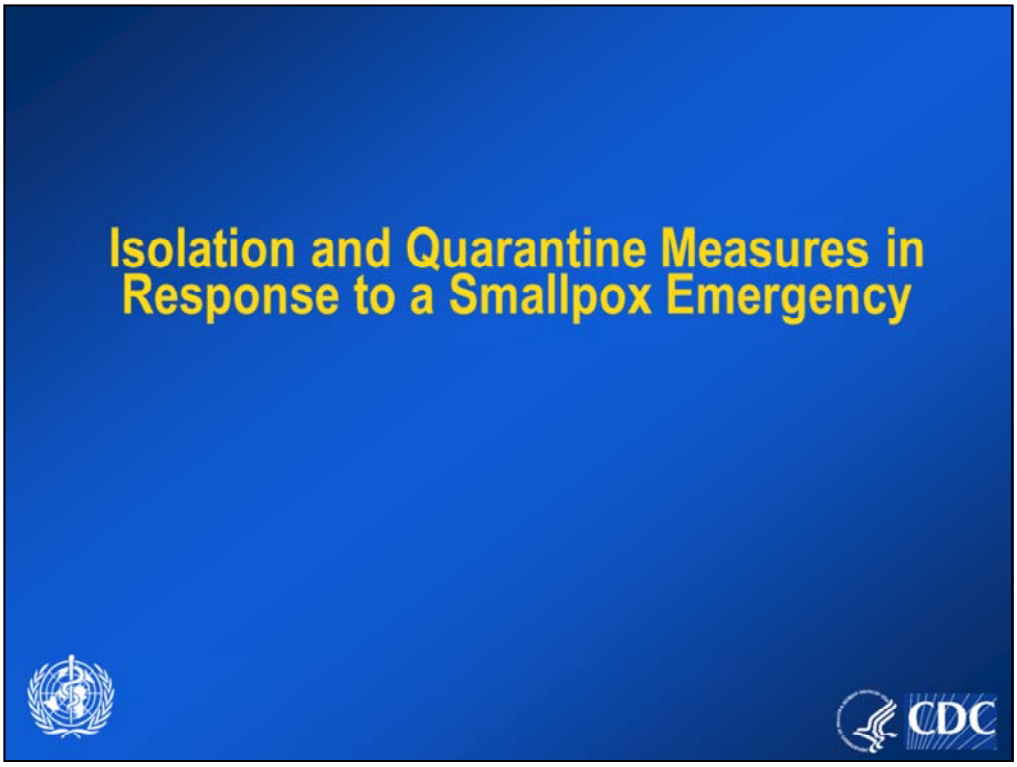
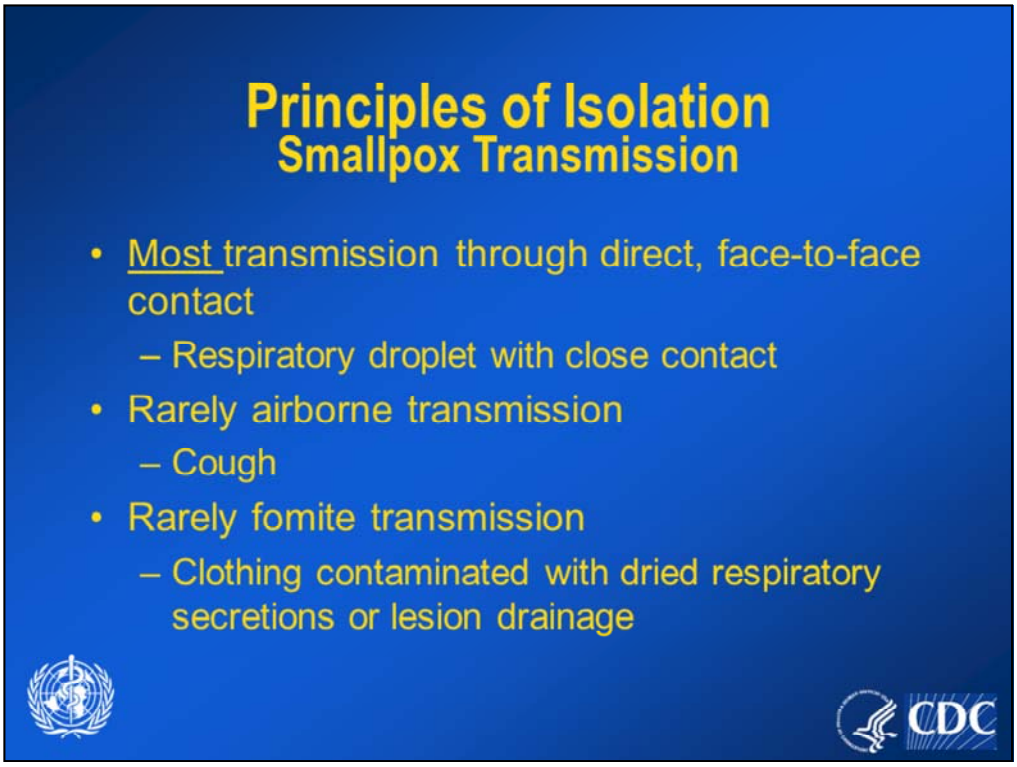


•Discussion of isolation considerations, strategies, and quarantine measures as a part of the response to a smallpox emergency

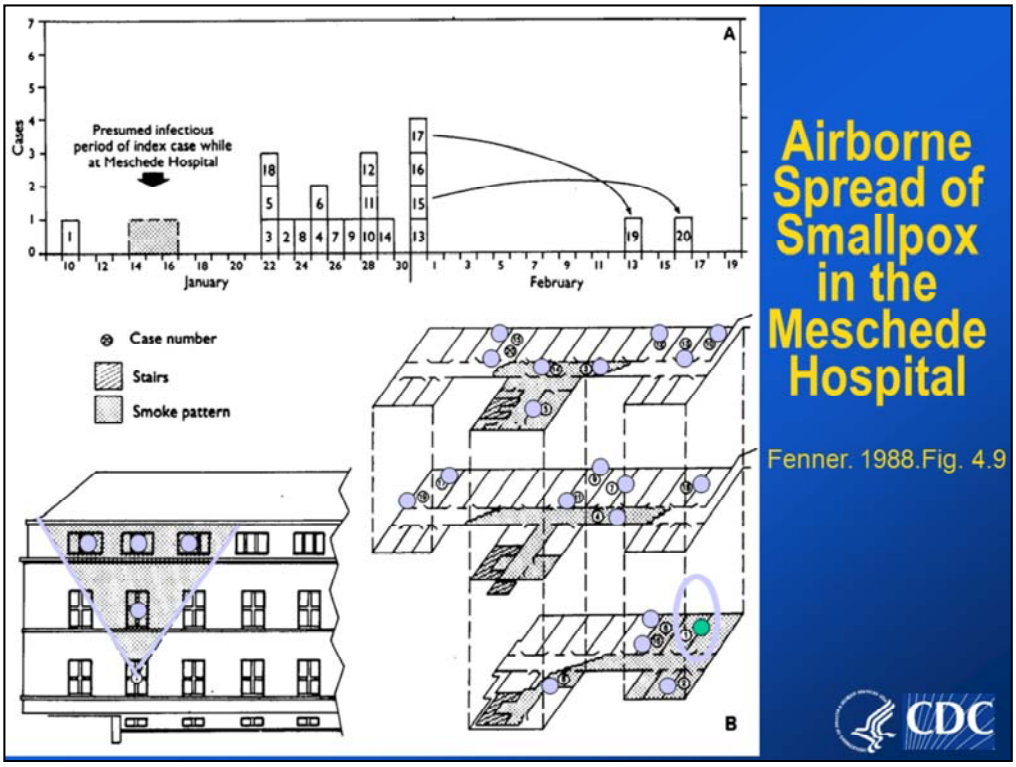


•Smallpox is most often transmitted through direct contact with respiratory droplets

•Usually requires close, face-to-face contact

•Rarely the disease can be spread through airborne transmission of infectious particles over greater distances, usually associated with cases that have a cough, which is not a usual feature of smallpox

•Also, transmission has occasionally been linked to fomite such as clothing or bedding that has been contaminated by dried respiratory secretions or lesion drainage of cases



•Although rare, airborne infection over longer distances did sometimes occur.

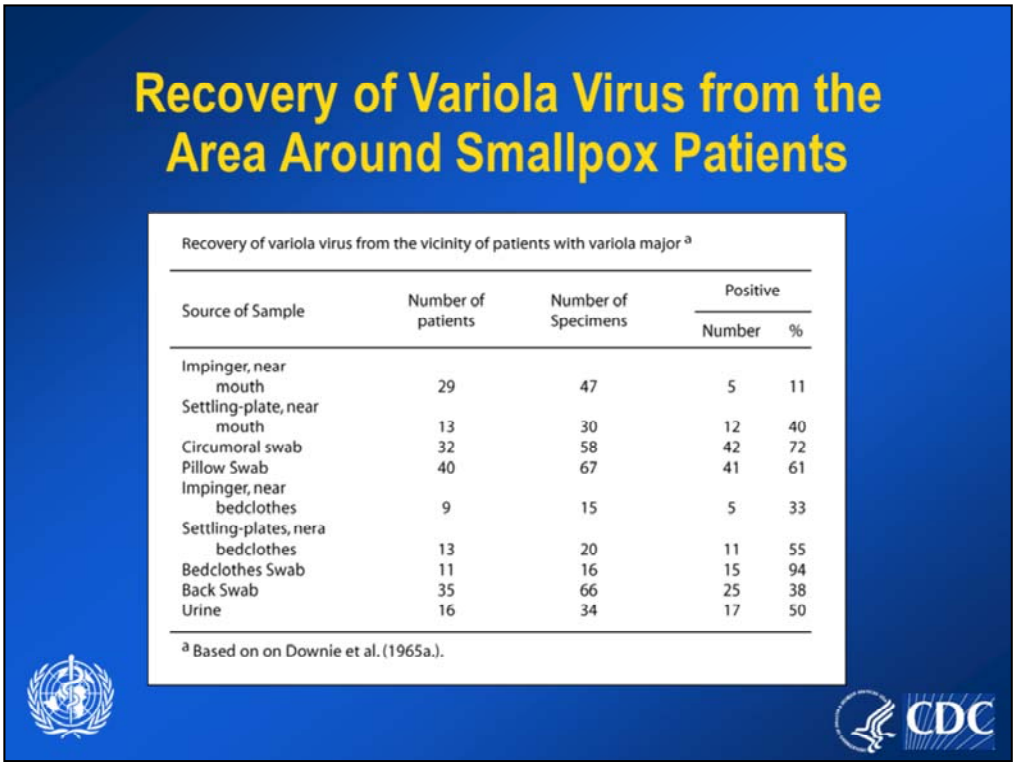
•Two hospital outbreaks in Germany seem to have secondary cases arising from airborne spread.

•In this hospital associated outbreak in Meschede, Germany, a case of smallpox (green dot) had been confined to his room before being diagnosed with smallpox and transferred to the smallpox hospital. In spite of his isolation 19 further cases of smallpox (blue dots) occurred on all three floors of the building in which the index case had been housed before transfer to the smallpox hospital.

•Reasons airborne transmission may have occurred include:

- •Confined to private room as a suspected typhoid fever case with contact isolation not respiratory isolation
- •Smoke studies showed fairly brisk air currents created by heating currents within the hospital that may have contributed to the distribution of air from the patient's room (shaded area shows path of air currents during smoke studies)
- •Patient had prominent cough

•Today's infection control practices and hospital ventilation engineering controls are more strict and should prevent transmission by preventing circulation of air from an isolation room to other areas of the hospital if implemented appropriately



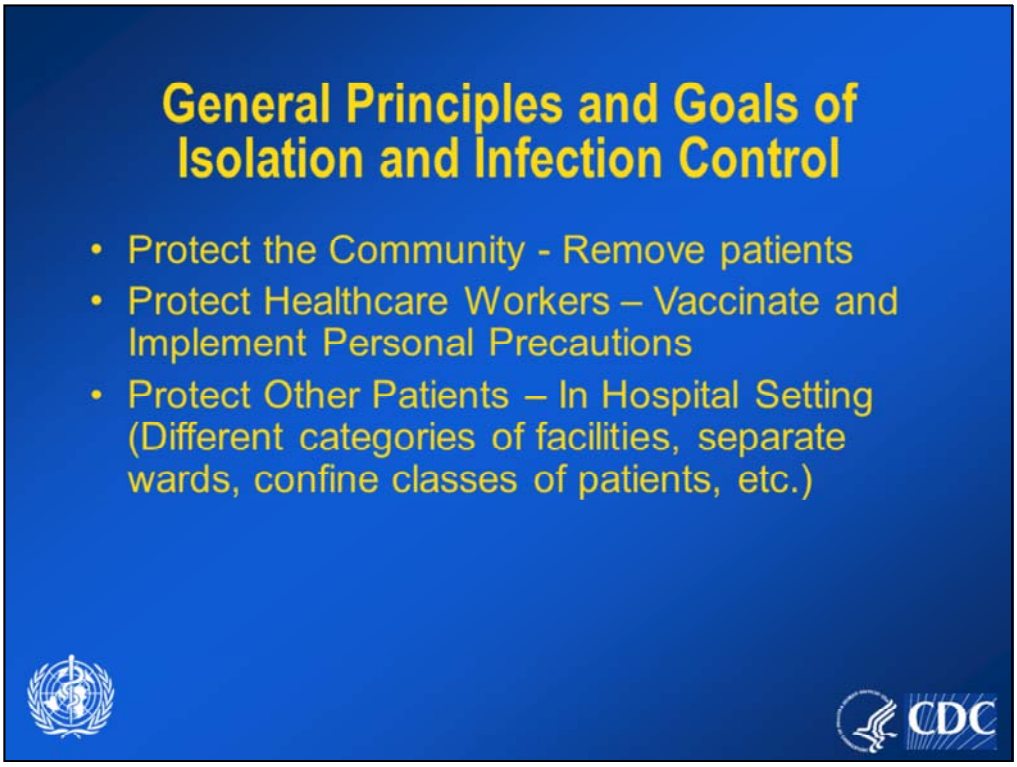
•Smallpox was rarely transmitted by fomites

•Although the vast majority of smallpox cases can be traced back to close, face-to-face contact and not to fomite contact, this study by Downie et al. demonstrated that live variola virus could be recovered from bedding and clothing used by smallpox patients and therefore could serve as a possible source of infection

•The environment immediately around the patient (e.g. pillow, bedclothes) had the highest percentage of positive cultures. This would correspond to areas where respiratory droplets would be most likely to settle and where pustule drainage contamination would be the greatest.

•Transmission to laundry workers by infected bedding/clothing was reported during several outbreaks by Dixon and others.

- •Wetting down the materials or avoiding sorting prior to washing to prevent re-aerosolization of dried secretions and decreased the risk for this type of transmission.



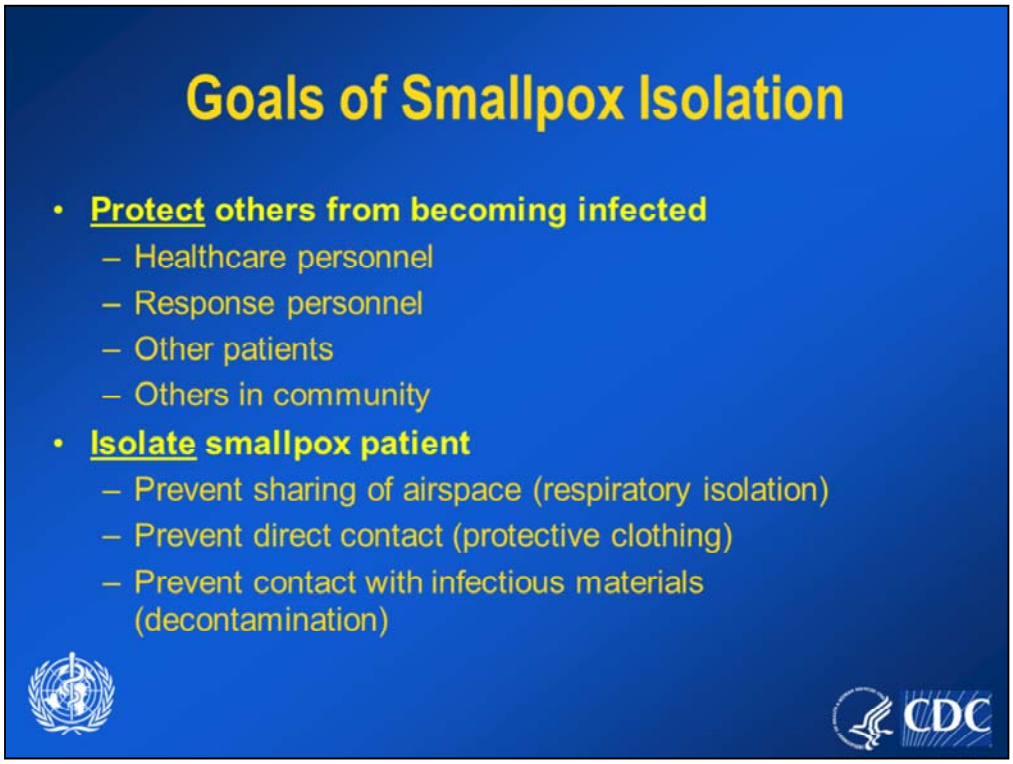
•The basic principles and goals of isolation and infection control are:

•First protect the community by removing infectious patients from the community environment

•Secondly protect healthcare workers who must come into contact and care for the patient

•Third, it is to protect other patients in the hospital.

Isolation is used for diseases that are transmitted through casual contact or respiratory transmission. Strict isolation is used for highly infectious agents that may travel long distances through the air or be caught from cutaneous contact with sores or secretions. Strict isolation requires restriction to a private room with controlled air flow. Persons entering the room must wear gowns, gloves, and respirators capable of filtering out micron-level particles. Surgical masks give no protection for respiratory isolation, which is used for diseases such as tuberculosis that are spread through the inspiration of infected particles but have only limited spread through contact with wounds or secretions. Respiratory isolation requires the same precautions as strict isolation but without the extensive gowning and gloving. Contact isolation is for diseases that spread by direct contact and limited droplet spread. It requires personal protective measures but not a controlled air supply.[128]

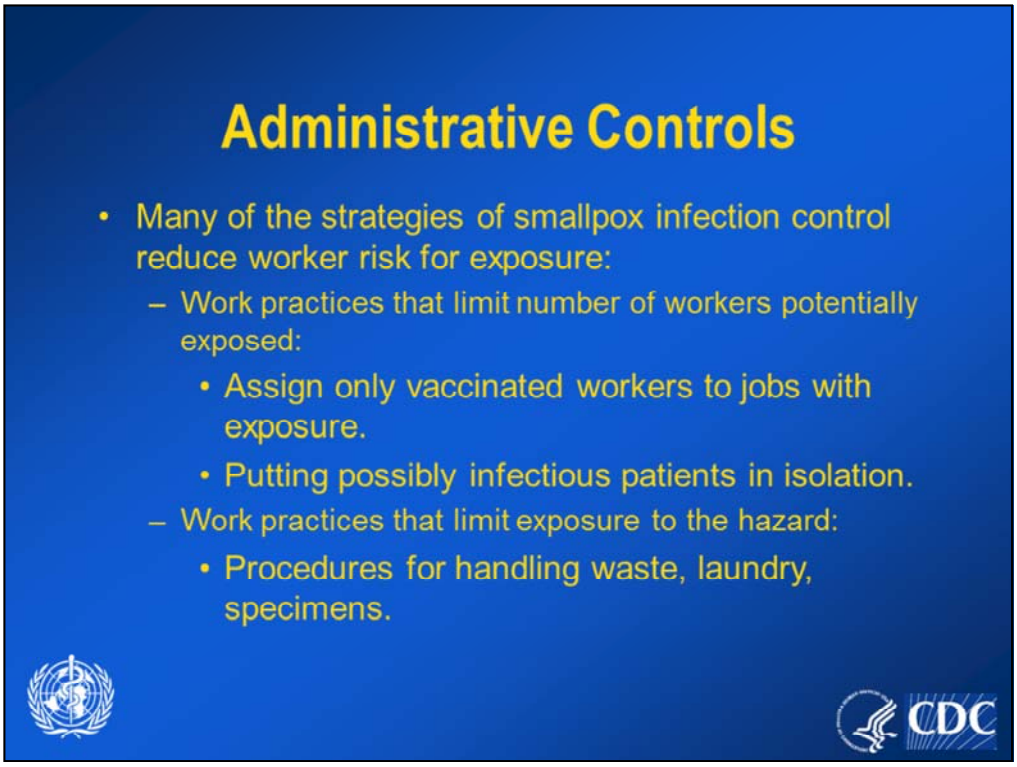


•Same goals in isolation strategies for smallpox

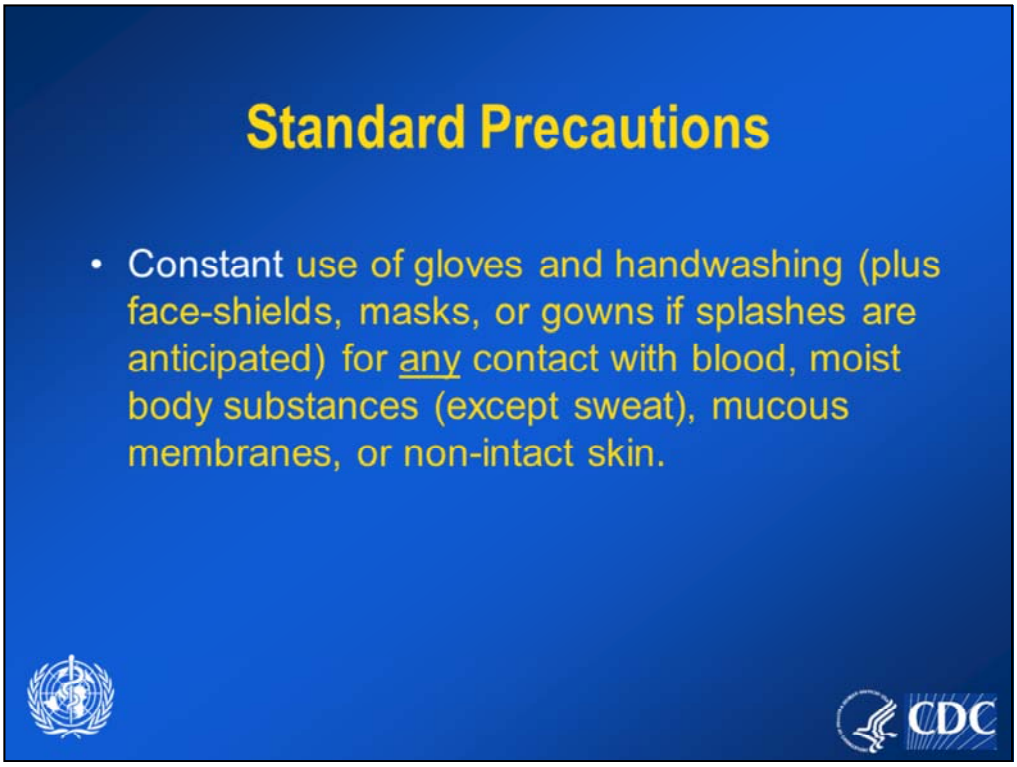
•Protect others from becoming infected and interrupt transmission

•Because of how it can be transmitted, isolation of smallpox patients would involve infection control measures to prevent:

- •Sharing of air between a smallpox patient and a person susceptible to disease (respiratory isolation and precautions)
- •Transmission of the virus to the healthcare provider by direct contact or to others from from a healthcare provider with contaminated clothing (contact isolation and precautions)
- •Others from coming into contact with infectious materials from the patient (infection control for waste disposal and decontamination measures)



- Many of the administrative infection control practices that are already utilized in current day hospitals can reduce worker exposures and spread within the hospital
- If a suspected smallpox case is admitted to a hospital, utilize vaccinated workers (if available) to care for the patient until the diagnosis is established
- People presenting to a hospital with a fever and a rash should be placed in respiratory isolation until an airborne infectious etiology is ruled out (as is done when varicella or measles is suspected)
- Established infection control procedures should be followed when dealing with potentially infectious waste



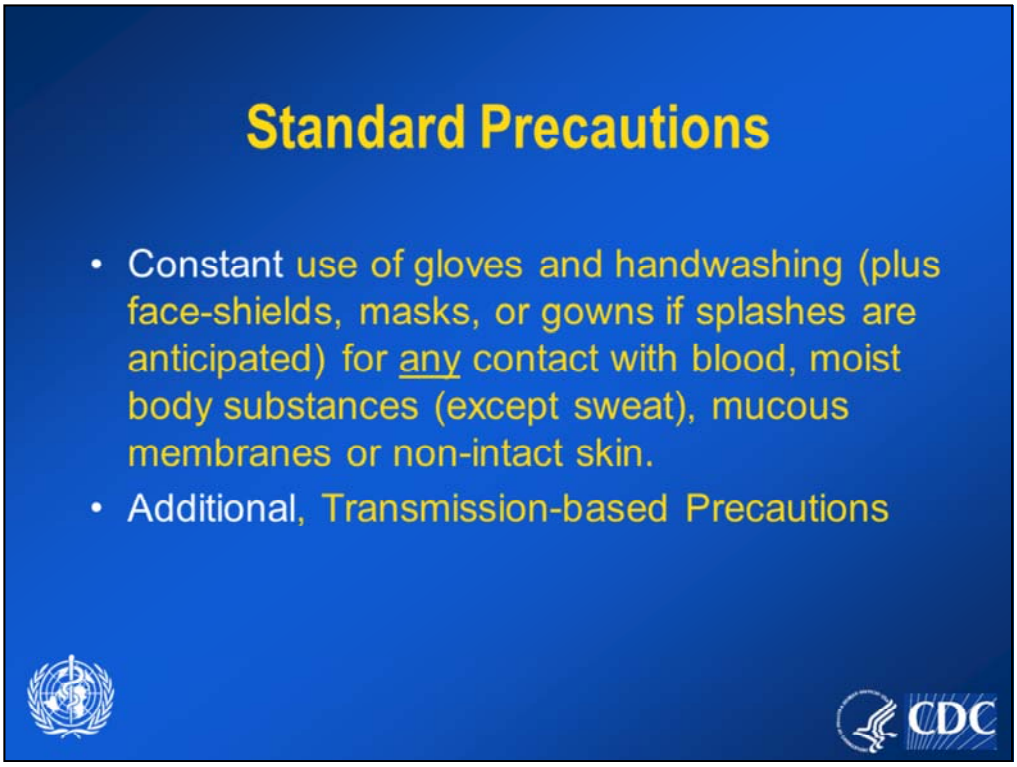
•Standard Precautions make up the major features of Universal Precautions (Blood and Body Fluid Precautions- designed to reduce the risk of transmission of bloodborne pathogens, and BSI - designed to reduce the risk of transmission of pathogens from moist body substances

•These standard or "constant" precautions should be applied to all patients receiving care in hospitals, regardless of their diagnosis or presumed infection status

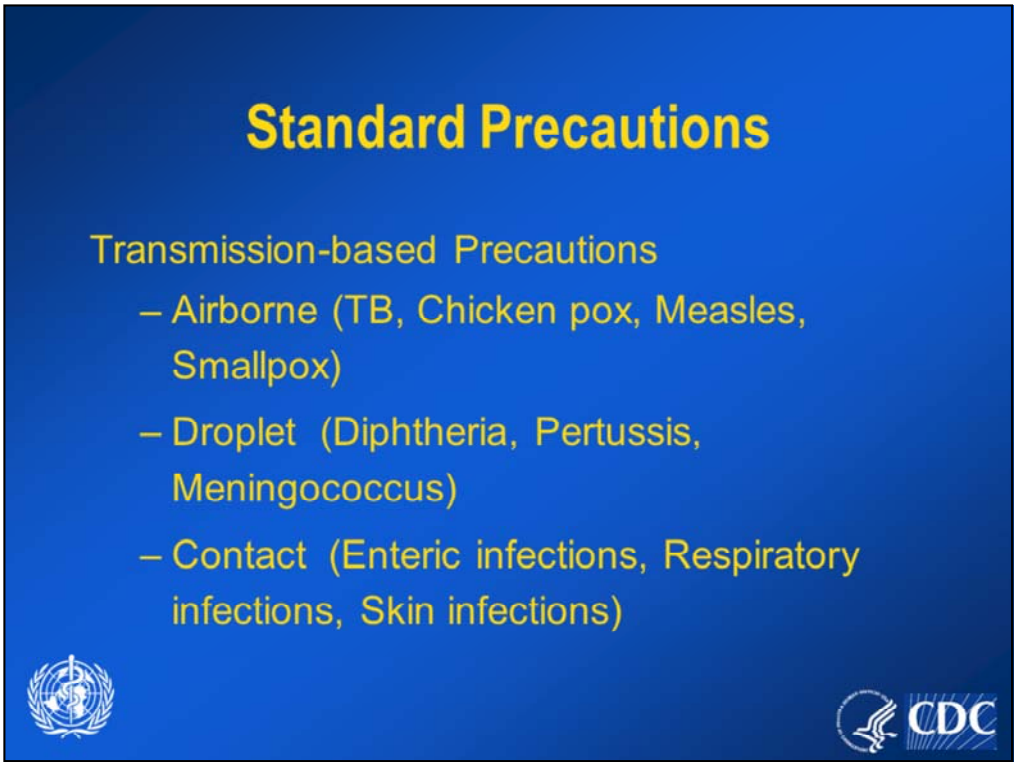
•Standard Precautions utilize gloves and handwashing following any contact with: 1) blood; 2) all body fluids, secretions, and excretions *except sweat*, regardless of whether or not they contain visible blood; 3) nonintact skin; and 4) mucous membranes.

•Additional protection should be utilized if splashes of body fluids are anticipated

•Standard Precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals.



•Additional Transmission-Based Precautions are designed for patients documented or suspected to be infected with highly transmissible or epidemiologically important pathogens for which additional precautions beyond Standard Precautions are needed to prevent or interrupt transmission in hospitals



•3 types of transmission-based precautions with examples of the biological agents that are transmitted by this route and require these types of precautions

•*Airborne Precautions* (TB, varicella, measles, etc.) are designed to reduce the risk of airborne transmission of infectious agents and apply to patients known or suspected to be infected with epidemiologically important pathogens that can be transmitted by this route

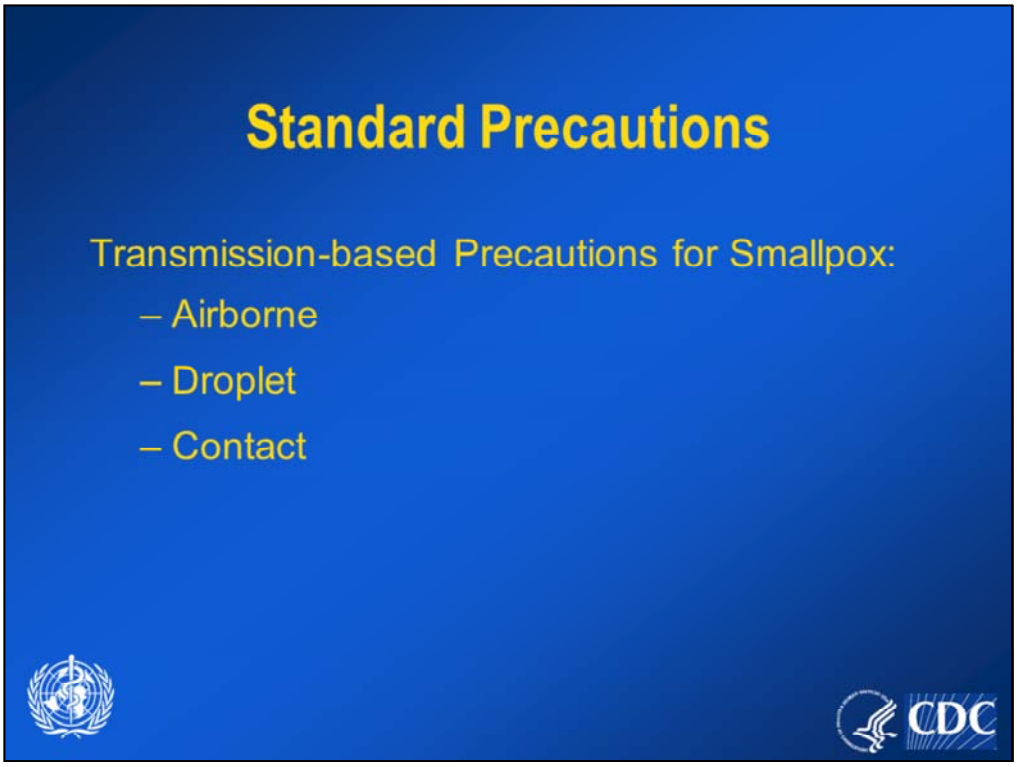
- •Airborne transmission occurs by dissemination of either airborne droplet nuclei (small-particle residue [5 µm or smaller in size] of evaporated droplets that can remain suspended in the air for longer periods of time) or dust particles containing the infectious agent.
- •Microorganisms carried in this manner can be dispersed more widely by air currents and may become inhaled by or deposited on a susceptible host within the same room or over a longer distance from the source patient, depending on environmental factors
- •Special air handling and ventilation are required to prevent airborne transmission.

•*Droplet Precautions* are designed to reduce the risk of droplet transmission of infectious agents.

- •Droplet transmission involves contact of the conjunctivae or the mucous membranes of the nose or mouth of a susceptible person with large-particle droplets (larger than 5 µm in size) containing microorganisms generated from a person who has a clinical disease or who is a carrier of the microorganism.
- •Droplets are generated from the source person primarily during coughing, sneezing, or talking and during the performance of certain procedures such as suctioning and bronchoscopy.

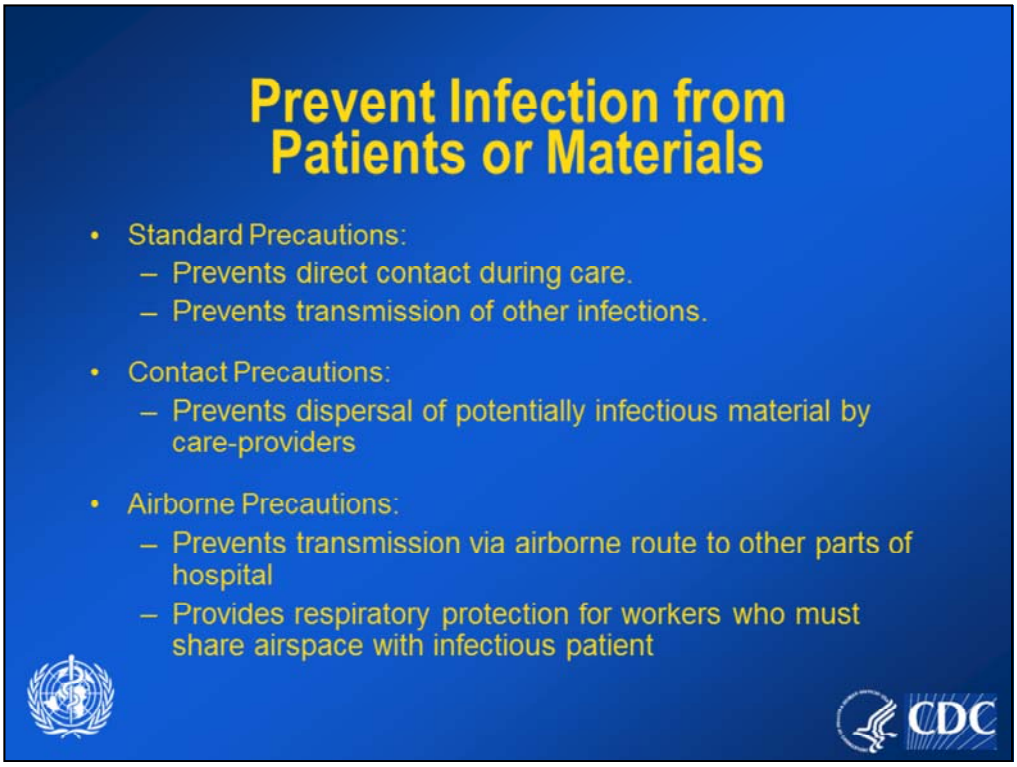
- Transmission via large-particle droplets requires close contact between source and recipient persons, because droplets do not remain suspended in air and generally travel only short distances, (usually 3 ft or less).
- Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent transmission.

- *Contact Precautions* are designed to reduce the risk of transmission of epidemiologically important microorganisms by direct or indirect contact.
  - Direct-contact transmission involves skin-to-skin contact and physical transfer of microorganisms to a susceptible host from an infected or colonized person, such as occurs when personnel turn patients, bathe patients, or perform other patient-care activities that require physical contact.
  - Direct-contact transmission also can occur between two patients (e.g., by hand contact), with one serving as the source of infectious microorganisms and the other as a susceptible host.
  - Indirect-contact transmission involves contact of a susceptible host with a contaminated object in the patient's environment.
  - Contact Precautions apply to specified patients known or suspected to be infected or colonized (presence of microorganism in or on patient but without clinical signs and symptoms of infection) with epidemiologically important microorganisms than can be transmitted by direct or indirect contact.



•Three types of Transmission-Based Precautions should be followed for smallpox:

- •Airborne Precautions (rare but can occur)
- •Droplet Precautions (most common route of transmission, droplet transmission is also prevented when airborne precautions are instituted)
- •Contact Precautions (rare but can occur)

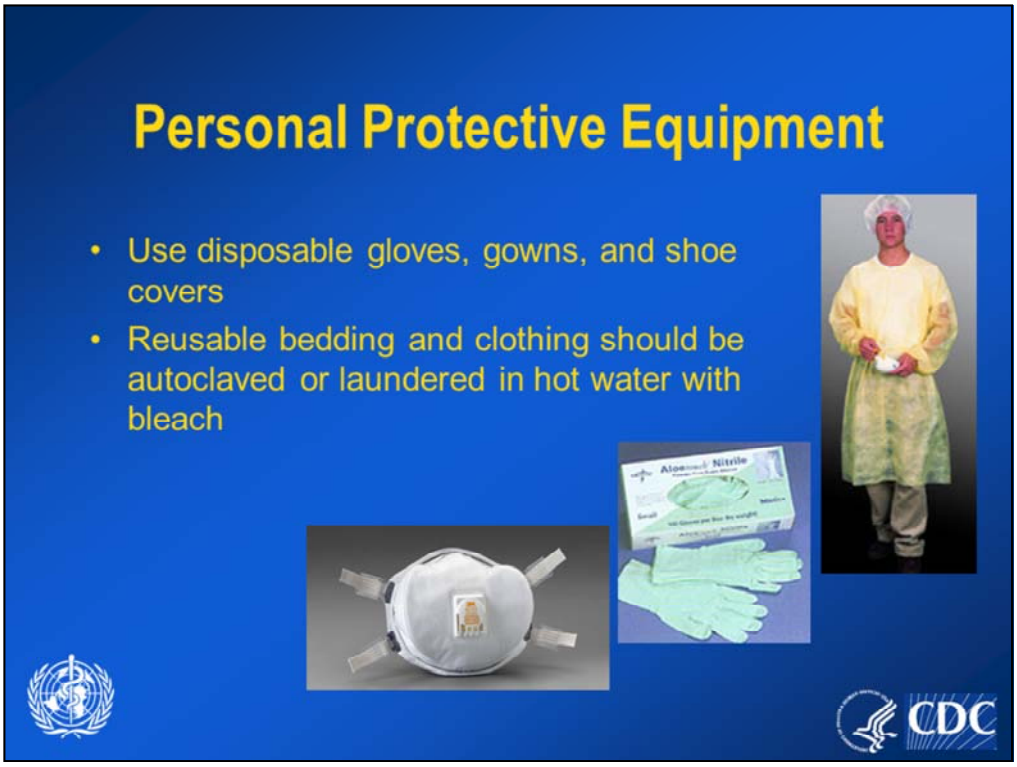


•These different precautions serve to prevent transmission in several ways:

•Standard precautions (gloves, handwashing, splash precautions) serve to prevent direct contact during patient care and provides protection against other blood-borne agents that may also be present (e.g. HIV, hepatitis, etc.)

•Contact precautions (disposable protective clothing in addition to gloves, handwashing, and splash precautions) help prevent direct contact but also prevent the health-care provider from carrying infectious materials to areas outside of the room

•Airborne precautions (masks, special air handling room requirements, in addition to above) provides respiratory protection for workers who must share airspace with the infectious patient and prevents potentially contaminated air from the patient's room from getting to other areas of the hospital



•Gowns, gloves, mask, and other protective clothing should be used

•Personnel should remove and correctly dispose of all protective clothing before leaving patient care area and having contact with other people.

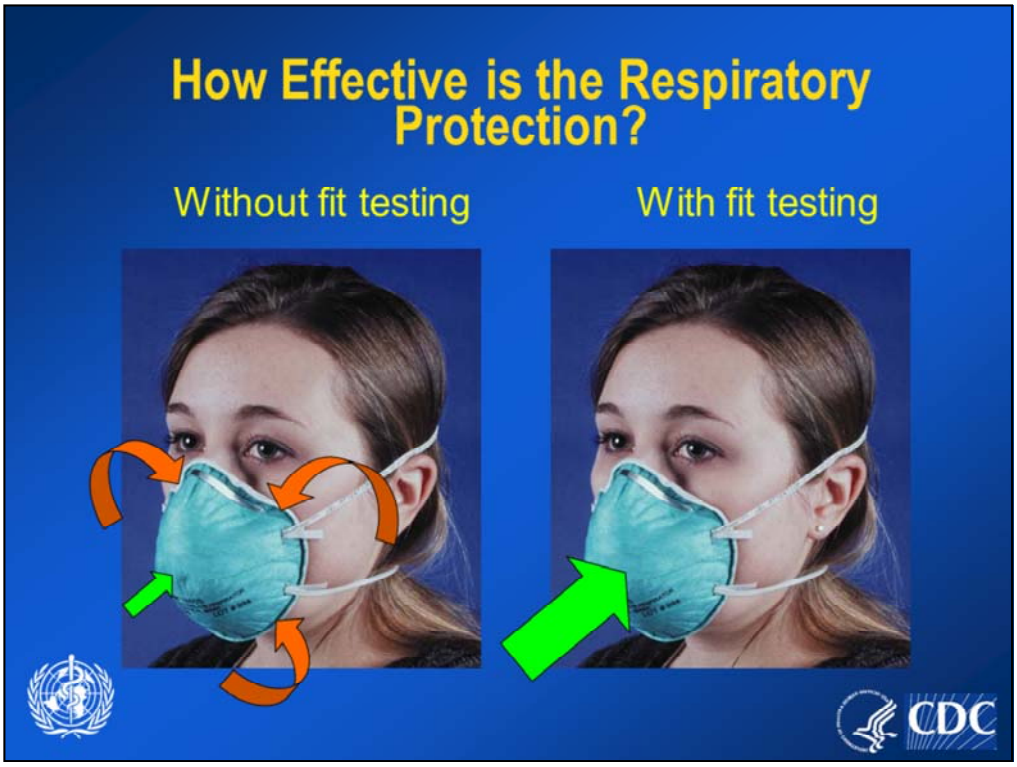
•Reusable bedding and clothing can be autoclaved or laundered in hot water with bleach to inactivate the virus.

•People who come into contact with materials potentially contaminated with smallpox virus, such as laundry handlers, housekeeping, and laboratory personnel should utilize appropriate precautions and protective clothing and equipment.

•If a case of smallpox is confirmed, all personnel should be vaccinated before caring for suspected smallpox patients or handling contaminated materials.

•For airborne precautions should use an N95 type mask or particulate respirator at a minimum

•This is the same recommendation that has been made for protecting health care workers against tuberculosis infection

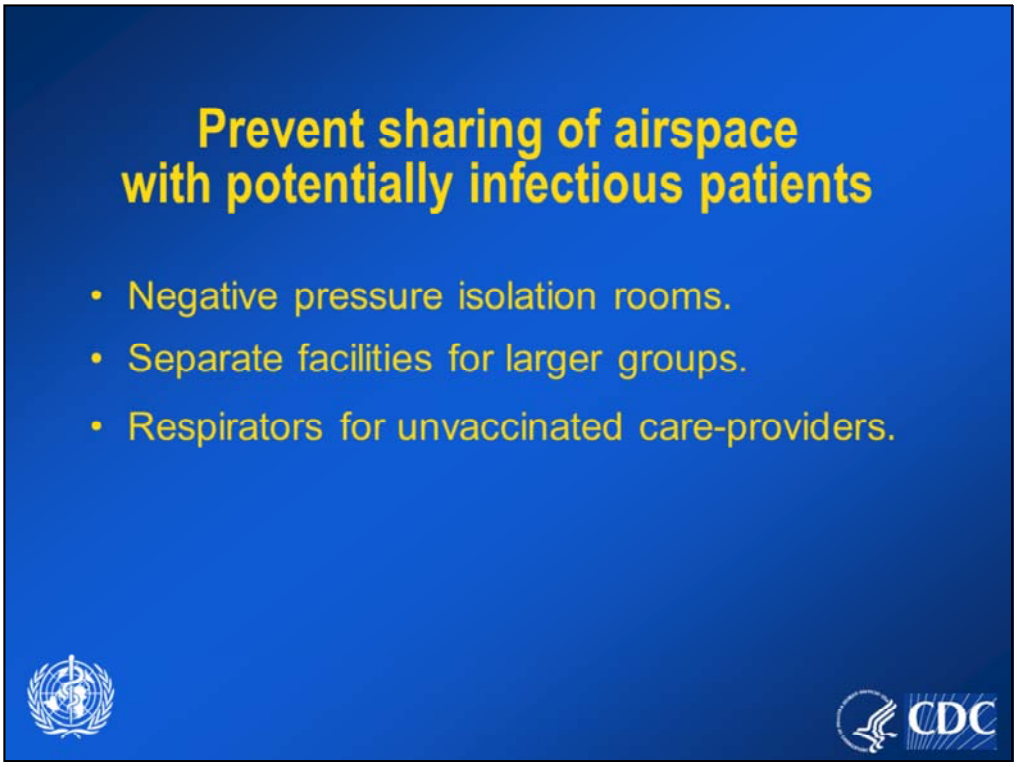


•Proper fit testing is important to maximize the effectiveness of the mask

•An N95 respirator will ONLY offer maximally effective protection if it has been tested to show that it fits well.

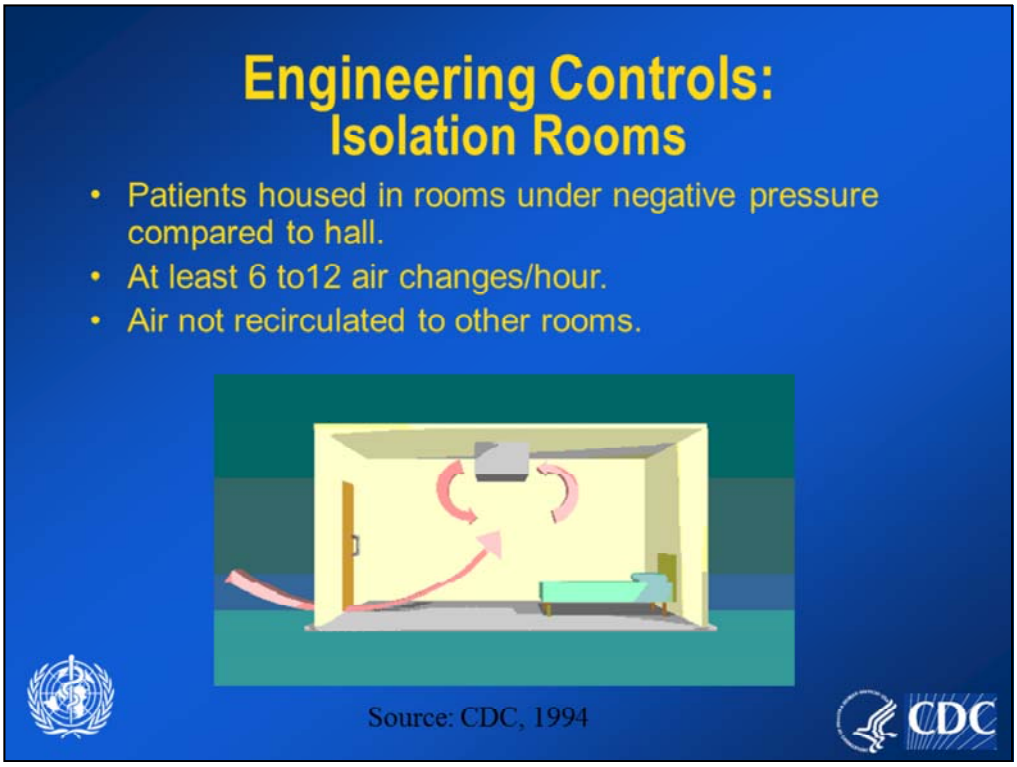
•If the respirator has a bad fit, inhaled air can leak around the edges and be inhaled without going through the filter.

•If the respirator has been fit tested, and the edges seal well to the face, inhaled air goes through the filter allowing the majority of the microorganisms and particulate matter to be filtered out of the air before it is inhaled



•Placing the patient in negative pressure isolation rooms will prevent potentially contaminated air from traveling to areas outside of the room.

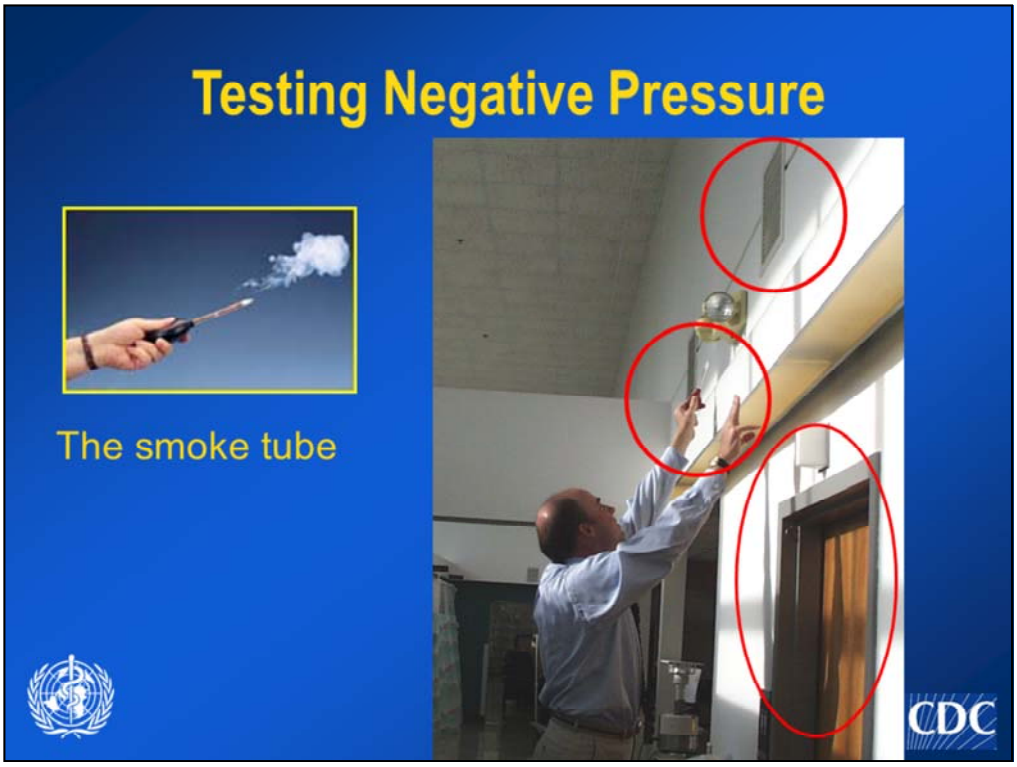
•If the number of smallpox patients is greater than the number of negative pressure isolation rooms or if no such rooms exist, patients should be isolated in a separate facility that does not share air ventilation with any other facility



•Rooms used for isolation should be at a negative air pressure when compared to the hall or other adjoining areas

•Current standards in the United States for isolation rooms require that there be at least 6-12 air changes/hour and that the air not be re-circulated to other rooms but that it be vented to the outside away from air intake vents or people traffic areas, or be filtered through high efficiency particulate air filtration systems

•Similar to isolation requirements for varicella, measles, and TB

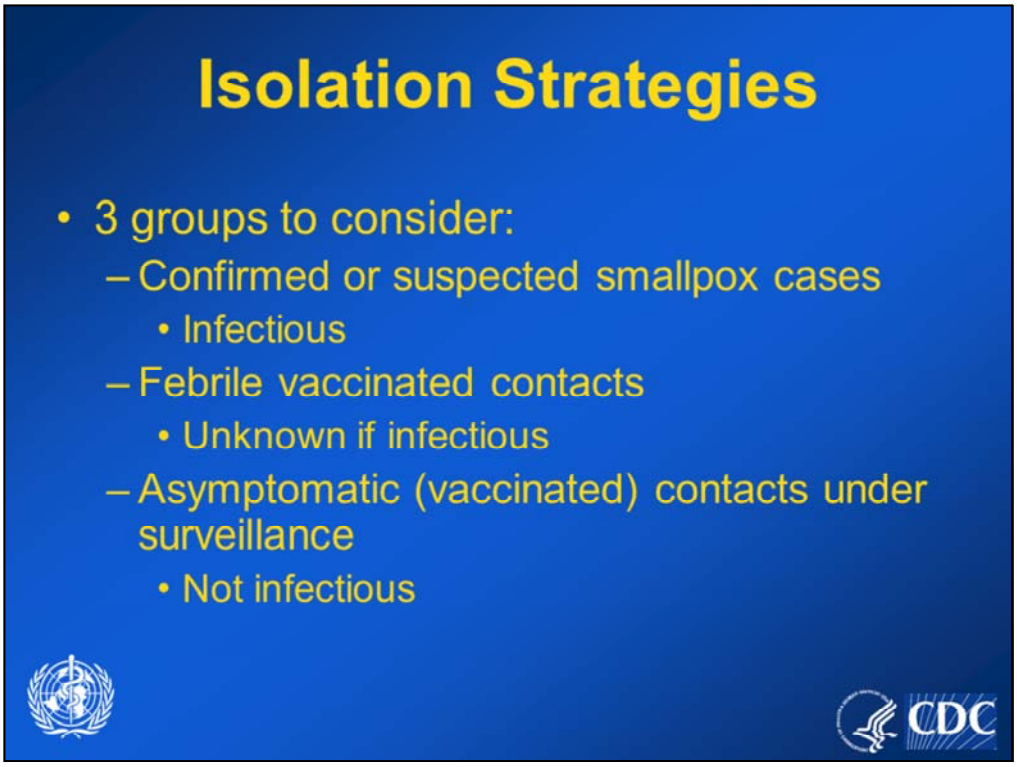


•Important to frequently test negative pressure rooms to confirm they are working correctly

- •Automatic airflow monitors can be wrong so simple smoke tube testing useful

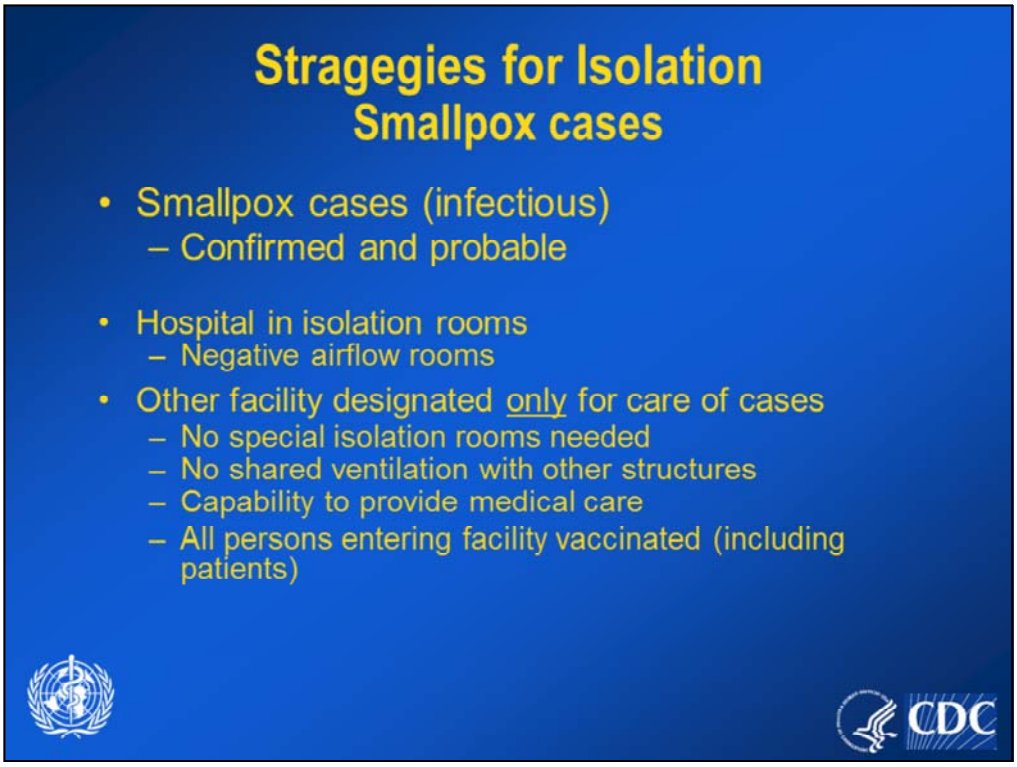
•Test area around door and any vents around door that should have air moving into the room but not out of the room

•Remember to keep doors to isolation rooms closed when not in use to enter or leave room!



•In a smallpox outbreak, there are 3 groups to consider when formulating isolation strategies

- •Confirmed or suspected cases that would be considered immediately infectious to others
- •Vaccinated contacts to smallpox cases that become febrile and may be developing smallpox or may be febrile from the vaccination or some other reason (potentially infectious)
- •and Vaccinated contacts to smallpox case that don't have any symptoms but who are still in the surveillance period for the development of smallpox (not currently infectious but could still develop smallpox)

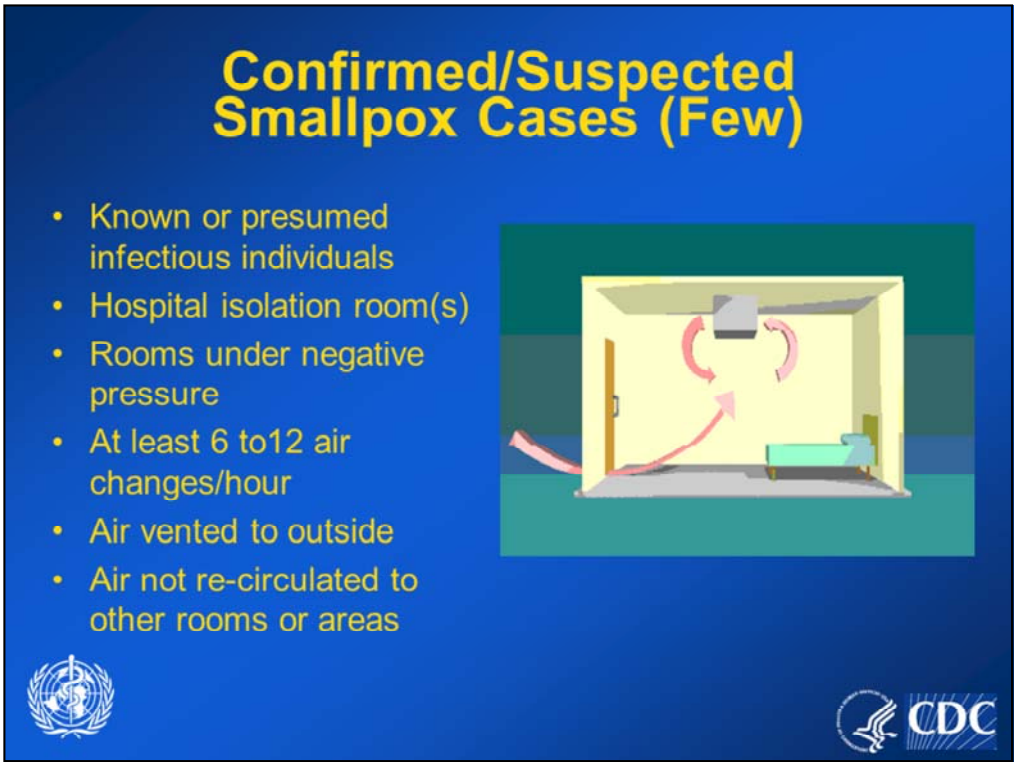


•Smallpox cases require precautions that were previously discussed to prevent further transmission of disease

•If only a few cases and have appropriate isolation rooms available, could be isolated individually in hospital isolation rooms

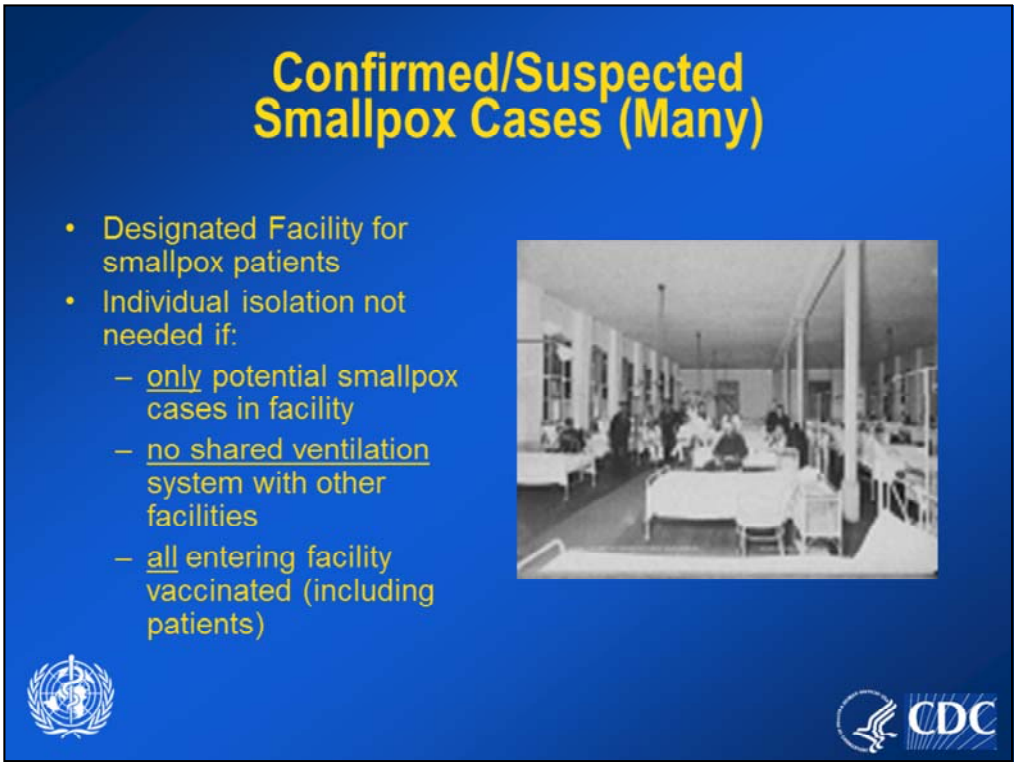
•Could also be isolated with other suspected cases in a separate facility that is designated for their use only and does not have a shared ventilation system with any other facility

- •All persons (including patients) within facility would have to be protected by vaccination
  - •Prevent patients that are mistaken for smallpox patients (varicella) from becoming infected when they are exposed to true smallpox patients
  - •Prevent others that enter facility from becoming infected following exposure via shared airspace
  - •Must have capability of providing some medical care if non-medical facility used for group isolation



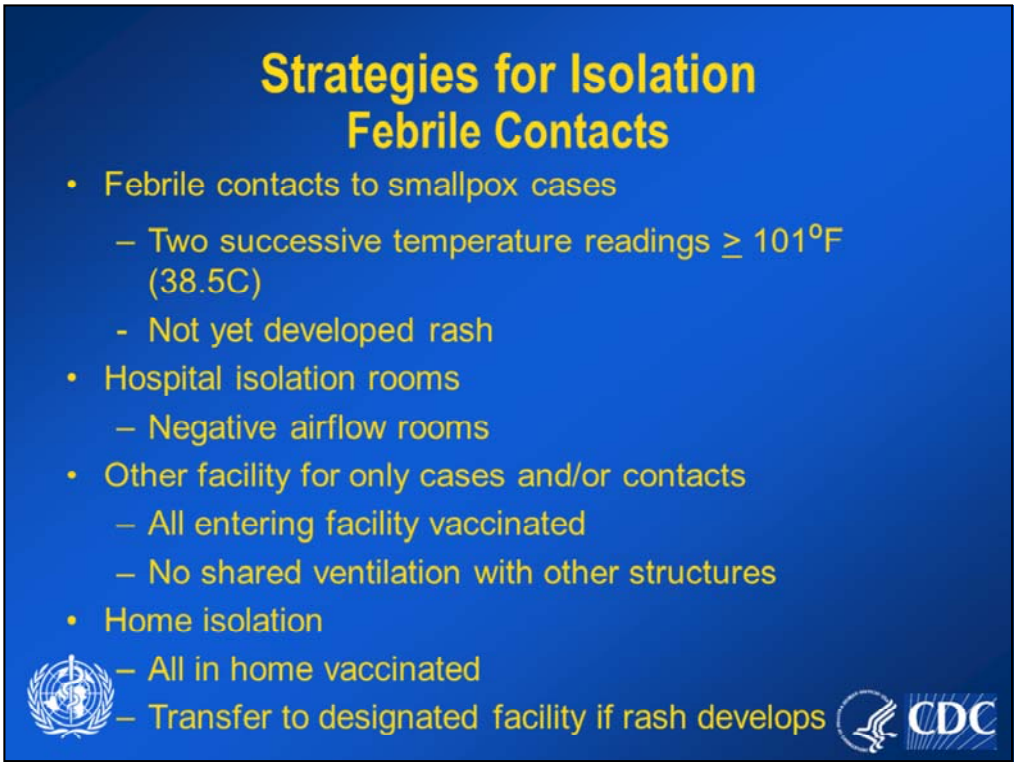
•Requirements for individual isolation in hospital or facility where airspace sharing is to be prevented (ie. hospital with other patients, unvaccinated people, etc.) have already been discussed

•Isolation rooms should be under negative pressure with engineering controls that assure that air is not re-circulated to other areas of hospital



•If groups of suspected patients are isolated in a facility designated only for care of smallpox patients, then

- •Don't need to have special isolation rooms
- •Make sure that ventilation system (including heating and air conditioning systems) are shared with any other facility
- •All persons entering facility must have been successfully vaccinated recently (including patients admitted to facility)



•Recently vaccinated contacts who have a fever but do not have a rash, may or may not be manifesting the first signs of smallpox

•They need to be watched carefully to see if the fever is from the prodrome of smallpox or if it is from the recent vaccination, could be infectious if developing early symptoms of smallpox

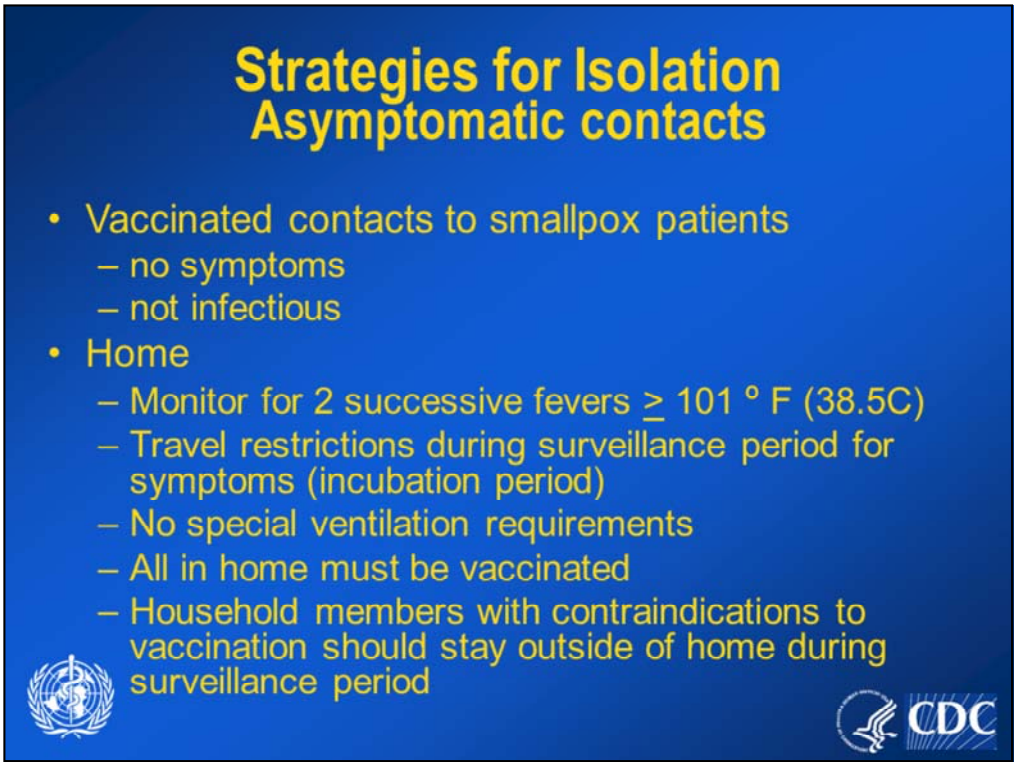
•Can also isolate in hospital negative pressure rooms if available while observing for development of rash

•Or can isolate in a different facility with other febrile contacts or cases

- •Same requirements as facility for cases

•Additional option is to keep person isolated at home and moving to smallpox isolation facility only if develops rash

- •All people entering or living in home must be vaccinated



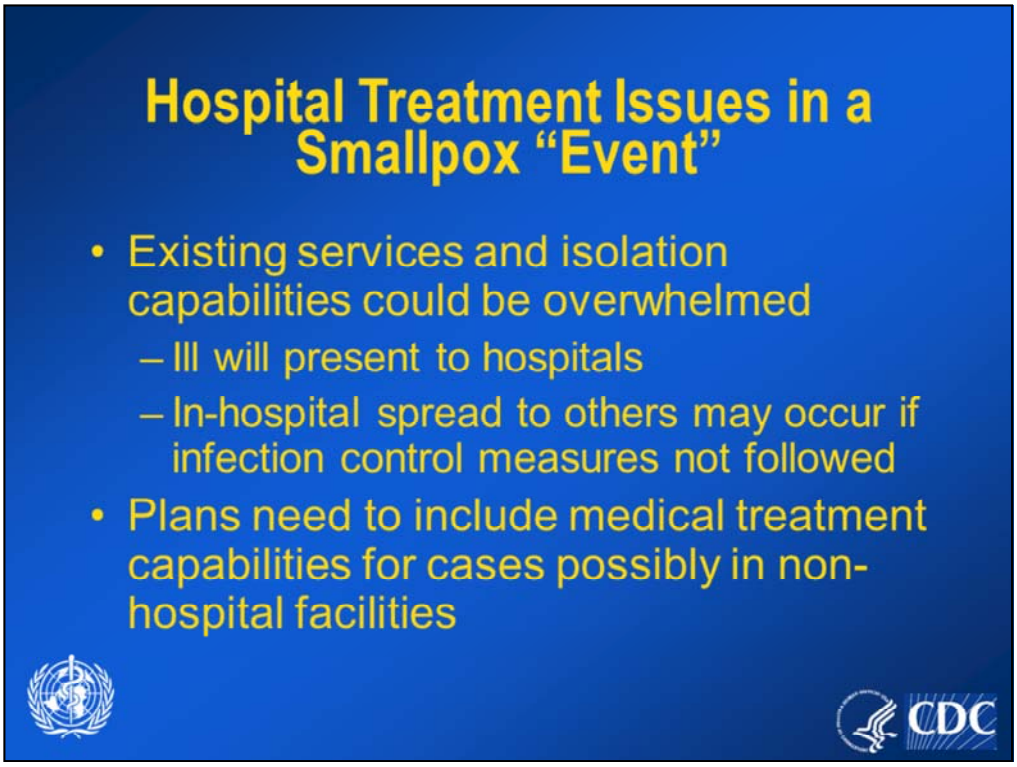
•Recently vaccinated contacts to smallpox cases that do not have any symptoms are not infectious so don't require facilities with any special ventilation

•They can be monitored in their home for development of a fever (check at least twice a day)

•Can be asked to stay at home during surveillance period for symptoms or may be allowed to travel outside of home if distance is restricted such that a quick return to home is possible if develops fever

•All others staying in home must be vaccinated in case the contact develops smallpox

•Other household members with vaccination contraindications that can't be vaccinated to protect themselves if the contact does develop smallpox while at home under surveillance should stay elsewhere until the contact is no longer at risk of developing the disease



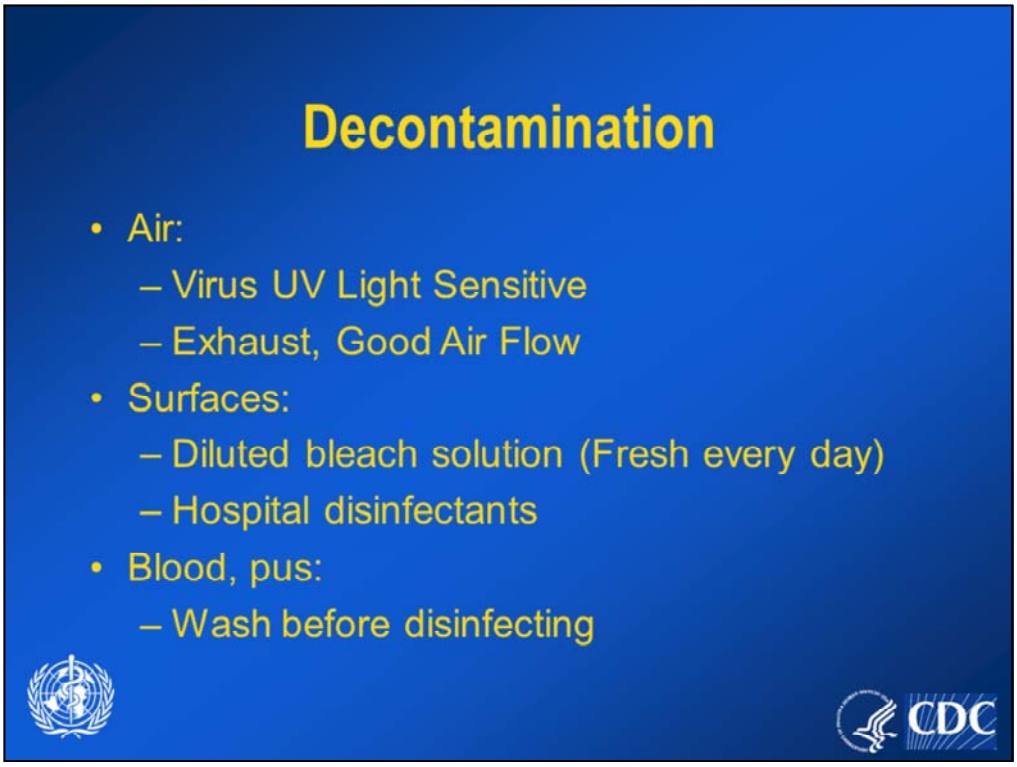
•Hospitals and communities need to plan now on the proper management of suspicious smallpox cases.

•If an outbreak occurred, existing medical services and individual isolation capabilities could quickly become overwhelmed dealing with probable cases and evaluating potential cases

•Breakdowns in infection control measures could contribute to the spread of disease in hospitals where patients present

•Contingency plans should include other facilities where smallpox patients can be cared for appropriately without worry about spread of disease if existing isolation capabilities in hospitals are overwhelmed

•Still have to have medical facilities that can maintin routine medical care for other illnesses and trauma

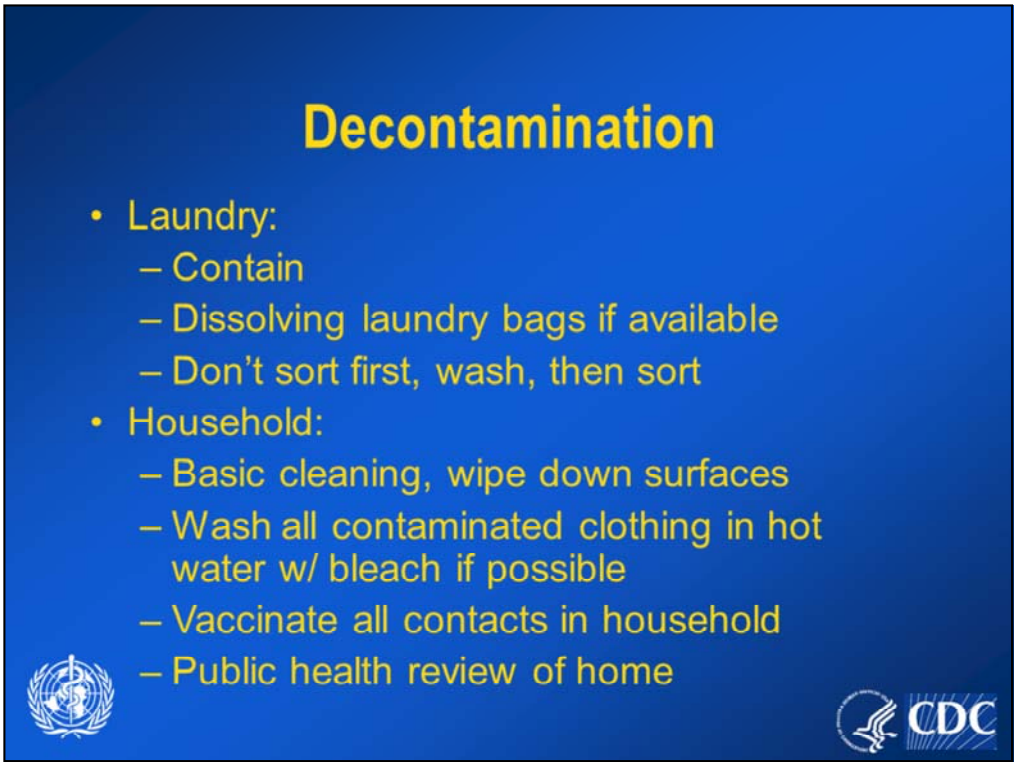


•Smallpox virus is sensitive to UV light inactivation

•Good air flow and exhaust to the outside will help to dilute the concentration of any airborne particles and exposure the virus to UV light

•Contaminated surfaces can be cleaned with fresh, diluted bleach solution or other hospital disinfectants that inactivate viruese

•Reusable medical instruments or surfaces contaminated with blood or pus should be washed to remove the material in addition to disinfection



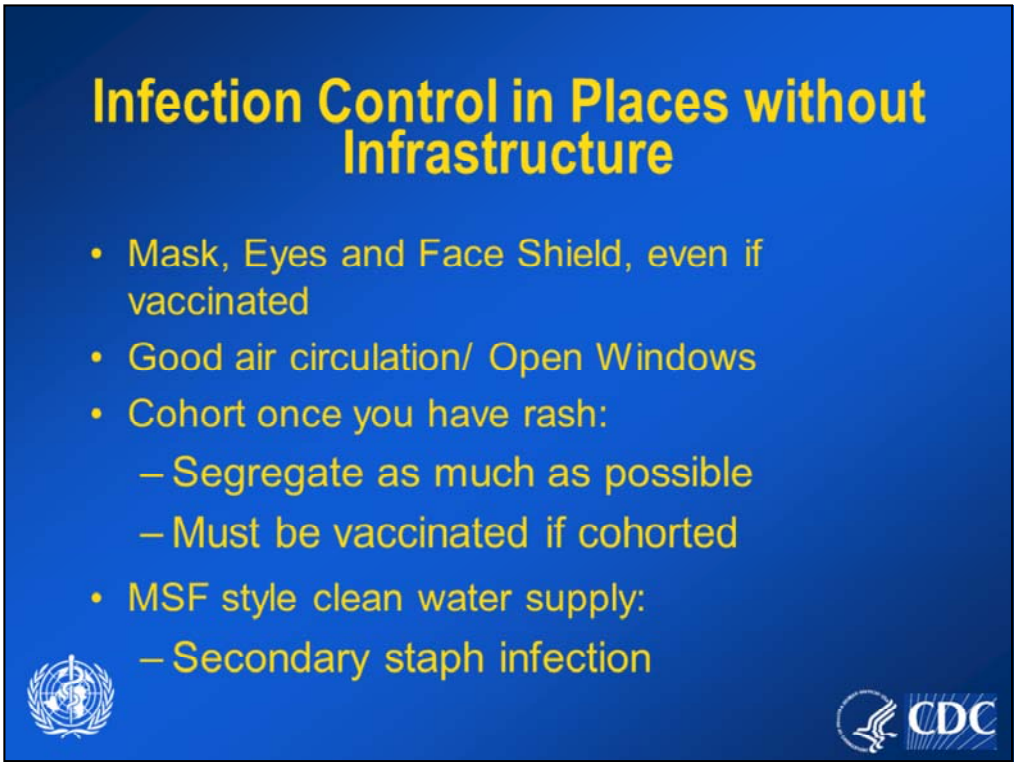
•Laundry and contaminated personal protective clothing should be placed in appropriate containers upon leaving an isolation area

•For reusable laundry, dissolving laundry bags that can be placed in the was without removing the laundry are preferable

•Laundry should not be sorted before washing, should be placed directly in the wash, then sorted

•Surfaces in homes where smallpox cases were present should be wiped down

•Contaminated clothing can be washed in hot water with bleach added if possible



•In places where the existing medical infrastructure has been overwhelmed or where one doesn't exist, several things should still be implemented:

•Suspected patients should be segregated away from other patients as much as possible is areas where there is good air circulation to the outside of the facility (open windows, encourage airflow from the room to the outside of the facility)

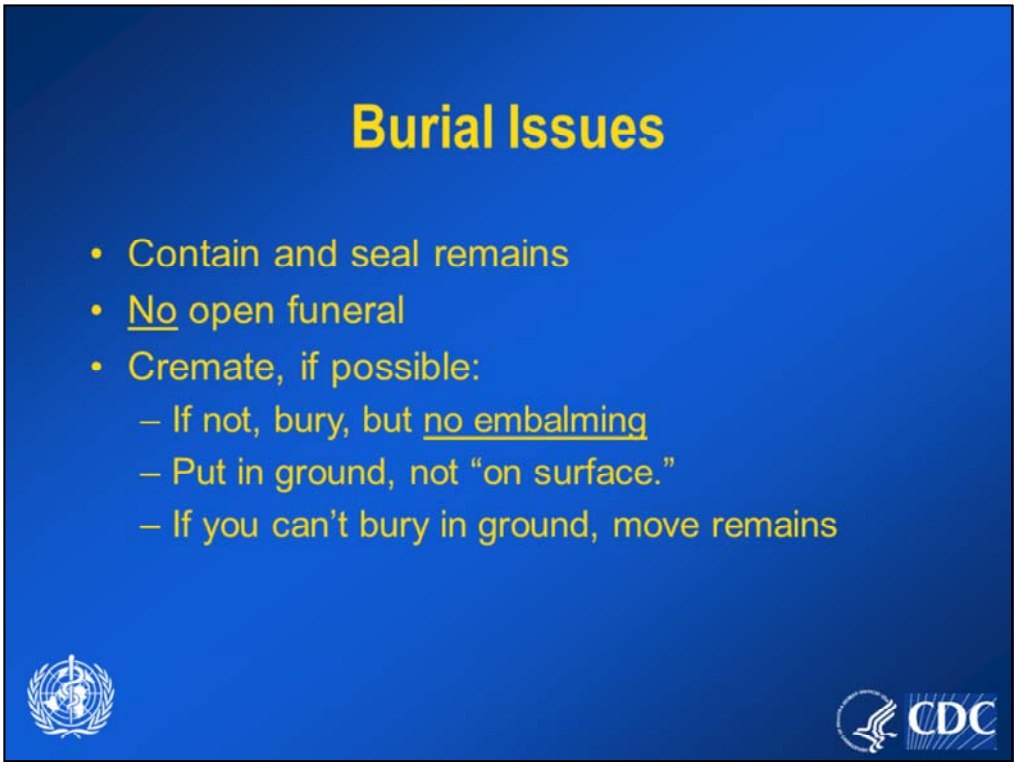
•Healthcare workers should still utilize standard precautions to prevent mucous membrane deposition of body fluids and protect themselves, even if vaccinated

•If suspected smallpox patients are grouped together, must vaccinate them all

•Clean water is important to prevent secondary bacterial infection in patients with extensive skin lesions

•Burning is the easiest method of waste disposal in places where the medical infrastructure is compromised.

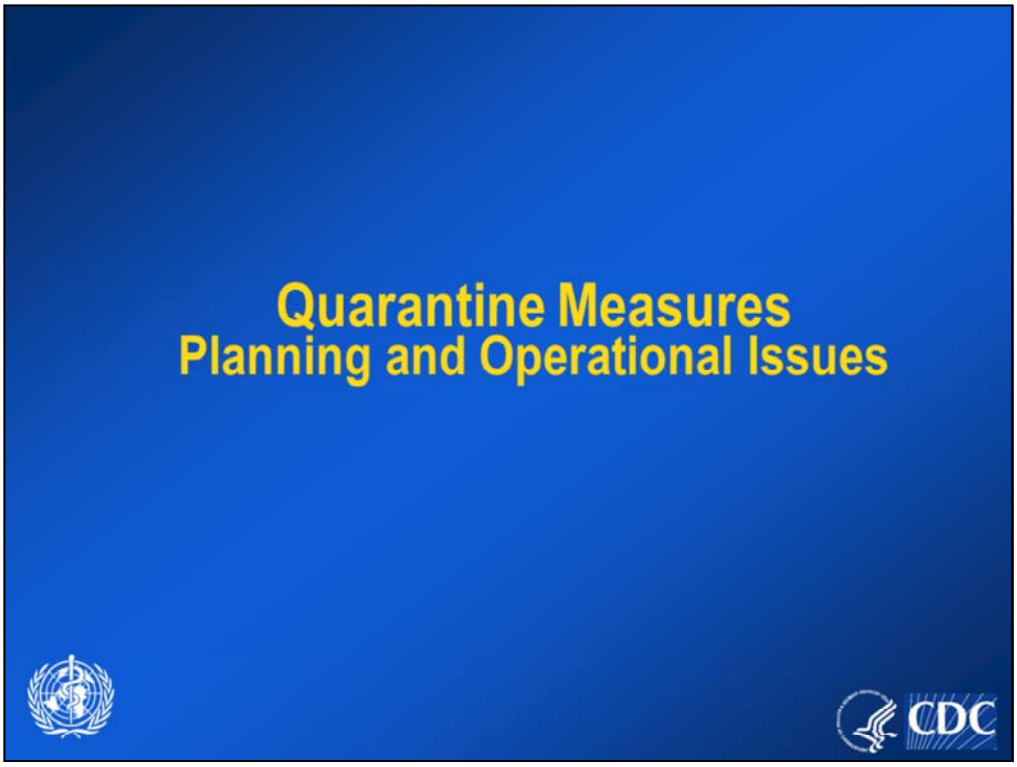
•Surface cleaning with a fresh bleach solution would serve as an acceptable means of decontamination



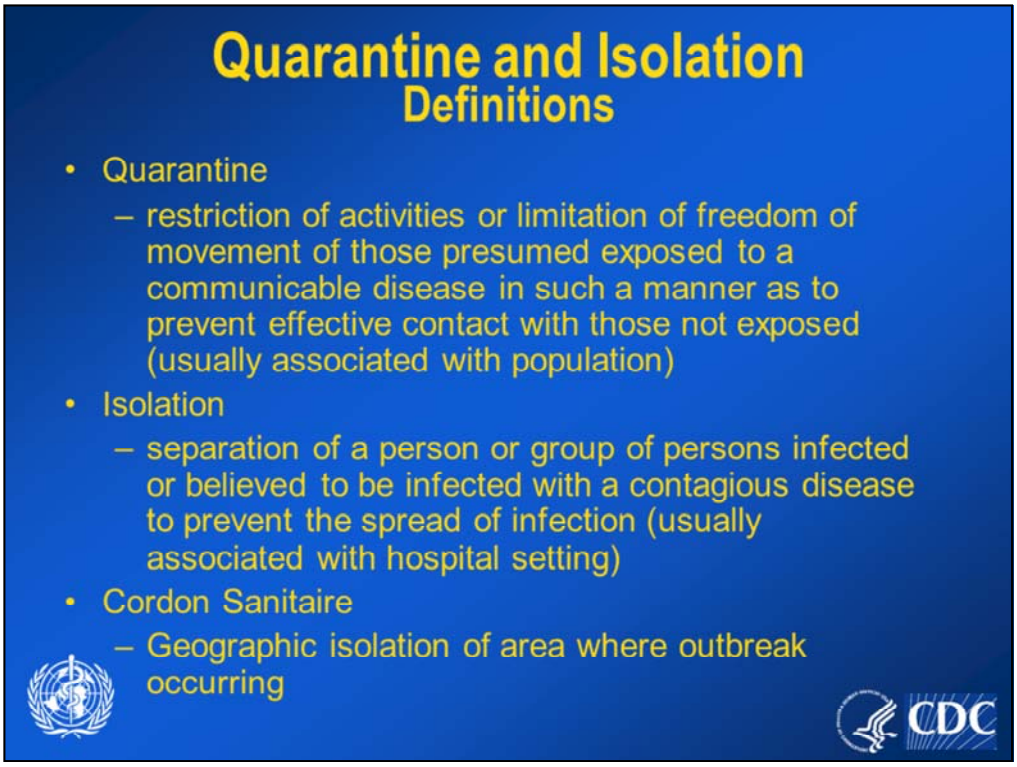
•Embalming and open casket funerals should not be done for people who have died from smallpox

•Outbreaks have been associated with open casket funerals

•If possible, the safest way to deal with remains is cremation, but if that is not possible, containing and sealing the remains then burying them in the ground can be done



•Since many countries have not had to use quarantine as a public health measure in recent years, planning and evaluation for how it might be implemented should be done now, before a crisis like a smallpox outbreak, forces its potential use as an outbreak control measure



•There are varying levels of isolation and quarantine that range from personal to community-wide.

•Slide shows the various terms used to describe these levels and their definitions.

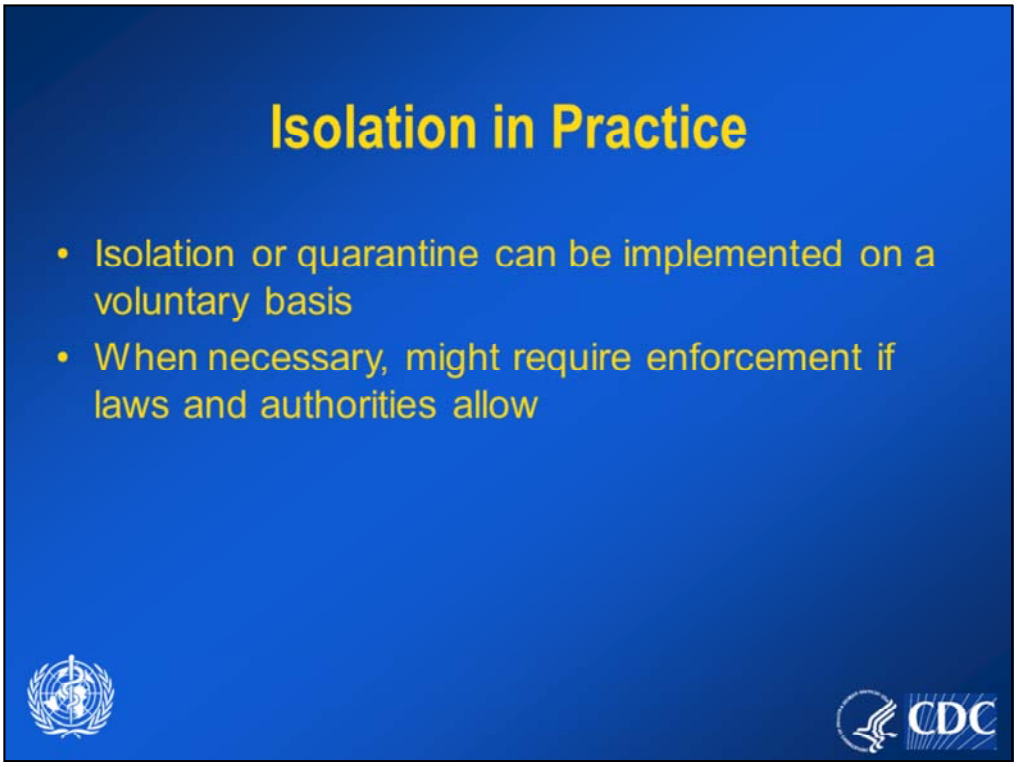
•Quarantine means the restriction of disease carriers (but not necessarily symptomatic) to an area where their contact with non-exposed, non-carriers is limited. In the United States, quarantine was widely used as a public health measure until the 1950s but is not generally used currently.

•*Isolation* is almost always used in an institutional setting. Isolation is used for diseases that are transmitted through casual contact or respiratory transmission.

•Strict isolation used for highly infectious agents that may travel long distances through the air or be caught from cutaneous contact with sores or secretions.

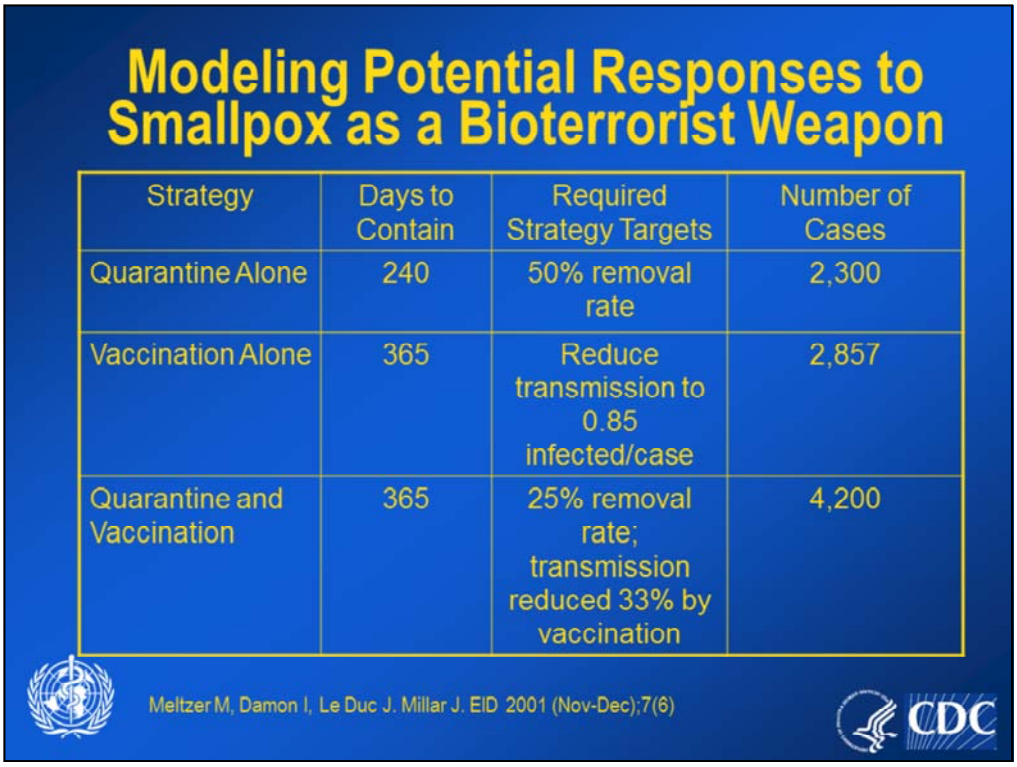
•Another term that might be used when discussing restrictions of movement is the "Cordon Sanitaire". Term is usually associated with keeping people within a defined geographic area in which there is a disease outbreak. May move within the isolated area, but not outside it, in order to keep the disease from spreading.

Any combination of these three types of restrictions could be used to control a smallpox outbreak, although it is still under debate as to which is the most useful.



•When possible, it is preferable to have patients and contacts willingly submit to isolation and quarantine. Fewer public health and police resources would be needed.

•However, when necessary, both isolation and quarantine can be invoked under existing laws with law enforcement authorities assisting in its implementation.



•Isolation and quarantine as a necessary control measure for smallpox is inherent as preventing contagious individuals from transmitting disease to susceptible individuals is an important step for all transmissible diseases. However, it may not be feasible as the only control measure.

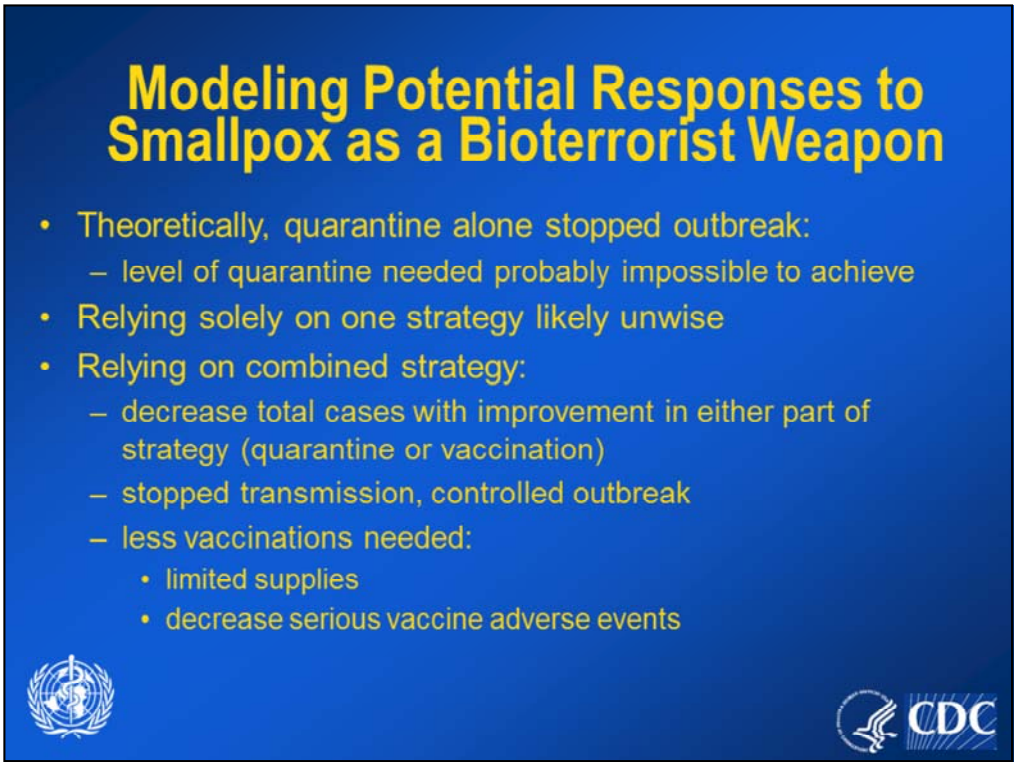
•Modeling by Meltzer et al. that looked at control measures to contain an outbreak with 100 people initially infected showed:

•By using isolation/quarantine (or removal of contagious individuals) alone, it would take an estimated 240 days to contain the outbreak, with a resultant 2,300 cases. But, would require that a 50% removal rate of infectious cases be maintained. This high a removal rate may be very difficult to achieve.

•Also the use of quarantine alone at that level may not be acceptable in today's society. Preparations must be made for all levels of interventions.

•Vaccination alone could also be effective, however, vaccination coverage would have to be sufficient to reduce the transmission rate from 3/case to less than 1/case; this could also be a difficult target to achieve

•With a combination strategy that only achieved 25% removal or a reduction of transmission of 3/case to 2/case (much more achievable targets), the outbreak could still be terminated within 1 year. Any increase in either the percent removal or the reduction in transmission via vaccination coverage would decrease the number of cases and shorten the time interval to contain the outbreak.

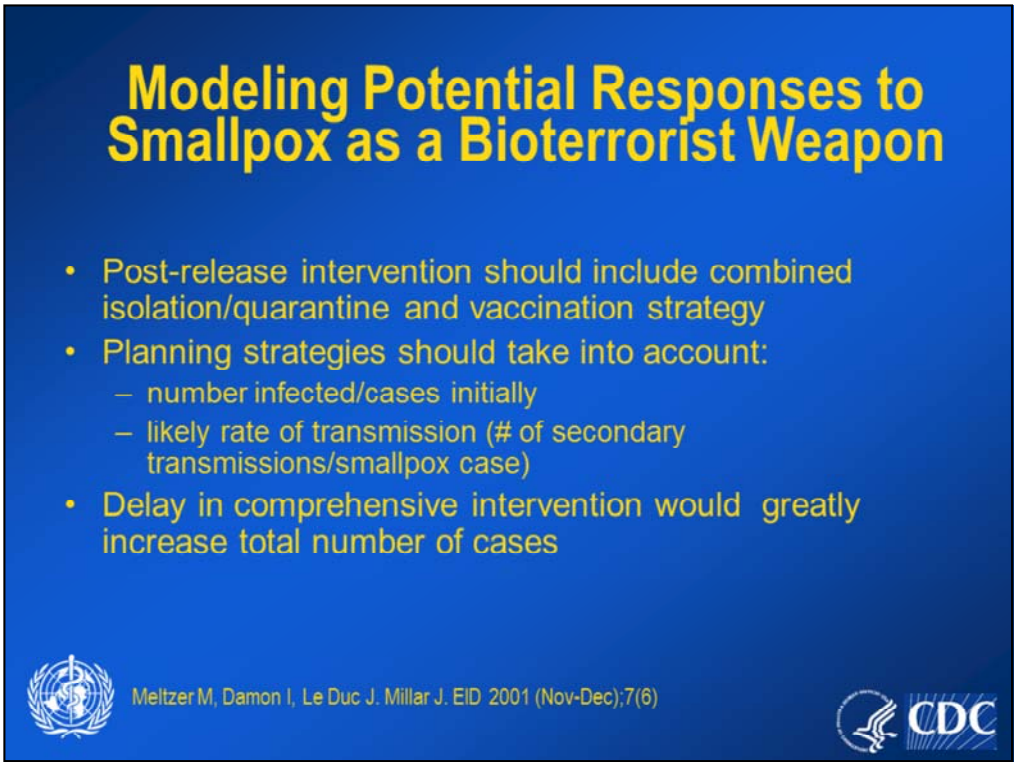


•Theoretically, quarantine alone can stop an outbreak.

•However, the level of quarantine that would be necessary according to some outbreak models, may be impossible to achieve and enforce with large numbers of people.

•Relying solely on either a vaccination or quarantine strategy alone is probably unwise.

•Combining the two would be the most reasonable and achievable strategy, given limited vaccine and personnel resources.

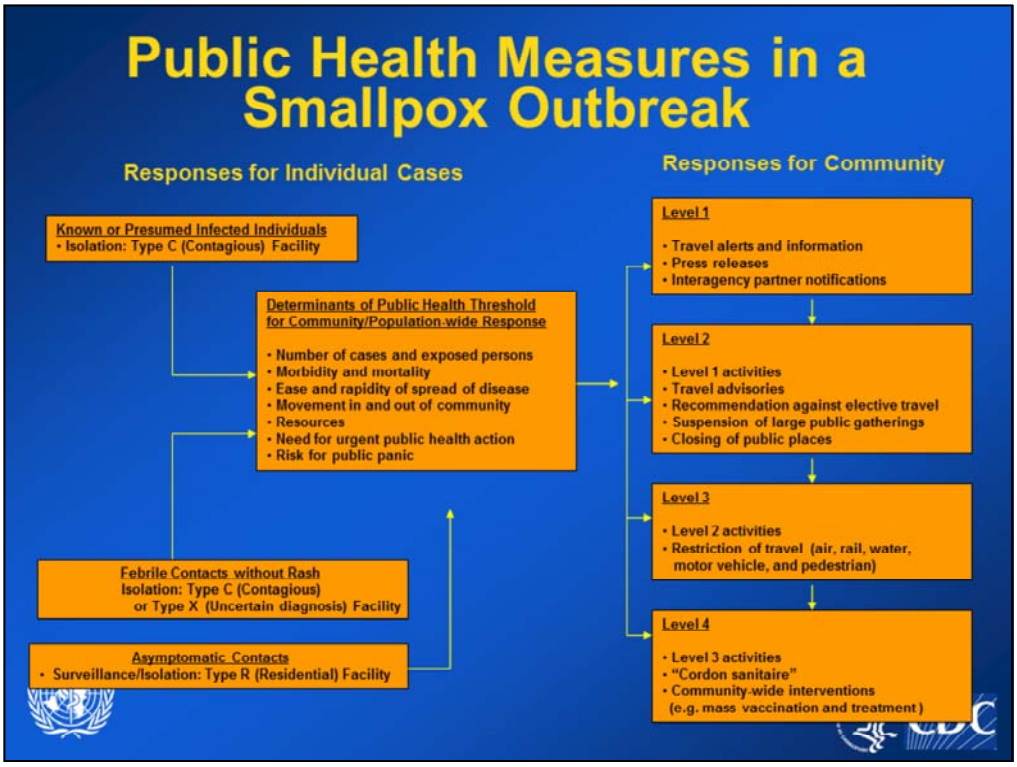


•Planning of control strategies should take into account various numbers of cases and various levels of rates of transmission.

•Smaller numbers of cases with lower transmission rates could be controlled with isolation of cases and a smaller amount of vaccinen and lower amounts of vaccine

•Larger numbers or higher transmission rates would require more vaccine, if appropriate amounts of vaccine were unavailable, quarantine and isolation may become a greater part of the control strategy and resources would have to be available to implement these measures to a greater degree

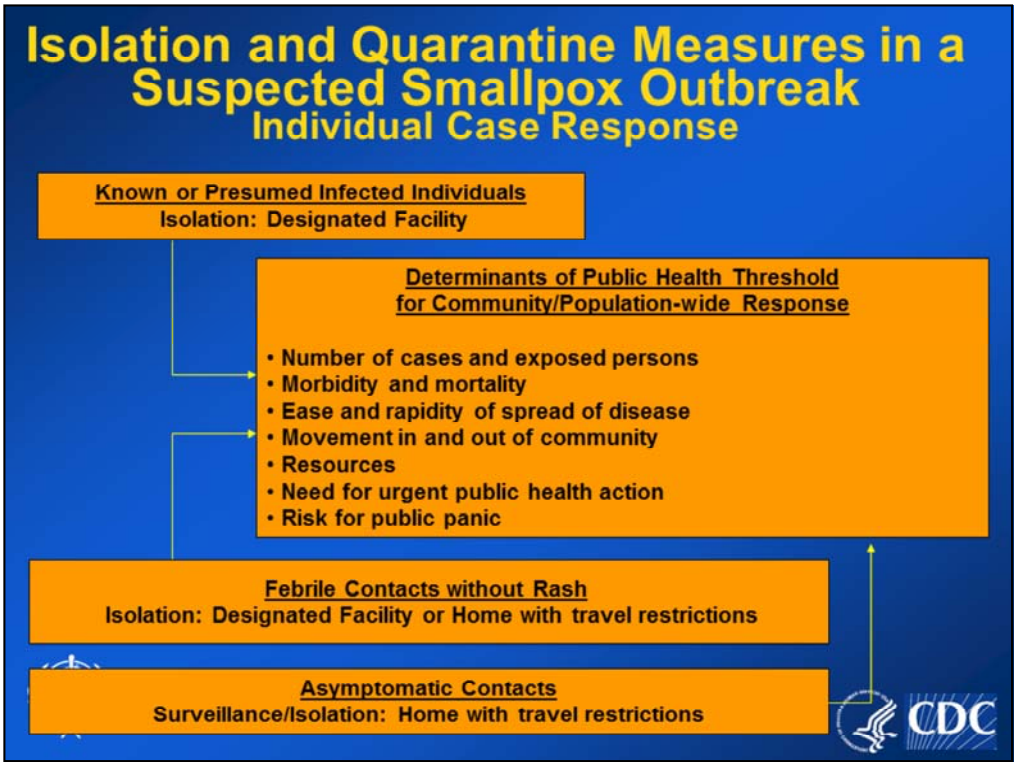
•Planning for any scenario should include how to intervene as quickly as possible.



•Public health authorities can implement various types and levels of control measures to try and decrease the potential exposure of susceptible individuals during an outbreak of smallpox

•This slide depicts the various public health community responses to smallpox, both on an individual level and a community level.

•Will go over the different levels in the next few slides



•Isolation would be instituted for individuals with smallpox and those potentially infectious.

•The level of isolation requirements would depend upon resources and facilities and the degree to which the community is affected (number of cases, etc.)

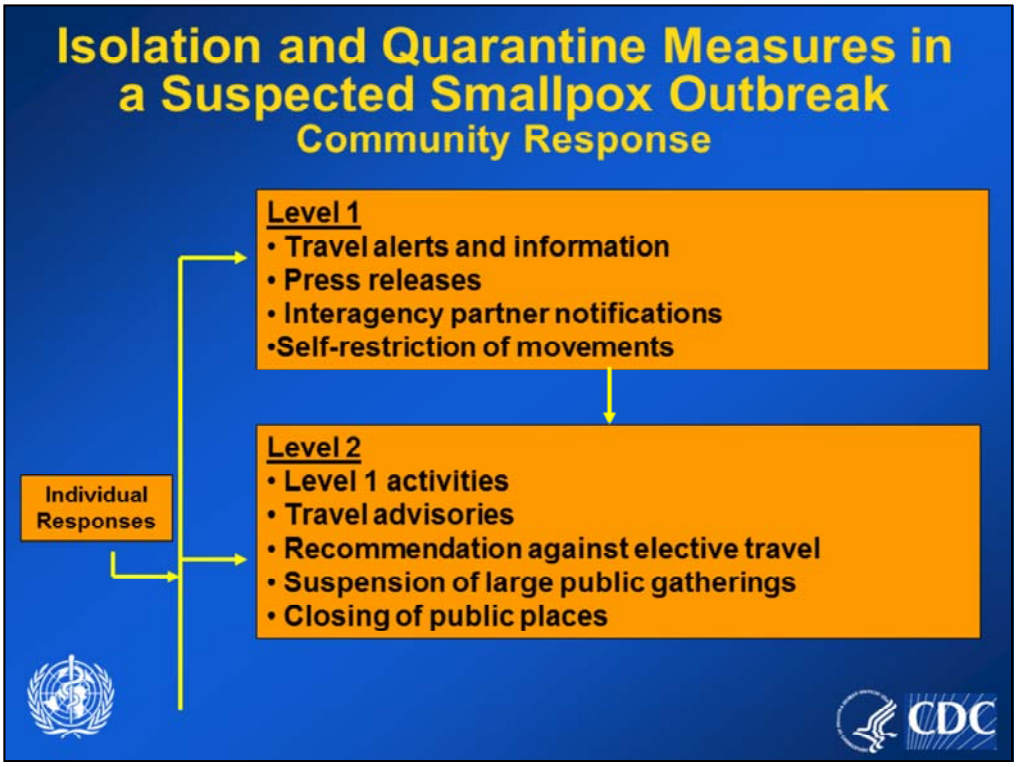
•Those who are known or presumed to be infectious should be placed in a facility like those previously discussed in this presentation where contact with non-protected (non-vaccinated) individuals can be prevented.

•Those contacts who are febrile, but who have not developed a rash, can be placed in an isolation facility or may be monitored at home for the development of rash if this can be done easily and in a manner that will prevent unvaccinated individuals from entering the home and the person from leaving the home until it is determined they do not have smallpox.

•Those contacts who are asymptomatic can be monitored for symptoms in their own home with travel restrictions. Example travel restrictions would be distance restrictions that keep them close enough to their home such that they could return to home via ground transportation (preferably in their own vehicle and not via public transportation so that others would not be exposed) within 1-2 hours if they were to develop a fever (note: air transportation that would allow a person to return home within a few hours would not be considered acceptable)

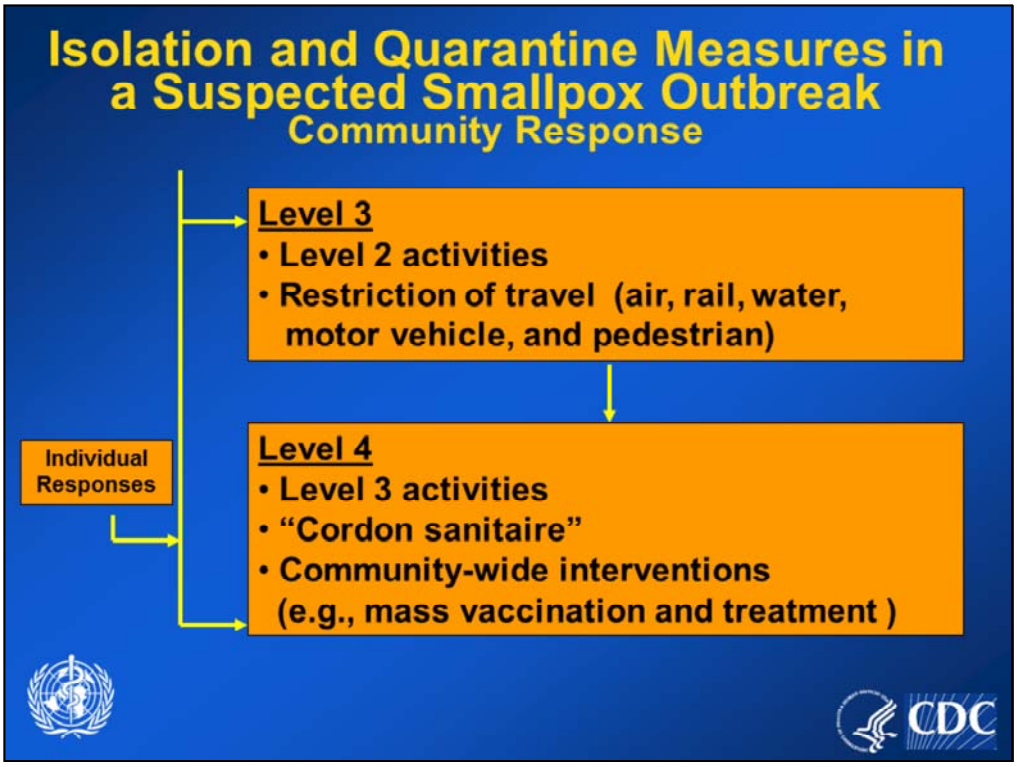
•The numbers of these types of individuals (numbers of cases, numbers exposed, etc.) and the community resources would then help to shape the other population-

wide response and control measures that may be implemented



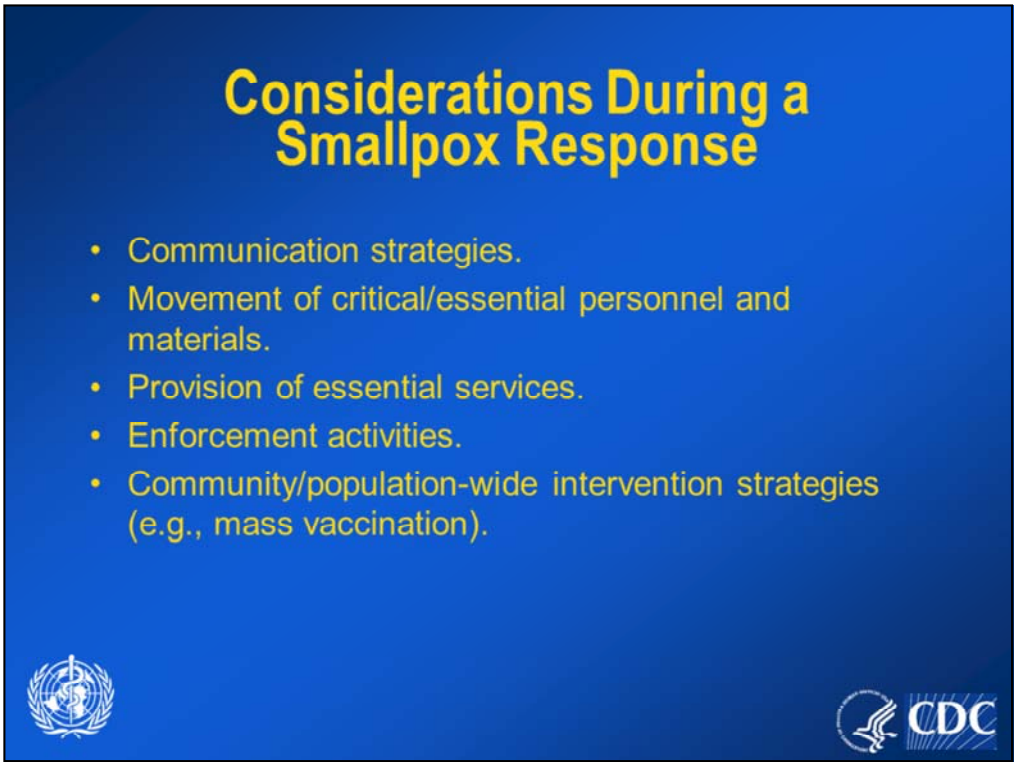
•At a minimum, a smallpox outbreak would result in travel alerts and information being released so that the community is aware of the situation and can make their own decision about how to manage their risk by controlling their own movements within the community (e.g. some people may decide themselves not to go to places where there are lots of people).

•A Level 2 community response would include those activities implemented in Level 1, plus the issuance of travel advisories to those outside the community to avoid the area if possible. There would be a recommendation against those from the community traveling outside of the area unnecessarily , but it would not be a forced restriction. In addition, public health authorities could also restrict large public gatherings and the temporarily close unessential public places.



•Level 3 response would include all previous measures, but would actively restrict all travel to avoid the further spread of infection (e.g. closure of airports, bus stations, train stations, etc.)

•The institution of the highest level of quarantine, Level 4 activities, would mean the complete cut-off of an area from the outside (i.e. institution of "Cordon Sanitaire"), with mass vaccination and treatment taking place within the area.



•When considering the implementation of these various levels of isolation/quarantine and other control measures, public health authorities and policy makers must be prepared for various things.

•Communication will be essential.

- •When people understand the reasoning behind the control measures such as quarantine, they may be more likely to voluntarily comply, making enforcement much easier.
- •In addition, they must be kept informed of all developments. Information will help to prevent public panic.
- •Must be given some idea of a timeline for how long control measure will be in place and what things may prompt relaxation of the levels of restrictions or increased duration of current restrictions so they will be prepared

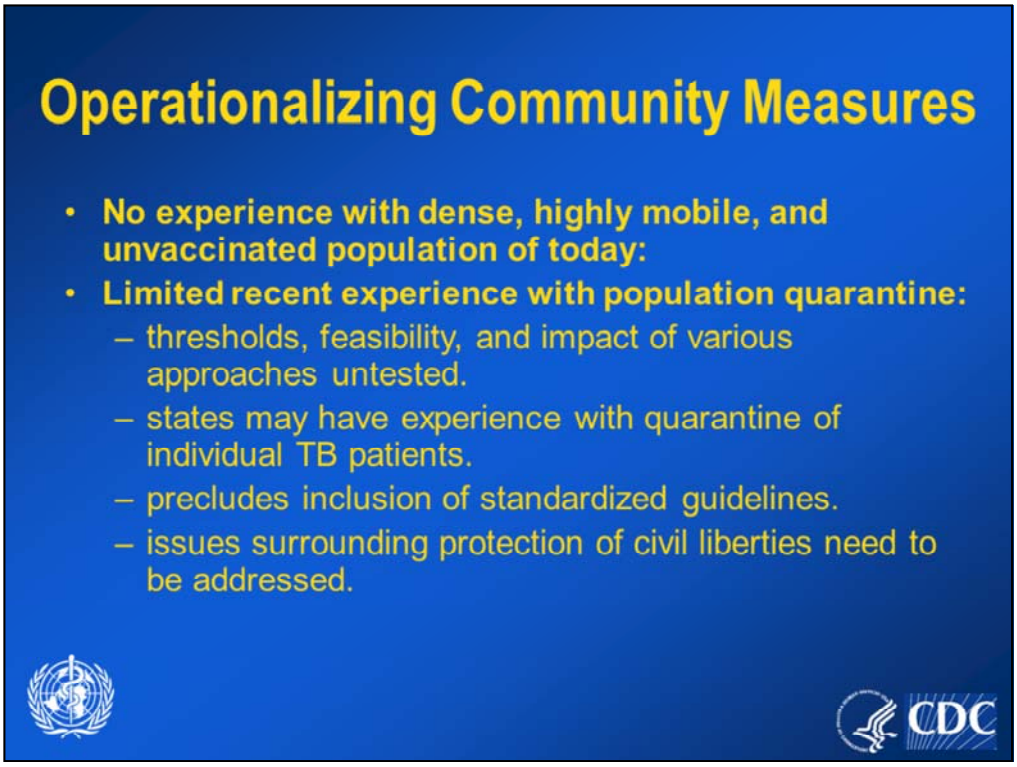
•Authorities must also consider how various quarantine levels would impact the movement of critical personnel and supplies into and out of the area, and how to maintain essential services while at a certain level.

•As discussed earlier, larger quarantines will require larger amounts of enforcement personnel. If a community's law enforcement resources are limited, planners should arrange for mutual aid with other law enforcement agencies for larger-scale quarantine measures.

•And finally, planners might consider the utilization of mass vaccination of the

entire community if possible in order to shorten the time needed for quarantine restrictions if it is felt the outbreak may not be controlled quickly with more limited vaccination strategies

- Could decrease community panic and unrest
- Could decrease level of restrictions needed, especially if higher levels difficult to implement and maintain
- May bring about more rapid control of outbreak



•Big challenge regarding the national and international control of an infectious disease in today's society is the presence of a highly mobile society.

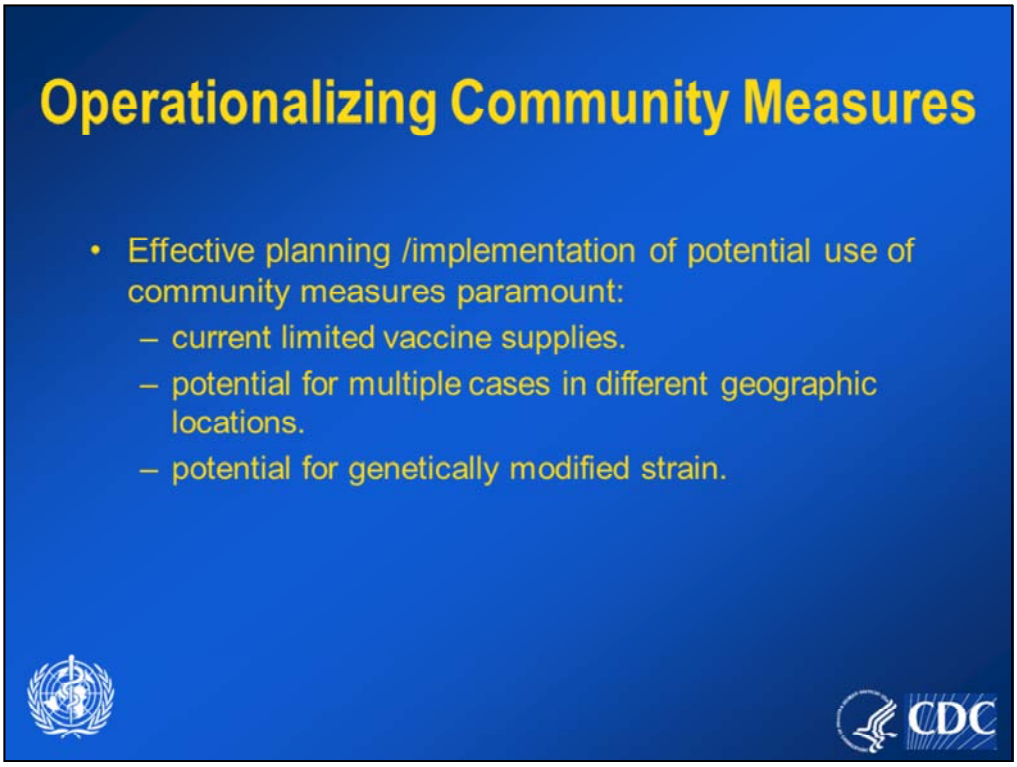
- •People can travel all over the world within a day.

•Unanswered questions remain about quarantine in modern day disease control:

- •How well can authorities implement larger scale quarantine or isolation measures. Current day experience is really with individuals not communities.
- •How quickly should quarantine measures that would restrict travel be implemented in order to prevent the spread of smallpox outside of an infected area?
- •Should areas/countries that have less capabilities to respond to an importation (i.e. limited vaccine or public health/medical resources) implement travel restrictions to/from an area with cases sooner and with greater enforcement than areas that are more prepared to detect and contain an importation? (Disparity in response capability makes standardized international guidelines for quarantine and travel restrictions difficult)
- •How do we deal individual and economic impact of travel restrictions that may be in place for longer periods of time?

•Planners must be prepared to deal with the limited public memory of population-based quarantine. The majority of the population will not have seen this public

health measure in practice before, and planners will need to address current standards of civil liberties if they can expect to counteract resistance. These dialogues and educating the public about these issues need to take place before the panic of an outbreak is in place.

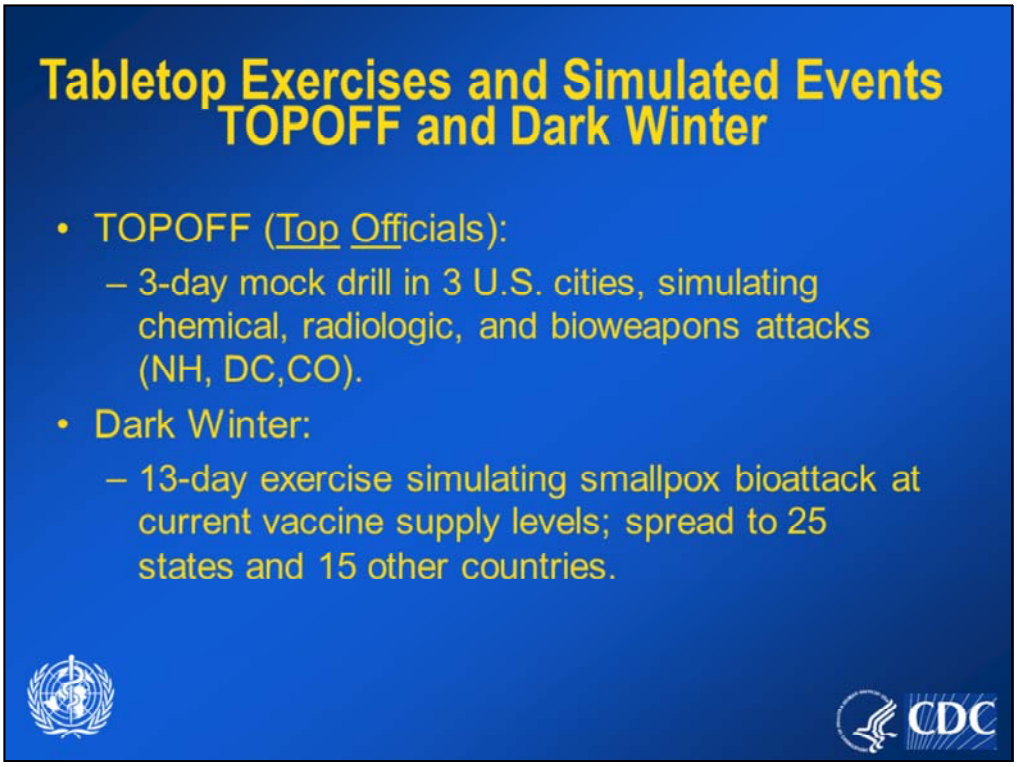


•Authorities are often reluctant to take on these issues, but given the very nature of bioterrorism, they must be addressed.

•There are currently limited vaccine supplies in most areas of the world and these limited vaccine resources will probably always exist.

•We must also assume that there could be multiple locations that are affected.

•We even have to even consider the unlikely but potential scenario with a modified strain of smallpox that is not prevented by current vaccines. In this instance, quarantine measures may be the only method of slowing the spread of disease.

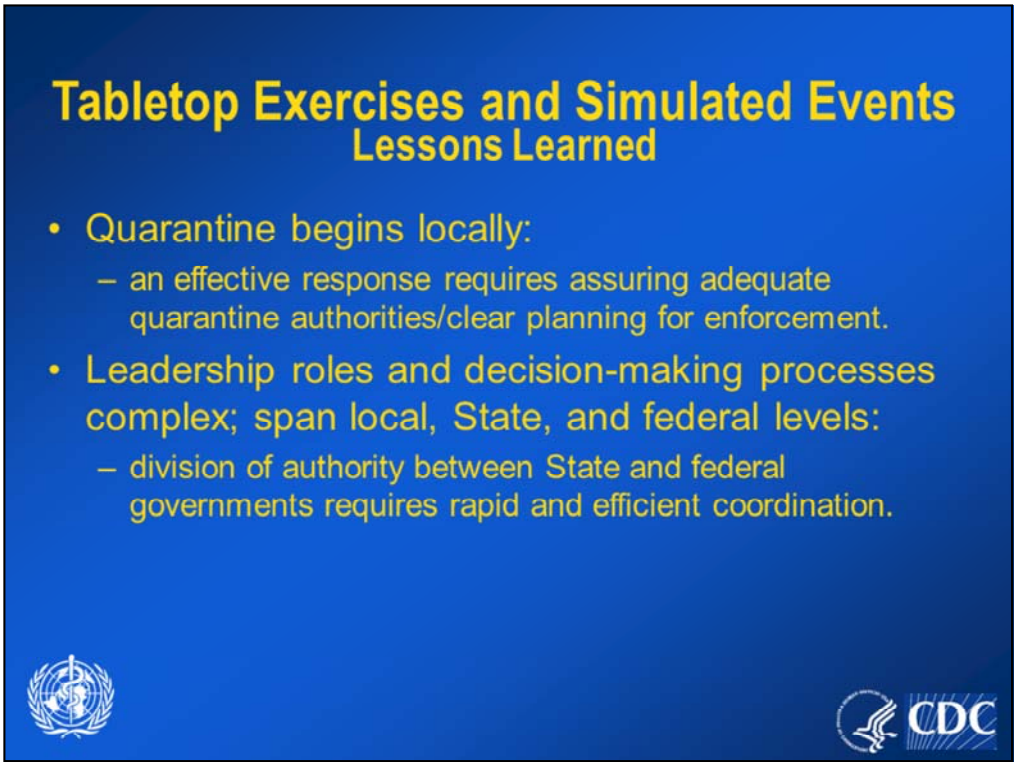


•In the United States, several tabletop exercises have begun to explore the realities of dealing with quarantine in today's society.

•The multi-faceted TOPOFF exercise, involved the simulation of 3 different types of events, a chemical, radiological and bioweapon attacks in three cities. The exercise was specifically done to engage top US officials and agencies in the process of emergency response and decision-making at a local, state, and national functional level.

•Another exercise called Dark Winter involved high-level state and federal officials and simulated a smallpox attack over a 13 day period. This exercise was meant to address higher level policy decision making and control measure implementation on a national scale.

•Valuable lessons were learned in these exercises.

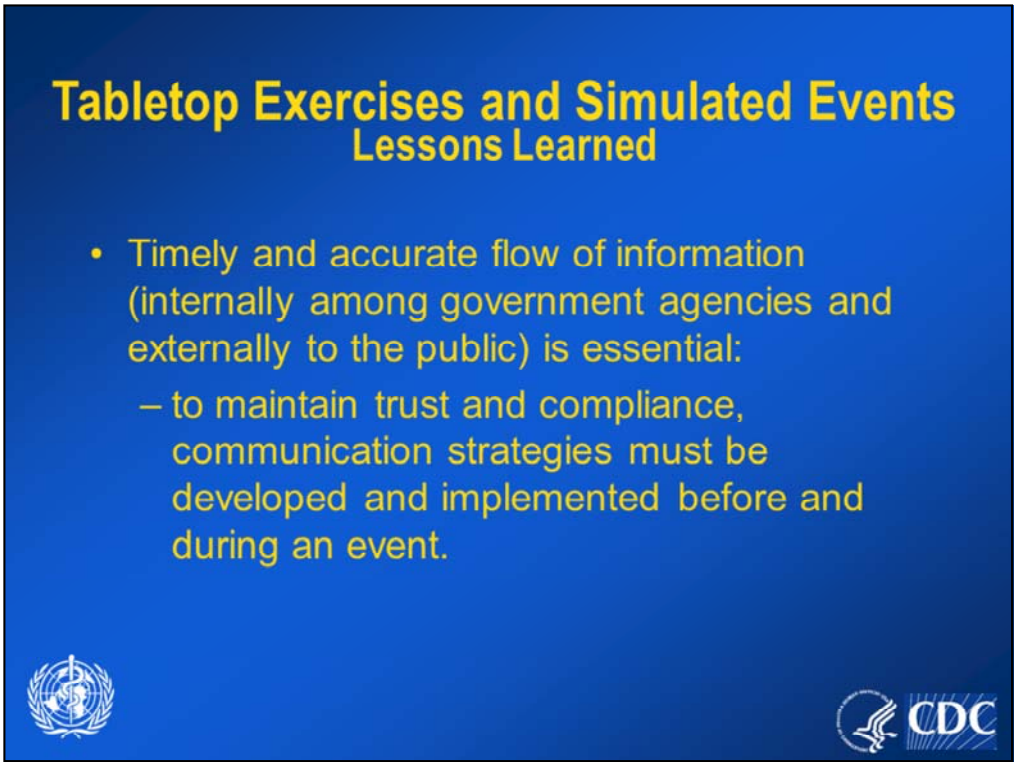


•Quarantine implementation and enforcement happens locally.

•Each local government must be prepared to institute this measure and must to understand its own powers to enforce quarantine. It's the local area that knows its citizens and structure better than any other entity.

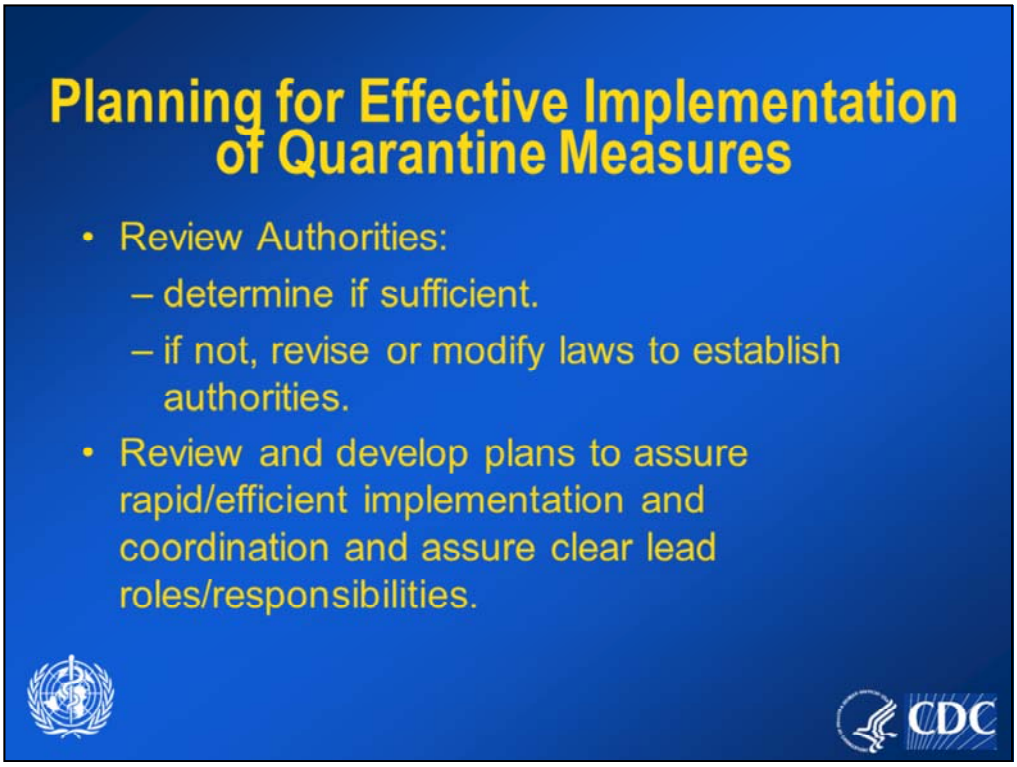
•Despite the local nature of this measure, other levels of government must also be involved.

•To avoid confusion, these various levels of government need to understand their authorities, powers, and responsibilities, and need to be able to coordinate rapidly in the event the quarantine needs to be implemented or expanded



•Some communication materials and strategies must be developed before an event takes place.

•Having all levels of government agree on the intervention strategy, messages, and speaking with the same authority on the powers involved is key to maintaining trust in the quarantine and maintaining compliance.

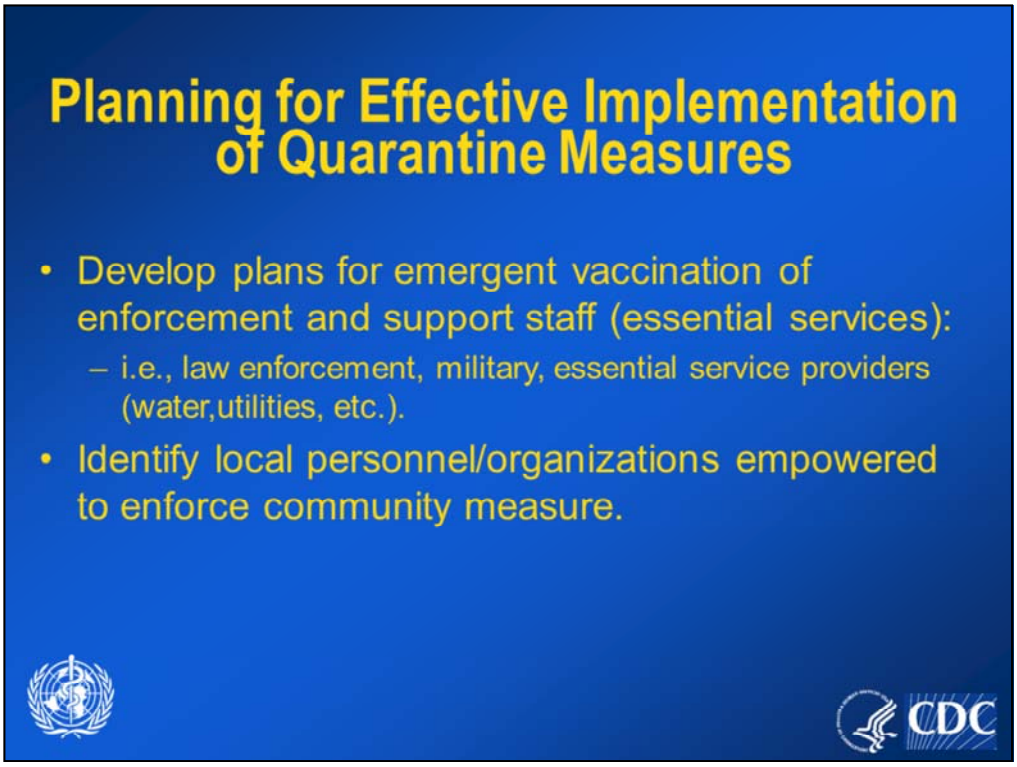


•How do we start planning for potential use of quarantine as a part of a smallpox emergency response

•First, the laws at all levels must be reviewed to determine if sufficient authorities currently exist. If not, then they should be modified to provide the capability to implement the level of quarantine that may be necessary. An outbreak is not the time for legal challenges to occur.

•Planners should also identify those who would be participating in the initiation and enforcement of different levels of quarantine and what triggers would determine which isolation/quarantine strategy is implemented

•Resources for this review can be found in the CDC Interim Smallpox Response Plan and on the Public Health Law website. These are focused on United States law, but might give international planners a framework from which to begin their evaluation.



•Planners should also be prepared plans to rapidly activate (and vaccinate) their enforcement personnel and those who would provide essential services during a quarantine of an area.

•And finally, communications staff should be working on educational campaigns before an attack.

•These should explain about the potential need for population quarantine measures so that communities and populations will be more informed. By doing so, you can help to improve public compliance during an event.