist the State of Iowa in implementing its smallpox planning. Our state can count on its medical facilities and the professionals staffing them to work as a team with federal, state, and local authorities, and with all people dedicated to the health, safety and security of Iowans.

Courtesy of Iowa Hospital Association



Iowa's six smallpox planning regions

A History of Smallpox in Iowa

Although smallpox could have existed earlier, the first recorded signs in Iowa were from Hamburg on Nov. 18, 1898, where it appeared that the source of infection came from Nebraska City or Omaha, Nebraska.

At the end of June 1899, 249 cases with two deaths were reported from fifteen counties, which included: Appanoose, Audubon, Cedar, Fremont, Henry, Howard, Johnson, Jones, Lee, Scott, Shelby, Warren, Washington, Winneshiek, and Wayne.

1901: an Iowan with smallpox

Smallpox spread until hardly a county in the state didn't have one or more cases. Many physicians didn't recognize it and neglected to report it to the State Board of Health, which wanted it for quarantine purposes. Also, between 1899 and 1900, many cities, towns and townships didn't keep good records on the number of cases.

Around the turn of the century, around 5,000 cases of smallpox were reported and a total number of 25 deaths. Recognizing the mistakes physicians were making in the diagnosis of smallpox the board sent pamphlets to wherever it was known or suspected to exist and visited many localities when questions occurred about diagnosis or to enforce quarantine regulations.

At the same time, the board started to recommend vaccination as the means for prevention. If smallpox appeared in a community, the board believed that every person had to get the vaccination, and if employed, the vaccination was a condition to continue employment. Also, all children had to present a certificate of successful vaccination before entering school.

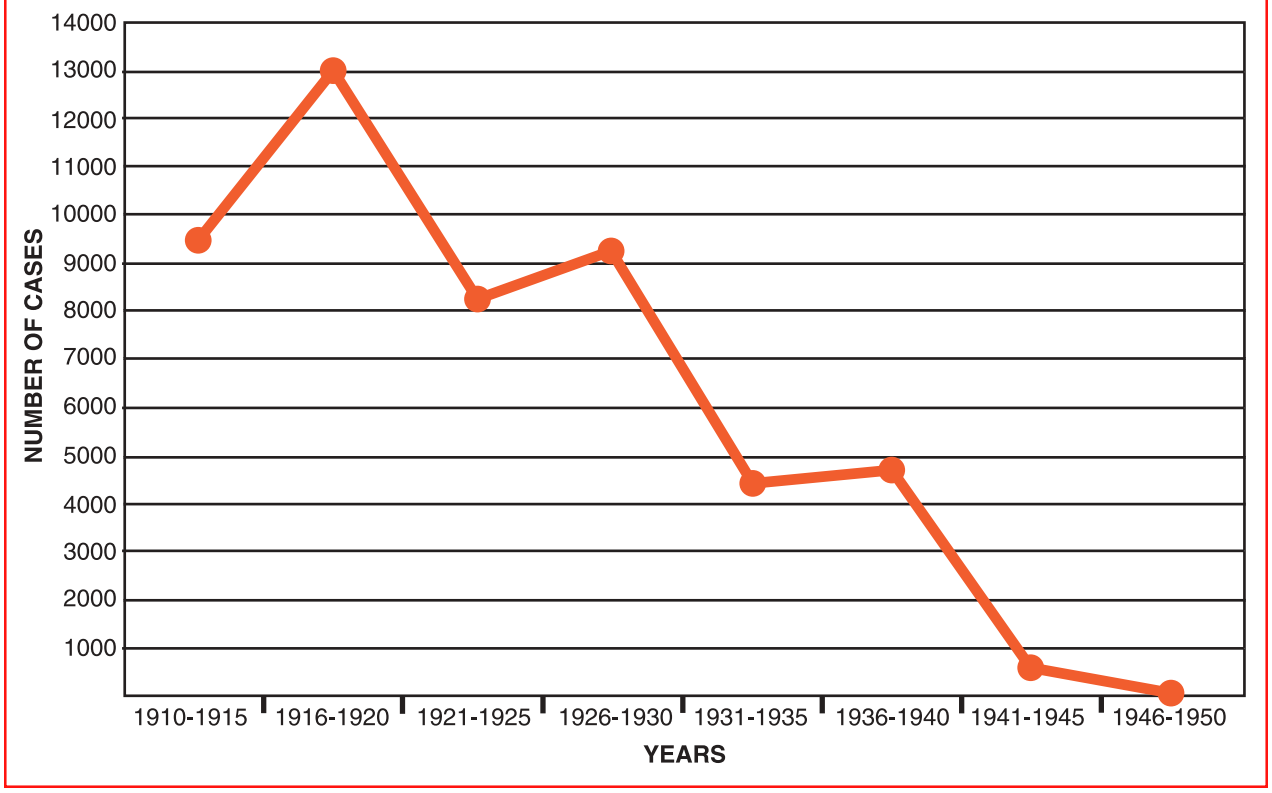
After WWI, around 4,505 smallpox cases and a total of 22 deaths were reported during a two-year period. Shortly afterward, smallpox reached its peak with ere a little over 13,000 reported cases.

Before the Great Depression a considerable number of smallpox cases was still being reported. The board believed that with vaccination readily available, there was no reason for contracting smallpox.

The number of cases started to drop around 1935, but until this time it was one of the most prevalent communicable diseases in Iowa. By WWII, its occurrence was reaching low levels. During this period only 210 cases of smallpox and one death were reported.

Although there was a low incident of smallpox cases, alerts were still maintained because the State Board of Health, now called the Iowa Department of Public Health, believed the numbers could increase at any time. The number of cases continued to drop because of vaccination until the late 1940's when Iowa's last smallpox cases were reported.

The decline of smallpox in Iowa



In the early 1900's in Iowa, many physicians were identifying smallpox as "Yaws" because they were unwilling to call it smallpox. In response, the State Board of Health gathered information and concluded that the only common characteristic between the two was that they were both contagious.

Yaws, also called Frambesia, is an infection caused by the spiral-shaped bacterium (spirochete), called Treponema pertenue, that is closely related to the organism that causes syphilis – yet is not sexually transmitted. The sore appears "raspberry-like" and may persist for several weeks to months. Yaws is primarily an illness involving children in rural, warm, tropical areas – primarily the Caribbean Islands, Latin America, West Africa, India and Southeast Asia.

Smallpox Around the World

Smallpox is at least 3000 years old. The first credible evidence of its existence come from Egypt and it is believed to have spread through India to China and Japan. Smallpox came to Europe in the first few centuries A.D., but the disease never became established there until the time of the Crusades, when the population increasingly moved around.

The disease played a fundamental role in the European conquest of South America. It reduced the fighting capability of the native armies, killing more than 3 million Aztecs in the 1500's. One hundred years later, the North American east coast was settled by Europeans, and with these colonies came outbreaks of smallpox among the eastern Native American Indians.

During the 1600's and 1700's, smallpox was the most serious infectious disease in The West and accounted for a substantial proportion of deaths, especially among town dwellers.

Today, smallpox is considered *eradicated* – the equivalent of extinct. The last known case occurred in Somalia on October 26, 1977.

Smallpox eradication became possible when, during the 18th century, Edward Jenner discovered vaccination. He became convinced that an infection with cowpox could protect against smallpox. He then induced immunity by transferring cowpox from the hand of a dairymaid to the arm of a young boy.

In the 1960's, the World Health Assembly fostered cooperation between the United States and the Soviet Union to eradicate smallpox in the midst of Cold War politics. The United States can be proud of its role in the worldwide vaccination program, contributing hundreds of workers and millions of dollars for the eradication of a disease that no longer involved our nation.

La Viruela y su Vacuna

La Enfermedad

La viruela es una enfermedad infecciosa grave, contagiosa que en algunos casos puede causar la muerte. No hay tratamiento especial para la viruela y la única forma de prevención es la vacunación. El nombre viruela proviene de la palabra latina que significa "manchado" y se refiere a los abultamientos que aparecen en la cara y en el cuerpo de una persona infectada. Durante miles de años han ocurrido ocasionalmente epidemias de viruela; sin embargo, luego de un exitoso programa de vacunación mundial se logró erradicar la enfermedad. En los Estados Unidos, el último caso de viruela se registró en 1949.

La Vacuna Contra la Viruela

La vacuna contra la viruela ayuda al cuerpo a crear inmunidad a esta enfermedad. La vacuna se hace con un virus llamado vaccinia que es otro tipo de virus "pox" relacionado con la viruela. En esta vacuna, el virus vaccinia está "vivo"—no muerto como en muchas otras vacunas. Por esa razón, hay que cuidar muy bien el sitio donde se aplica la vacuna para evitar que el virus se extienda a otras partes del cuerpo. La vacuna no contiene el virus de la viruela y, por lo tanto, no puede causar la enfermedad. Actualmente, en los Estados Unidos hay cantidades suficientes de las vacunas contra la viruela para aplicarla a todos en el país que pudieran necesitarla en caso de una emergencia. La vacuna se sigue produciendo sin interrupción.

Duración de la Protección

La vacuna crea un alto nivel de inmunidad contra la viruela durante un período de 3 a 5 años y, de allí en adelante, la inmunidad empieza a disminuir. Pero, si una persona se vuelve a vacunar, la inmunidad durará todavía más. Históricamente, la vacuna ha sido eficaz para prevenir la infección con el virus de la viruela en 95% de las personas vacunadas.

Aplicación de la Vacuna

La vacuna contra la viruela no se aplica con una aguja hipodérmica. No se trata de una inyección como la que conoce la mayoría de la gente. Se utiliza una aguja bifurcada, es decir con dos puntas, que se sumerge en la solución de vacuna. Cuando se saca de allí, queda una gota de la vacuna en las puntas. Con la aguja, se pincha la piel varias veces en pocos segundos. Los pinchazos no son profundos, pero dejarán esa zona adolorida y harán salir una o dos gotitas de sangre. Usualmente, la vacuna se aplica en la parte superior del brazo.

Si la vacunación es exitosa, luego de tres o cuatro días aparecerá, en el lugar donde se aplicó, un abultamiento rojo que produce comezón. En la primera semana, el abultamiento se transforma en una ampolla grande que se llena de pus y luego el pus empieza a salir. Durante la segunda semana, la ampolla comienza a secarse y se forma una costra. La costra se cae durante la tercera semana y deja una cicatriz pequeña.

Cuidados Después de la Vacunación

Es muy importante seguir las instrucciones para cuidar el sitio donde se aplicó la vacuna. Debido a que el virus está "vivo" puede propagarse a otras partes del cuerpo y, tal vez, hasta a otras personas. El virus vaccinia (el virus vivo de la vacuna contra la viruela) puede causar erupción, fiebre, dolores de cabeza y dolores en el cuerpo.

Beneficios de la Vacuna Luego de la Exposición al Virus

Si la vacuna se aplica dentro de los 3 días siguientes a la exposición al virus, se evitarán los síntomas de la viruela o se atenuará considerablemente su gravedad en la gran mayoría de las personas. La vacuna aplicada dentro de los 4 a 7 días siguientes a la exposición, probablemente ofrecerá cierta protección contra la enfermedad o podría modificar su gravedad.

Inocuidad de la Vacuna Contra la Viruela

La vacuna es la mejor protección que uno puede recibir si ha estado expuesto al virus de la viruela. Los riesgos asociados con esta enfermedad son mucho mayores que los que presenta la vacuna.

Quiénes NO Deben Recibir la Vacuna Contra la Viruela

Las personas que tienen más probabilidades de presentar efectos secundarios graves son: quienes han padecido, aunque sea una sola vez, enfermedades de la piel (especialmente eczema o dermatitis atópica) y las que tienen el sistema inmunológico debilitado, como por ejemplo las que han recibido un transplante, son VIH positivas, están en tratamiento para el cáncer o están tomando algunos medicamentos (como esteroides) que deterioran el sistema inmunológico.

Por otra parte, las embarazadas no deben recibir la vacuna porque representa un riesgo para el feto. Tampoco la deben recibir las mujeres que están amamantando ni los niños menores de 12 meses de edad. Por otra parte, el Comité Asesor sobre Métodos de Inmunización (ACIP) aconseja que no se aplique la vacuna contra la viruela, a menos que se trate de una situación de emergencia, a personas menores de 18 años de edad. Además, quienes sean alérgicos a la vacuna o a alguno de sus componentes no deberán recibir la vacuna.

En el pasado, unas 1,000 personas por cada millón de las que se vacunaron por primera vez experimentaron reacciones que, a pesar de no poner en peligro su vida, fueron graves. Entre 14 y 52 personas por cada millón de las que se vacunaron por primera vez experimentaron reacciones que podían poner en peligro su vida. Sobre la base de la experiencia acumulada, se calcula que de 1 a 2 personas de cada millón de las que reciben la vacuna por primera vez, podrían morir como resultado de ella. Es fundamental un examen cuidadoso de los posibles receptores de la vacuna para asegurar que los que se encuentran expuestos a mayor riesgo no la reciban.

Disponibilidad de la Vacuna Contra la Viruela

Luego de los sucesos de septiembre y octubre de 2001, el Gobierno de los Estados Unidos tomó otras medidas para estar mejor preparado en caso de un ataque terrorista. El Gobierno de los Estados Unidos dio órdenes de producir la vacuna contra la viruela en cantidades suficientes para vacunar a la población estadounidense en caso de un brote. En estos momentos, el Gobierno de los Estados Unidos tiene acceso a suficientes dosis de vacuna contra la viruela para responder con eficacia a un brote de viruela.

Para mayor información, visite http://www.bt.cdc.gov/agent/smallpox/basics/espanol/index.asp

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Text and photos courtesy of the Centers for Disease Control and Prevention, World Health Organization and Iowa Department of Public Health, except as noted.

Iowa Department of Public Health

Promoting and Protecting the Health of Iowans

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