THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D. C. 20301-1200

HEALTH AFFAIRS

NOV 26 2002

MEMORANDUM FOR CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
GENERAL COUNSEL, DEPARTMENT OF DEFENSE
INSPECTOR GENERAL, DEPARTMENT OF DEFENSE
DIRECTORS OF DEFENSE AGENCIES
SECRETARY OF THE ARMY
SECRETARY OF THE NAVY
SECRETARY OF THE AIR FORCE
COMMANDANT OF THE U.S. COAST GUARD

SUBJECT: Clinical Policy for the DoD Smallpox Vaccination Program (SVP)

This memorandum establishes policy on medical issues involving smallpox vaccination: education, medical screening before immunization, pregnancy screening, vaccination-site selection, vaccine delivery, medical exemptions, and adverse-event management. The guidance provided in this policy is consistent with guidance provided in the DoD Smallpox Response Plan.

This memorandum applies primarily to the Dryvax-brand smallpox vaccine manufactured by Wyeth Laboratories, when administered in its original full-strength concentration. Dryvax was re-licensed by the Food and Drug Administration (FDA) on October 25, 2002. Supplemental policies will be issued, if warranted, for other circumstances or other vaccine formulations.

Education

All personnel will be educated about smallpox and smallpox vaccination before vaccination. Educational materials provided shall address the rationale, contraindications, criteria for medical exemptions for Service members or their household contacts, benefits, expected response at the vaccination site, side effects, risks to household contacts, vaccination-site care, and other medical information concerning the vaccine.

Healthcare providers will remain alert to modifications in clinical recommendations as the smallpox vaccination program progresses. Personnel involved in this program should regularly review the following web sites for new clinical information and educational resources: www.vaccines.army.mil and www.cdc.gov/smallpox. However, nothing in this memorandum will be superseded except by subsequent memoranda from the Assistant Secretary of Defense (Health Affairs).

Medical Screening Before Immunization

Medical screening before vaccination for contraindications in vaccine recipients and their household contacts is essential to prevent serious complications. Prescreening questionnaires for contraindications to vaccinations will be placed in the medical record. Screening must be conducted in a manner that allows Service members to freely ask questions and get reliable answers. The standard of practice for all immunizations includes medical screening before immunization. Unique for smallpox vaccine is the need to screen for risks among household contacts. Education and screening shall be conducted to document medical conditions for which immunization exemption (temporary or permanent) or further medical evaluation before immunization is indicated. A sample screening and follow-up questionnaire is provided (Attachment 1). Standardized screening tools will be provided at a later date.

Infection with human immunodeficiency virus (HIV) is a contraindication to smallpox vaccination. Service members will be up-to-date with Service HIV-screening policies before smallpox vaccination. Service members who are concerned that they could have HIV infection may request additional HIV testing. DoD civilian employees and contractors to be vaccinated against smallpox will be offered HIV testing in a confidential setting, with results communicated to the potential vaccinee before vaccination. HIV testing is recommended for anyone who has a history of a risk factor for HIV infection, especially since his or her last HIV test, and who is not sure of his or her HIV-infection status. Because known risk factors cannot be identified for some people infected with HIV, people concerned that they could be infected should be tested.

Pregnancy Screening

DoD policy is to defer routine smallpox vaccinations until after pregnancy, except in emergencies where personal benefit from vaccination outweighs the risks. In a smallpox outbreak, pregnancy is not a contraindication to vaccination of a pregnant woman with a high-risk exposure to smallpox, because the benefits of vaccination would outweigh its risks.

In accordance with FDA and Advisory Committee on Immunization Practices (ACIP) recommendations, all appropriate efforts will be taken to avoid unintended vaccination during pregnancy. On rare occasions, typically after primary (first) vaccination, vaccinia virus has been reported to cause fetal vaccinia infection. Fetal vaccinia usually results in stillbirth or death of the infant shortly after delivery. Vaccinia vaccine is not known to cause congenital malformations.

All immunization clinics will prominently display a written warning against unintentionally vaccinating pregnant women. This warning must be visible during the screening process. Women of childbearing potential are to be questioned/screened for pregnancy before receiving immunizations. Women who are uncertain about pregnancy status shall be medically evaluated for pregnancy before immunization. Because the requirement for smallpox vaccination is based largely on occupational risk, defer vaccination for pregnant women at least until the resumption of full duties following pregnancy, or later as postpartum care may require.

In addition, all women receiving a smallpox vaccination will be instructed to avoid becoming pregnant for at least four weeks after their smallpox vaccination.

Vaccination-Site Selection

The skin over the insertion of the deltoid muscle (non-dominant preferred) is the preferred site for smallpox vaccination. Other optional sites are described in the vaccine's package insert (Attachment 2). As always, appropriate clinical judgment is warranted. Do not vaccinate near the site of an active skin lesion or rash. Avoid tattooed skin where vaccination-site evaluation could be impaired. Avoid skin folds where drying is impeded. Any skin condition that may interfere with the immune response to vaccination should be carefully evaluated before vaccination.

Vaccination

Appropriately trained and qualified medical personnel, upon the order of an appropriately privileged health care provider, will administer smallpox vaccine. People who administer smallpox vaccine must be vaccinated themselves. The preference to vaccinate smallpox vaccinators is based on the risk of inadvertent inoculation from repetitive handling of the vaccine. People may administer smallpox vaccine promptly after being personally vaccinated.

Smallpox vaccination shall consist of 3 punctures (jabs) with a bifurcated needle for a primary (first) vaccination or 15 punctures (jabs) for a revaccination (see package insert). When in doubt, give 15 punctures. Evidence of prior smallpox vaccination includes medical documentation or a characteristic Jennerian scar. Presumptive evidence includes entry into U.S. military service before 1984, or birth in the United States before 1970 (roughly in descending order of reliability). People vaccinated with smallpox vaccine in the past 10 years do not require revaccination, except specific laboratory workers involved with orthopox virus research, who may require more frequent vaccination.

Assessment of vaccine take is required for health care workers and members of smallpox response teams who will travel into a smallpox outbreak area. Other persons receiving vaccine should also have vaccine take assessed. To assess vaccine take, medical personnel trained in vaccination evaluation will inspect the vaccination site at six to eight days after vaccine administration. Reactions will be categorized as "Major Reaction" or "Equivocal" in accordance with the World Health Organization criteria (Attachment 3). To accommodate individuals for whom take assessment is not feasible, all persons receiving smallpox vaccine will be instructed to report to the vaccination clinic if they do not develop a characteristic smallpox vaccination reaction.

Accurate documentation of both vaccination and take is required. Vaccination will be documented in both individual health records and automated immunization tracking systems. In addition, vaccination take will be documented in individual health records immediately beneath the vaccination entry by writing the date of the assessment and the type of reaction: Major Reaction or Equivocal.

Persons administering vaccines will follow necessary precautions to minimize risk of spreading diseases. Because of the nature of the vaccine container and method of administration, vaccinators' hands should be washed with soap and water or cleansed with an alcohol-based waterless antiseptic solution after each patient contact. Glove use is not routinely recommended when administering vaccinations, unless persons administering vaccinations are likely to come into contact with potentially infectious body fluids or have open lesions on their hands. Even vaccinated vaccinators may develop vaccinia skin lesions on the fingers, known as "whitlow," if vaccine touches their skin, particularly near abrasions or dry skin.

Needles should be discarded in labeled, puncture-proof containers to prevent inadvertent needle-stick injury or reuse. Standard needle-stick-injury procedures will be followed if a vaccinator is inadvertently stuck with a used bifurcated needle.

Cleansing of the vaccination site may be performed with soap and water, followed by water only, and then drying. Acetone or alcohol may be used only if adequate time is allowed for it to evaporate or if the site is wiped dry with (non-sterile) gauze to prevent unintentional inactivation of the live virus vaccine. Acetone may be preferred over alcohol, because acetone evaporates more quickly.

Revaccination

If a person does not manifest a characteristic vaccination reaction six to eight days after smallpox vaccination, that person should receive a single revaccination with 15 punctures (jabs) at a separate site. People previously vaccinated, especially if they have received multiple doses, may not respond to smallpox vaccine because of current immunity. Revaccination should be repeated once. People who do not respond with a visible skin lesion after two attempts should be referred for immunologic evaluation.

People should be revaccinated if more than 10 years have elapsed since the last smallpox vaccination. Laboratory workers working with orthopox viruses will observe appropriate revaccination intervals, based on their individual situation.

Quality Assurance

Medical commanders will use standardized materials to train smallpox vaccinators. Medical commanders will assess vaccination technique by evaluating the vaccination take rates among the first cohort of people (e.g., 50 to 100) vaccinated by each vaccinator. Recent published studies found take rates > 95% with appropriate technique.

Medical commanders will assure that proper screening of vaccine recipients occurs before vaccination and access to providers experienced in risk-benefit assessment are available to both vaccine recipients and vaccinators. Medical commanders will facilitate prompt evaluation of vaccine recipients with adverse events or side effects that interfere with the ability to work. The Clinical Guidelines for Managing Adverse Events after Vaccination should be used.

Timing and Spacing of Other Vaccinations

General recommendations from the ACIP allow administration of live and inactivated vaccines simultaneously or at any interval. The only major restriction to combining vaccinations is with multiple live-virus vaccines, which should either be given simultaneously or separated by 28 days or more. There are limited data evaluating the simultaneous administration of smallpox vaccine with other live-virus vaccines. It may be desirable to separate varicella (chickenpox) and smallpox (vaccinia) vaccinations by 28 days, because of the small potential to confuse attribution of lesions that may result in vaccine recipients.

Do not administer other vaccines near the smallpox vaccination site.

Care of the Vaccination Site

Vaccinia virus can be cultured from the site of primary vaccination beginning at the time of development of a papule (i.e., two to five days after vaccination) until the scab separates from the skin lesion (i.e., 14 to 21 days after vaccination). During that time, care must be taken to prevent spread of the virus to another area of the body or to another person by inadvertent contact. Disease transmission from intact scabs is unlikely, but high-risk individuals may be vulnerable to scab particles. Historically, the rate of spread of vaccinia virus to contacts is quite rare, about 27 cases per million vaccinations. The DoD's goal is to reduce the risk as much as possible.

The most important measure to prevent inadvertent contact spread from smallpox vaccination sites is thorough hand washing (e.g., alcohol-based waterless antiseptic solution, soap and water) after any touching of the vaccination site.

To avoid secondary infection, commanders and noncommissioned officers will direct physical activities so that smallpox vaccination sites are not subject to undue pressure (likely to burst a pustule), rubbing, or immersion sufficiently prolonged to cause tissue breakdown or secondary infection. Activities that complicate vaccine site care and cleanliness should be avoided during the post-vaccination healing period. For example, clothing and load-bearing equipment will be arranged in a manner to avoid excessive pressure or rubbing at the vaccination site. Avoid contact sports, such as wrestling. Avoid immersion in public pools or spas.

Appropriate care should be taken to prevent the spread of vaccinia virus from the vaccination site. The following special precautions will be observed. In general, it is reasonable to leave most vaccination sites unbandaged, especially when not in close contact with other persons. Airing will help speed healing of the vaccination site. Wearing clothing with sleeves covering the vaccination site and/or using a loose, porous bandage (e.g., standard Band-Aid®, a piece of gauze attached with adhesive or paper tape around each edge) to make a touch-resistant barrier can reduce the opportunity for contact transfer until the scab falls off on its own. Bandaging may be appropriate in confined spaces (e.g., ships, aircraft) to help reduce contact spread and accidental infection (i.e., inadvertent inoculation).

If bandages are used in a medical setting, dispose of contaminated bandages and the vaccination scab as biohazardous waste. In other settings, dispose of these items in sealed plastic bags (e.g., Zip-Loc® bag). Clothing, towels, sheets, or other cloth materials that have had contact with the site can be decontaminated with routine laundering in hot water with detergent or bleach. Normal bathing can continue, but the vaccination site should otherwise be kept dry. Avoid rubbing the vaccination site. Vaccinia virus is inactivated by sunlight.

Minimizing close physical contact with infants less than one year of age is prudent until the scab falls off. If unable to avoid infant contact, wash hands before handling an infant (e.g., feeding, changing diapers) and ensure that the vaccination site is covered with a porous bandage and clothing. It is preferable to have someone else handle the infant. Smallpox vaccine is not recommended for use in a nursing mother in non-emergency conditions.

Recently vaccinated healthcare workers should minimize contact with unvaccinated patients, particularly those with immunodeficiencies, until the scab falls off. Even patients vaccinated in the past may be at increased risk due to current immunodeficiency. If contact with unvaccinated patients is essential and unavoidable, healthcare workers can continue to have contact with patients, including those with immunodeficiencies, as long as the vaccination site is well covered and thorough hand-hygiene is maintained. In this setting, a more occlusive dressing might be appropriate. Semi-permeable polyurethane dressings (e.g., Opsite®, Tegaderm®) are effective barriers to vaccinia and recombinant vaccinia viruses. However, exudate may accumulate beneath the dressing, and care must be taken to prevent viral contamination when the dressing is removed. In addition, accumulation of fluid beneath the dressing may increase the maceration of the vaccination site. To prevent accumulation of exudates, cover the vaccination site with dry gauze, and then apply the dressing over the gauze. The dressing should also be changed daily or every few days (according to type of bandaging and amount of exudate), such as at the start or end of a duty shift. Military treatment facilities should develop plans for site-care stations, to monitor workers' vaccination sites, promote effective bandaging, and encourage scrupulous hand hygiene. Wearing long-sleeved clothing can further reduce the risk for contact transfer. The most critical measure in preventing inadvertent contact spread is thorough hand-hygiene after changing the bandage or after any other contact with the vaccination site.

Medical Exemptions

Some individuals will have either acute or chronic pre-existing conditions that may warrant medical exemption from smallpox vaccination. In some cases, vaccination should be withheld if the individual cannot avoid household contact with another person with contraindicating conditions. Furthermore, a small proportion of individuals will develop a more serious reaction after vaccination that may warrant medical exemptions, temporary and permanent, from further smallpox vaccination.

In a smallpox emergency, there are no absolute contraindications to vaccinating people with a high-risk exposure to an infectious case of smallpox (e.g., face-to-face contact). Prior

contraindications to vaccination could be overshadowed by personal risk of smallpox disease. Smallpox vaccine would be made available for people exempted during pre-outbreak vaccination programs. People at greatest risk for experiencing serious vaccination complications are often those at greatest risk for death from smallpox. If a relative contraindication to vaccination exists, the risk for experiencing serious vaccination complications must be individually weighed against the risks for experiencing a potentially fatal smallpox infection.

Granting medical exemptions is a medical function performed by a privileged healthcare provider. The provider will grant individual exemptions when medically warranted, with the overall health and welfare of the patient clearly in mind, balancing potential benefits with the risks while taking into consideration the threat situation. Medical exemptions are not based on preferences of the prospective vaccinee for or against vaccination.

The two most common annotated medical exemption categories are Medical Temporary (MT) and Medical Permanent (MP). Annotate Service member records in immunization tracking systems with these codes, and update them as appropriate. In the event of a confirmed smallpox outbreak, permanent exemptions could be lifted, based on individual risk.

People who have household contact with a person who has a contraindication to smallpox vaccination (e.g., immune-suppressed people, people with atopic dermatitis or eczema, pregnant women) shall either have alternative housing arrangements or be exempted from smallpox vaccination until the household contact situation is no longer applicable. Scheduling vaccinations shortly before or during 21-day or greater deployments or family separation is an option. This avoidance of contact should continue until the vaccination scab falls off on its own.

Military-unique berthing settings require similar precautions. Exempt individuals should be physically separated and exempt from duties that pose the likelihood of contact with potentially infectious materials (e.g., clothing, towels, linen) from recently vaccinated people. This separation will include not having the vaccine recipient share or alternate use of common sleeping space (e.g., cot, bunk, berth) with people with contraindications to vaccination.

Temporary medical exemptions are warranted when a provider has a concern about the safety of immunizations in people with certain clinical conditions. The vaccine's package insert contains examples of situations that warrant a temporary medical exemption (e.g., immune-suppressed people, pregnant women). The ACIP notes that people with acute, chronic, or exfoliative skin conditions (e.g., burns, impetigo, varicella zoster, herpes, psoriasis, severe or uncontrolled acne) may also be at higher risk for inadvertent inoculation and should not be vaccinated until the condition resolves or a provider affirms it is under maximal control.

In situations where a medical condition is being evaluated or treated, a temporary deferral of smallpox vaccination may be warranted, up to a maximum 12 months. This would include significant vaccine-associated adverse events that are being evaluated or while awaiting specialist consultation. The attending physician will determine the deferral interval, based on individual clinical circumstances.

Medical Permanent exemptions are generally warranted if the medical condition or adverse reaction is so severe or unremitting that the risk of subsequent immunization is not justified. In the case of smallpox vaccine, these permanent exemptions could be lifted if the individual had face-to-face contact with someone contagious with smallpox. Examples of situations otherwise warranting a permanent medical exemption appear in the vaccine's package insert (e.g., life-threatening allergy to vaccine component, immune-suppressed people, people infected with human immunodeficiency virus, people with atopic dermatitis or eczema or a past history of those disorders; Attchment 2). People with contraindicated skin conditions who received smallpox vaccine earlier in life may be revaccinated after medical consultation for individual risk-benefit decision making.

If a permanent medical exemption is indicated, follow appropriate DoD and Service-specific policies for granting such exemptions. If the situation changes, an appropriate medical specialist can remove a medical exemption.

If an individual's clinical case is complex or not readily definable, healthcare providers should consult an appropriate medical specialist with vaccine safety-assessment expertise, before granting a permanent medical exemption. In addition, providers may consult with physicians in the Vaccine Healthcare Center Network. In such cases, providers will document specialty consultation in the individual's health record, including the considerations and reasons why a temporary or permanent medical exemption is or is not granted. A table to assist providers in determining medical exemptions will be provided at a later date.

An individual who disagrees with a provider's recommendation regarding an exemption may request a referral for a second opinion. In such cases, the individual will be referred to a provider experienced in vaccine adverse-event management who has not been involved in the decision-making to this point. This provider may be at the same facility or, when applicable, at a referral facility. If the patient disagrees with the second opinion, he or she may be referred directly to the Vaccine Healthcare Center Network. Medical commanders retain authority to review all appealed exemption determinations and may delegate this authority to individuals with appropriate expertise within their organization.

Each military treatment facility commander will assist in obtaining appropriate specialty consultations expeditiously and in resolving patient difficulties. Specialists may grant permanent medical exemptions. Return of the patient to his or her primary-care provider is not required if the referring specialist deems a permanent medical exemption is warranted. A Vaccine Adverse Event Reporting System (VAERS) report should be filed for any permanent medical exemption due to a vaccine-related adverse event. The following medical exemption codes relate to all vaccines.

Military Medical Exemption Codes

Code	Meaning	Explanation or Example	Duration
MI	Medical, Immune	Evidence of immunity. For smallpox, documented infection (indefinite exemption) or documented confirmed take in medical records within the past 10 years.	Up to 10 years
MR	Medical, Reactive	Severe adverse reaction after immunization (e.g., anaphylaxis). Code can be reversed if an alternate form of prophylaxis is available. File VAERS report.	Indefinite
MT	Medical, Temporary	Pregnancy, hospitalization, temporary immune suppression, convalescent leave, any temporary contraindication to immunization (e.g., smallpox vaccine and household-contact situation).	Specified period
MP	Medical, Permanent	HIV infection, atopic dermatitis, permanent immune suppression. Can be reversed if the condition changes.	Indefinite
MD	Medical, Declined	Declination of optional vaccines, religious waivers.	Indefinite
MS	Medical, Supply	Exempt due to lack of vaccine supply.	Indefinite

Adverse-Event Management

As with any vaccine, some individuals receiving smallpox vaccine will experience side effects or adverse events. Adults vaccinated for the first time may develop a clinical illness with injection-site inflammation, muscle aches, and fatigue, most often on days eight to nine after vaccination. This illness may interfere with work. In addition, smallpox vaccine exhibits a unique adverse-event profile including encephalitis, progressive vaccinia, eczema vaccinatum, and other conditions.

DoD Clinical Guidelines for Management of Adverse Events After Vaccination offer useful advice. These clinical guidelines are available on the DoD military vaccine web site at www.vaccines.army.mil and at the Vaccine Healthcare Center web site at www.vhcinfo.org. Specific guidance for management of adverse reactions unique to smallpox vaccination will be published at a later date.

Specific information about treatment with vaccinia immune globulin (VIG) appears in the DoD Smallpox Response Plan and in ACIP recommendations. In summary, VIG is available under investigational new drug (IND) protocol to treat progressive vaccinia, eczema vaccinatum, severe generalized vaccinia, and ocular vaccinia. Providers may request use of VIG for a named patient by telephoning the U.S. Army Medical Research Institute of Infectious Diseases at 1-888-USA-RIID (1-888-872-7443) 24 hours a day. Additionally, after duty hours, one can call the USAMRIID Security Desk at 301-619-2257, or page the USAMRIID staff duty officer at 301-631-4393. IND-specific procedures must be followed carefully.

Adverse reactions from DoD-directed immunizations are line-of-duty conditions.

Immunizations are provided as part of the Department's Force Protection program. At the time of immunization, personnel are to be provided documentation that identifies date and location of immunization, general information on typical responses to vaccination, common and serious adverse events, location of the nearest military treatment facilities (MTFs), and the toll-free telephone number of the Military Medical Support Office (MMSO), in the event medical treatment is required from non-military treatment facilities. Emergency-essential DoD civilian employees and contractor personnel carrying out mission-essential services are entitled to the same treatment and necessary medical care as given to the Service members. This includes follow-up and/or emergency medical treatment from the MTF or treatment from their personal healthcare providers or non-military treatment facilities for emergency medical care as a result of immunizations required by their DoD employment.

Whenever a vaccine recipient presents at an MTF, expressing a belief that the condition for which treatment is sought is related to an immunization received during a period of duty, the person must be examined and provided necessary medical care. Once treatment has been rendered or the individual's emergent condition is stabilized, Line of Duty and/or Notice of Eligibility will be determined as soon as possible. Reserve Component members and their family members who seek medical attention as a result of adverse reactions from DoD-directed immunizations should 1) immediately seek medical attention if an emergency and contact MMSO and their command as soon as possible, or 2) contact MMSO and their unit command for referral to the nearest treatment facility and to ensure payment for care and entitlements.

In the case of emergency-essential civilian employees presenting to a military treatment facility or occupational health clinic, the initial assessment and any needed emergency care should be provided consistent with applicable occupational health program procedures. In the case of contractor personnel covered by the vaccination policy presenting to a military medical treatment facility or occupational health clinic, Secretarial-designee authority shall be used, consistent with applicable Military Department policy, to allow an initial assessment and any needed emergency care. This policy will facilitate awareness by our medical professionals of adverse events and provide to the patient medical expertise regarding vaccine events not necessarily available in the civilian medical community. This use of Secretarial-designee authority does not change the overall responsibility of the contractor under workers' compensation program for all work-related illnesses, injuries, or disabilities.

A privileged healthcare provider and any specialists, as indicated, should immediately evaluate any vaccinee with a serious adverse event temporally associated with receiving smallpox vaccination.

Vaccine Adverse Event Reporting System (VAERS) reports shall be filed using Service reporting procedures for those events resulting in hospital admission, lost duty time or work of 24 hours or more, adverse event suspected to result from contamination of a vaccine vial, or death. Further, healthcare providers are encouraged to report other adverse events that in the

provider's professional judgment appear to be unexpected in nature or severity. This is to include autoinoculations (or inadvertent infections). In other situations in which the patient wishes a VAERS report to be submitted, the healthcare provider will work with the patient to submit one without regard to causal assessment. VAERS report forms may be obtained by accessing www.vaers.org or by calling 1-800-822-7967.

Adverse-event management should be thoroughly documented in medical records. Medical record coders should use precision in coding medical encounters, noting specific codes listed in Attachment 3. A copy of the VAERS report will be filed in an individual's medical record after submitting the original form through DoD reporting channels, as discussed above. Providers are encouraged to provide a copy of the VAERS report to the patient.

Blood Donor Deferral

Because there is a significant donor deferral period associated with smallpox vaccination, it is critical that vaccination schedules be closely coordinated with local military and civilian donor center collection schedules to reduce the impact on the readiness and availability of the military blood supply. Individuals who receive the vaccination and have no complications will be deferred from donating blood until the scab spontaneously separates (14 – 21 days after vaccination). In cases where a scab is otherwise removed, the donor may be deferred for two months after vaccination. Individuals with vaccine complications will be deferred until 14 days after all vaccine complications have completely resolved.

Policy

These policies are effective immediately and should be communicated to appropriate commanders, healthcare providers, and others involved in implementation. If the FDA-approved labeling for smallpox vaccine changes, corresponding aspects of these policies will be superceded. Any recommendations from the ACIP will be taken into account in providing vaccination and clinical care.

William Winkenwerder, Jr., MD

Attachments:
As stated

cc:
Chief of Staff of the Army
Chief of Naval Operations
Commandant of the Marine Corps
Chief of Staff of the Air Force

Surgeon General of the Army
Surgeon General of the Navy
Surgeon General of the Air Force
Director of Health & Safety, U.S. Coast Guard

26090

CHRONOLOGICAL RECORD OF MEDICAL CARE

Initial Smallpox Vaccine Immunization Note Page 1

This page to be completed by potential vaccine recipient

Today's Date (M M / D D / Y Y Y Y) ☐☐ / ☐☐ / ☐☐☐☐

Birth Year ☐☐☐☐

1st Year in Military ☐☐☐☐ If never in the military, leave blank

GENDER ○ Male ○ Female

FEMALES: Was your last menstrual period normal and on time? ○ Yes ○ No ○ Unsure
Are you currently breastfeeding? ○ Yes ○ No

1. Could you or someone you live with be pregnant? ○ Yes ○ No ○ Unsure
2. Did you ever receive smallpox vaccine? ○ Yes ○ No ○ Unsure
   IF YES: Were you vaccinated within the last 10 years? ○ Yes ○ No ○ Unsure
3. Do you currently have an illness with fever? ○ Yes ○ No ○ Unsure
4. Have you ever had a serious problem after being vaccinated? ○ Yes ○ No ○ Unsure

IF YES or UNSURE: Name the vaccine and describe the problems (may use additional page)

5. Do you NOW HAVE or have you EVER HAD Eczema or Atopic Dermatitis? (Usually this skin condition involves an itchy, red, scaly rash that lasts more than 2 weeks. It often comes and goes.)

○ Yes ○ No ○ Unsure

6. Do you NOW HAVE any of the following skin problems:
Psoriasis (scaly skin rash),
Burns (other than mild sunburn),
Impetigo (skin infection),
Uncontrolled Acne,
Shingles (herpes zoster or chickenpox),
Other Skin Condition (Describe below)?

○ Yes ○ No ○ Unsure

Other Skin Condition:

7. Do you LIVE WITH someone who NOW HAS or has EVER HAD Eczema or Atopic Dermatitis? (Usually involves an itchy, red, scaly rash that lasts more than 2 weeks. It often comes and goes.)

○ Yes ○ No ○ Unsure

8. Do you LIVE WITH someone who NOW HAS any of the following skin problems:
Psoriasis (scaly skin rash),
Burns (other than mild sunburn),
Impetigo (skin infection),
Uncontrolled Acne,
Shingles (chickenpox),
Other Skin Condition (explain below)?

○ Yes ○ No ○ Unsure

Other Skin Condition:

9. Do you, or anyone you live with, have a problem or take a medication that affects the immune system?

○ Yes ○ No ○ Unsure **IF YES or UNSURE: Check ALL that apply**

Do you have or take medications for:

☐ leukemia, lymphoma, a generalized cancer, HIV/AIDS

☐ arthritis, Crohn's disease, lupus, an immune disease, or hepatitis

☐ X-ray or radiation treatment

☐ organ/bone marrow transplant

☐ another problem requiring steroids or prednisone

Do you LIVE WITH someone who has or takes medications for:

☐ leukemia, lymphoma, a generalized cancer, HIV/AIDS

☐ arthritis, Crohn's disease, lupus, an immune disease, or hepatitis

☐ X-rays or radiation treatment

☐ organ/bone marrow transplant

☐ another problem requiring steroids or prednisone

10. Are you allergic to any of these vaccine components: tetracycline, streptomycin, polymyxin B, neomycin, latex?

○ Yes ○ No ○ Unsure

11. Do you have other concerns you'd like to discuss?

○ Yes ○ No

(If YES: Describe concerns in box to the right)

NOTE:
If you think you might have one of the many risk factors for HIV infection, we can arrange for HIV testing before vaccination.
FOR FEMALES:
If you think you might be pregnant, you should get a pregnancy test before vaccination. Please tell us.

Explain "other" or additional concerns (may use additional page):

Name: Last, First, Middle Initial

Social Security Number ☐☐☐ - ☐☐ - ☐☐☐☐

Patient's Identification (Use for mechanical imprint)

RECORDS MAINTAINED AT:

PATIENT RANK/GRADE
DATE OF BIRTH SEX
SPONSOR NAME
RELATIONSHIP TO SPONSOR
ORGANIZATION
STATUS DEPART./SER

26090

CHRONOLOGICAL RECORD OF MEDICAL CARE

Initial Smallpox Vaccine Immunization Note Page 2

This page to be completed by a health care provider

Provider Assessment Date (MM/DD/YYYY)

☐☐ / ☐☐ / ☐☐☐☐

If Provider Assessment Date is blank,
Default is "Today's date" on page 1.

Reason for Vaccination (Indicate One):

○ Pre-outbreak: disease prevention

○ Post-outbreak: not exposed to virus

○ Post-outbreak: exposed to virus

○ Other reason (Describe)

Vaccine Risk Factors (Check all that apply):

	Self	Household
Pregnancy	☐	☐
Immune supression	☐	☐
Skin condition	☐	☐
Relevant allergy	☐	
Unsure/other risk	☐	☐

Refer to skin condition assessment tool for clinical evaluation guidance

Describe other possible risk

Comment on any concerns about contraindications, need to defer, need to consult, and/or relevent diagnosis

PROVIDER:

Plan (Indicate One):

○ Immunize: Primary

○ Immunize: Revaccination

○ Immunization deferred: Pending consult or lab test

○ Immunization deferred: Temporary contraindication (MT)

○ Immunization contraindicated unless exposed (MP)

○ Immunization not given (other reason specify below):

IF NOT IMMUNIZED, Check all that apply:

☐ Reason for non-immunization explained

☐ Lab test requested

☐ Consult request written/sent

☐ Follow up appointment planned

☐ Other reason (specify below):

Provider Signature and Printed Name/Stamp:

VACCINE ADMINISTRATOR:

Action Taken: Immunization Date (M M / D D / Y Y Y Y)

☐☐ / ☐☐ / ☐☐☐☐

Immunized; # of Punctures: ☐☐

Location: ○ Left Arm ○ Right Arm

Default Lot # is 317501, Mfr is WAL (Wyeth Ayerst Laboratories)
IF Lot # and/or Mfr are different, specify below:

Lot # ☐☐☐☐☐☐ Mfr ☐☐☐

IF IMMUNIZED, Check all that apply:

☐ Information sheet given to recipient

☐ Recipient advised about post-vaccination reaction and care

☐ Reasons for follow-up clinic visit described

☐ Patient understands information given

Please assure that all actions taken and deferrals are updated into your service's electronic Immunization Tracking System (ITS) as soon as possible.

Vaccine administered by: (Signature and Printed Name/Stamp)

Social Security Number of Recipient

☐☐☐ - ☐☐ - ☐☐☐☐

Patient's Identification (Use for mechanical imprint)

RECORDS MAINTAINED AT:

PATIENT RANK/GRADE
DATE OF BIRTH SEX
SPONSOR NAME
RELATIONSHIP TO SPONSOR
ORGANIZATION
STATUS DEPART./SER

10919

CHRONOLOGICAL RECORD OF MEDICAL CARE

Smallpox Immunization Follow up Note

Today's Date (M M / D D / Y Y Y Y)

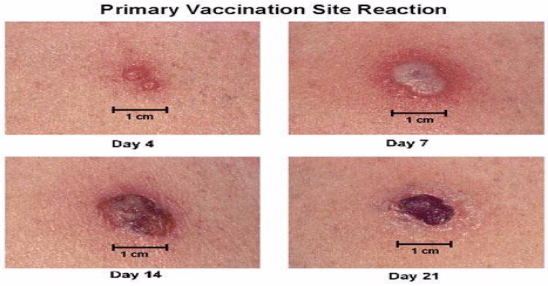
☐☐ / ☐☐ / ☐☐☐☐

Smallpox Immunization Date (MM/DD/YYYY)

☐☐ / ☐☐ / ☐☐☐☐

Pictures on this page show what can normally happen over the next few weeks following a smallpox immunization.

Primary Vaccination Site Reaction



1. Since you received the smallpox immunization on your arm, what have you noticed? (Check all that apply.)

☐ local redness ☐ scab

☐ bump ☐ nothing appeared

☐ blister ☐ do not remember

☐ pus-filled blister

2. Check anything else you experienced after the smallpox immunization.

☐ headache ☐ eye infection

☐ fever ☐ muscle aches

☐ generalized rash ☐ feeling lousy

☐ generalized itching ☐ other (describe in box)

Note any other reactions, problems or medications following vaccination:

3. Did you put a bandage on the vaccination site?

○ Yes ○ No

IF YES: How many days did you use a bandage? ☐☐

4. Any problems following immunization? (Check all that apply)

☐ Restricted activity How many days? ☐☐

☐ Limited duty How many days? ☐☐

☐ Missed work How many days? ☐☐

☐ Took medication (list in box) How many days? ☐☐

☐ Visited clinic or emergency room

☐ Hospitalized

☐ Other (describe in box)

5. Do you believe anyone living near you might have become ill as a result of your immunization? ○ Yes ○ No ○ Unsure

If YES or UNSURE, describe in box (or on continuation page)

Provider evaluation and action (check all that apply):

☐ Fully Immunized (major response)

☐ Equivocal response

☐ No response

☐ Re-immunization indicated

☐ Consultation request

☐ Follow-up for events described

☐ No further follow up planned

☐ Other action (describe in box)

Report to VAERS if warranted.

Provider Notes:

Provider Signature and Printed Name/Stamp:

Name: Last, First, Middle Initial

Social Security Number

☐☐☐ - ☐☐ - ☐☐☐☐

Patient's Identification (Use for mechanical imprint)

RECORDS MAINTAINED AT:

PATIENT RANK/GRADE
DATE OF BIRTH SEX
SPONSOR NAME
RELATIONSHIP TO SPONSOR
ORGANIZATION
STATUS DEPART./SER

32440

CHRONOLOGICAL RECORD OF MEDICAL CARE

Smallpox immunization Continuation Note

Today's Date (M M / D D / Y Y Y Y)

/ /

Additional Notes on Problems, Issues or Concerns of Patient or Provider related to Vaccine Assessment or Follow-up

Provider Assessment and Plan

Provider Signature and Printed Name/Stamp:

Name: Last, First, Middle Initial

Social Security Number

- -

RECORDS MAINTAINED AT:

PATIENT	RANK/GRADE
DATE OF BIRTH	SEX
SPONSOR NAME	
RELATIONSHIP TO SPONSOR	
ORGANIZATION	
STATUS	DEPART./SER

VACCINATION-RESPONSE INTERPRETATION

Inspect the vaccination site 6 to 8 days after vaccination. Interpret the response at that time. The World Health Organization (WHO) Expert Committee on Smallpox defined two types of responses:

a) major reaction: virus replication took place and vaccination was successful; or

b) equivocal reaction: a possible consequence of immunity adequate to suppress viral multiplication or allergic reactions to an inactive vaccine without production of immunity.

Major Reaction:

A vesicular (blistery) or pustular (pus-filled) lesion or area of definite palpable induration or congestion surrounding a central lesion that might be a crust or an ulcer.

After primary (first) vaccination, the vaccination site usually progresses as follows:

- The inoculation site becomes reddened and pruritic 3 to 4 days after vaccination.
- A vesicle surrounded by a red areola then forms, which becomes umbilicated (collapsed center) and then pustular by days 7 to 11 after vaccination.
- The pustule begins to dry; the redness subsides; and the lesion becomes crusted between the second and third week. By the end of about the third week, the scab falls off, leaving a permanent scar that at first is pink in color but eventually becomes flesh-colored.
- After revaccination, skin reactions might be less pronounced with more rapid progression and healing than those after primary vaccination. Revaccination is successful if a pustular lesion or area of definite induration or congestion surrounding a central lesion (i.e., scab or ulcer) appears 6 to 8 days after revaccination.

Equivocal Reaction:

Equivocal reactions, including accelerated, modified, vaccinoid, immediate, early, or immune reactions, are all responses other than major reactions. If an equivocal reaction is observed, check vaccination procedures and repeat vaccination using another vial or vaccine lot, if available. A response to smallpox vaccination may be blunted by immunity, insufficiently potent vaccine, or vaccination technique failure. If repeat vaccination using vaccine from another vial fails to elicit a major reaction, consult public-health authorities before attempting another vaccination of that person.

Sources: Fenner et. al, 1988 (pp 296, 312-314); ACIP, 2001.

Smallpox Vaccine

Dried, Calf Lymph Type

Dryvax®

Dried Smallpox Vaccine

Rx only

DO NOT INJECT INTRAMUSCULARLY (IM), INTRAVENOUSLY (IV), OR SUBCUTANEOUSLY (SC). FOR CONVENTIONAL SMALLPOX VACCINATION (SCARIFICATION) ONLY.

DESCRIPTION

Smallpox Vaccine, Dried, Calf Lymph Type, Dryvax®, is a live-virus preparation of vaccinia virus prepared from calf lymph. The calf lymph is purified, concentrated, and dried by lyophilization. During processing, polymyxin B sulfate, dihydrostreptomycin sulfate, chlortetracycline hydrochloride, and neomycin sulfate are added, and trace amounts of these antibiotics may be present in the final product. The reconstituted vaccine has been shown by appropriate test methods to contain not more than 200 viable bacterial organisms per mL.

The diluent for Dryvax® contains 50% glycerin, and 0.25% phenol in Sterile Water for Injection, USP.

The reconstituted vaccine, which contains approximately 100 million infectious vaccinia viruses per mL, is intended only for multiple-puncture use, ie, administration of the vaccine into the superficial layers of the skin using a bifurcated needle.

CLINICAL PHARMACOLOGY

Introduction of potent smallpox vaccine containing infectious vaccinia viruses into the superficial layers of the skin results in viral multiplication, immunity, and cellular hypersensitivity. With the primary vaccination, a papule appears at the site of vaccination on about the 2nd to 5th day. This becomes a vesicle on the 5th or 6th day, which becomes pustular, umbilicated, and surrounded by erythema and induration. The maximal area of erythema is attained between the 8th and 12th day following vaccination (usually the 10th). The erythema and swelling then subside, and a crust forms which comes off about the 14th to 21st day. At the height of the primary reaction known as the Jennerian response, there is usually regional lymphadenopathy and there may be systemic manifestations of fever and malaise.

Primary vaccination with product at a potency of 100 million pock-forming units (pfu)/mL elicits a 97% response rate by both major reaction (see **DOSAGE AND ADMINISTRATION**, **Interpretation of Responses:** *Major Reaction*) and neutralizing antibody response in children.[1,2] Immunity wanes after several years, and an allergic sensitization to viral proteins can persist. This allergy is manifested by the appearance of a papule and a small area of redness appearing within the first 24 hours after revaccination; this may be the maximum reaction but not infrequently vesicles appear in 24 to 48 hours

with ultimate scabbing. The peak of this type of reaction is passed within three days following the application of fully potent vaccine with an antibody rise occurring in roughly half of those who exhibit such a reaction. As immunity wanes, revaccination with potent vaccine elicits this allergic response followed by the changes produced by propagating virus. The lesion may then go through the same course as the primary vaccination or may exhibit an accelerated development of the lesion and its attendant erythema. Viral propagation is assumed to have occurred (and an immune response evoked) when the greatest area of skin involvement (erythema) occurs after the third day following revaccination. Revaccination is considered successful if a vesicular or pustular lesion is present or an area of definite palpable induration or congestion surrounding a central lesion, which may be a scar or ulcer, is present on examination 6-8 days after revaccination.[3]

INDICATIONS AND USAGE

Smallpox vaccine is indicated for active immunization against smallpox disease.

The Advisory Committee on Immunization Practices (ACIP) recommends vaccination of laboratory workers who directly handle a) cultures or b) animals contaminated or infected with non-highly attenuated vaccinia virus, recombinant vaccinia viruses derived from non-highly attenuated vaccinia strains, or other Orthopoxviruses that infect humans (eg, monkeypox, cowpox, vaccinia and variola).[2] The ACIP also recommends that vaccination can be considered for healthcare workers who have contact with clinical specimens, contaminated materials (eg, dressings), or patients receiving vaccinia or recombinant vaccinia viruses. Laboratory and other healthcare personnel who work with highly-

attenuated poxvirus strains such as modified vaccinia Ankara (MVA), NYVAC (derived from the Copenhagen vaccinia strain), ALVAC (derived from canarypox virus), and TROVAC (derived from fowlpox virus) do not require routine vaccination.[2]

For those in the above special-risk categories, revaccination is recommended at appropriate intervals (every ten years).[2]

The Armed Forces continue to recommend use of smallpox vaccine for certain categories of personnel. See the most recent issue of Immunizations and Chemoprophylaxis, Departments of the Army, the Navy, the Air Force, and Transportation (Army Regulation 40-562, BUMEDINST 6230.15, Air Force Joint Instruction 48-110, CG COMDTINST M6230.4E)[4] and Department of Defense Directive 6205.3[5] for current recommendations concerning use.

The judicious use of smallpox vaccine has been reported to have eradicated smallpox. At the World Health Assembly in May 1980, the World Health Organization (WHO) declared the world free of (naturally occurring) smallpox.[6]

As with any vaccine, smallpox vaccine may not protect all individuals receiving the vaccine.

Use of Smallpox Vaccine in Response to Bioterrorism:

Recommendations for use of smallpox vaccine in response to bioterrorism are periodically updated by the Centers for Disease Control and Prevention (CDC), and the most recent recommendations can be found at http://www.cdc.gov.

CONTRAINDICATIONS

Contraindications for Routine Non-Emergency Vaccine Use

Primary vaccination AND revaccination with smallpox vaccine are contraindicated:

1. For any individuals who are allergic to any component of the vaccine, including polymyxin B sulfate, dihydrostreptomycin sulfate, chlortetracycline hydrochloride, and neomycin sulfate.
2. Infants <12 months of age. The ACIP advises against non-emergency use of smallpox vaccine in children <18 years of age.[2]
3. For individuals of any age with eczema or past history of eczema or for those whose household contacts have eczema, other acute, chronic, or exfoliative skin conditions, (eg, atopic dermatitis, wounds, burns, impetigo, or Varicella zoster) and for siblings or other household contacts of such individuals.[2]
4. For persons of any age receiving therapy with systemic corticosteroids at certain doses (eg, ≥2 mg/kg body weight or ≥20 mg/day of prednisone for ≥2 weeks),[2] or immunosuppressive drugs (eg, alkylating agents, antimetabolites), or radiation. Household contacts of such persons should not be vaccinated.

5. For individuals with congenital or acquired deficiencies of the immune system, including individuals infected with the human immunodeficiency virus (HIV). Household contacts of such persons should not be vaccinated.
6. For individuals with immunosuppression (eg, leukemia, lymphomas of any type, generalized malignancy, solid organ transplantation, hematopoietic stem cell transplantation, cellular or humoral immunity disorders, agammaglobulinemia, or other malignant neoplasms affecting the bone marrow or lymphatic systems), or household contacts of such individuals.[2]
7. During pregnancy, suspected pregnancy, or to household contacts of pregnant women.

Contraindications for Smallpox Emergency

There are no absolute contraindications regarding vaccination of a person with a high-risk exposure to smallpox.[2] Persons at greatest risk for experiencing serious vaccination complications are often those at greatest risk for death from smallpox. If a relative contraindication to vaccination exists, the risk for experiencing serious vaccination complications must be weighed against the risks for experiencing a potentially fatal smallpox infection.[2]

PRECAUTIONS

General

The vial stopper contains dry natural rubber that may cause hypersensitivity reactions when handled by, or when the product is administered to, persons with known or possible latex sensitivity.

After completion of the multiple-puncture vaccination, blot off any vaccine remaining on skin at vaccination site with clean, dry gauze or cotton.

The vaccine vial, its stopper, the needle to release the vacuum, the diluent syringe, the vented needle used for reconstitution, the bifurcated needle used for administration, and any gauze or cotton that came in contact with the vaccine should be burned, boiled, or autoclaved before disposal.

Individuals susceptible to adverse effects of vaccinia virus, eg, those with eczema, immunodeficiency states, including HIV infection, should be identified and measures taken to avoid contact with persons with active vaccination lesions. Contact spread of vaccinia from recently vaccinated military personnel has been reported[7,8] (see **ADVERSE REACTIONS)**.

Prevention of contact transmission of vaccinia

Vaccinia virus may be cultured from the site of primary vaccination beginning at the time of development of a papule (2 to 5 days after vaccination) until the scab separates from the skin lesion (14 to 21 days after vaccination). During this time, care must be taken to prevent spread of the virus to another area of the body or to another person. The vaccination site may be left uncovered or can be covered with a porous bandage, such as gauze, until the scab has separated and the underlying skin has healed. An occlusive bandage should not be routinely used. If a bandage is used to cover the vaccination site, it

should be changed frequently (ie, every 1-2 days) to prevent maceration of the vaccination site secondary to fluid accumulation. No salves or ointments should be used on the vaccination site. Contaminated bandages should be placed in sealed plastic bags before disposal in the trash. Clothing or other cloth materials that have had contact with the site can be decontaminated with routine laundering in hot water with bleach.[2] The vaccination site should be kept dry, although normal bathing can continue.[2]

Recently vaccinated healthcare workers should avoid contact with patients, particularly those with immunodeficiencies, until the scab has separated from the skin at the vaccination site. However, if continued contact with patients is essential and unavoidable, they may continue to have contact with patients, including those with immunodeficiencies, as long as the vaccination site is well covered and good hand-washing technique is maintained by the vaccinee. In this setting, a more occlusive dressing may be required. Semipermeable polyurethane dressings (eg, Opsite®) are effective barriers to vaccinia and recombinant vaccinia viruses. However, exudate may accumulate beneath the dressing, and care must be taken to prevent viral contamination when the dressing is removed. In addition, accumulation of fluid beneath the dressing may increase the maceration of the vaccination site. Accumulation of exudate may be decreased by first covering the vaccination with dry gauze, then applying the dressing over the gauze. The dressing should also be changed at least once a day.

The most important measure to prevent inadvertent implantation and contact transmission from vaccinia vaccination is thorough hand washing after changing the bandage or after any other contact with the

vaccination site.

Simultaneous administration with other live-virus vaccines

There are no data evaluating the simultaneous administration of smallpox vaccine with other live-virus vaccines.

PREGNANCY

Pregnancy Category C

Animal reproduction studies have not been conducted with smallpox vaccine. Smallpox vaccine should not be given to pregnant women in routine, non-emergency conditions. For emergency conditions, see **CONTRAINDICATIONS - Contraindications for Smallpox Emergency** and **INDICATIONS AND USAGE - Use of Smallpox Vaccine in Response to Bioterrorism**. On rare occasions, almost always after primary vaccination, vaccinia virus has been reported to cause fetal infection. Fetal vaccinia usually results in stillbirth or death of the infant shortly after delivery. Vaccinia vaccine is not known to cause congenital malformations.[2]

Nursing Mothers

It is not known whether vaccine antigens or antibodies are excreted in human milk. This vaccine is not recommended for use in a nursing mother in non-emergency conditions. For use in emergency conditions, see **CONTRAINDICATIONS - Contraindications for Smallpox Emergency.**

Pediatric Use

Before the eradication of smallpox disease, smallpox vaccination was administered routinely during childhood. The vaccine is considered safe and effective in children. However, smallpox vaccine is not recommended for use in non-emergency situations and is contraindicated for infants <12 months in non-emergency situations.

Geriatric Use

There are no published data to support the use of this vaccine in geriatric populations. This vaccine is not recommended for use in geriatric populations in non-emergency conditions. For use in emergency conditions, see **CONTRAINDICATIONS – Contraindications for Smallpox Emergency**.

ADVERSE REACTIONS

A fever is common after vaccinia vaccination is administered. Up to 70% of children have one or more days of temperature ≥100°F from 4 to 14 days after primary vaccination, and 15% to 20% have temperatures of ≥102°F. After revaccination, 35% of children develop temperatures of ≥100°F, and 5% have temperatures of ≥102°F. Fever is less common in adults than children after vaccination or revaccination.[2]

Generalized rashes (erythematous, urticarial, nonspecific) and secondary pyogenic infections at the site

of vaccine applications may occur. Rarely bullous erythema multiforme (Stevens-Johnson syndrome) occurs.[2]

Inadvertent inoculation at other sites is the most frequent complication of vaccinia vaccination, usually resulting from autoinoculation of the vaccine virus transferred from the site of vaccination. The most common sites involved are the face, eyelid, nose, mouth, genitalia, and rectum. Accidental infection (autoinoculation) of the eye may result in blindness.

Generalized vaccinia among persons without underlying illnesses is characterized by a vesicular rash of varying extent. The rash is generally self-limited and requires little or no therapy except among patients whose conditions appear to be toxic or who have serious underlying illnesses.[2] Contact spread of vaccinia from recently vaccinated military personnel has been reported (see **CONTRAINDICATIONS)**.[7,8,9]

More severe complications that may follow either primary vaccination or revaccination include: postvaccinial encephalitis, encephalomyelitis, encephalopathy, progressive vaccinia (vaccinia necrosum), and eczema vaccinatum. Such complications may result in severe disability, permanent neurological sequelae, and/or death.[10,11] Although a rare event, approximately 1 death per million primary vaccinations and 1 death per 4 million revaccinations have occurred after vaccinia vaccination. Death is most often the result of postvaccinial encephalitis or progressive vaccinia.[2,12] Death has also been reported in unvaccinated contacts of individuals who have been

vaccinated.[12]

Estimates of the risks of occurrence of complications after primary vaccination and revaccination are as follows[13]:

Rates of reported complications* associated with vaccinia vaccinations (cases/million vaccinations)[†]

Age (yrs) and status	Inadvertent inoculation[§]	Generalized vaccinia	Eczema vaccinatum	Progressive vaccinia[¶]	Postvaccinial encephalitis	Death[10,#]	Total[**]
Primary vaccination							
<1	507.0	394.4	14.1	--[††]	42.3	5	**1549.3**
1-4	577.3	233.4	44.2	3.2	9.5	0.5	**1261.8**
5-19	371.2	139.7	34.9	--[††]	8.7	0.5	**855.9**
= 20	606.1	212.1	30.3	--[††]	--[††]	unknown	**1515.2**
Overall rates[†]	**529.2**	**241.5**	**38.5**	**1.5**	**12.3**	--	**1253.8**
Revaccination							
<1	--[††]	--[††]	--[††]	--[††]	--[††]	--	--[††]
1-4	109.1	--[††]	--[††]	--[††]	--[††]	--	**200.0**
5-19	47.7	9.9	2.0	--[††]	--[††]	--	**85.5**
= 20	25.0	9.1	4.5	6.8	4.5	--	**113.6**
Overall rates[§§]	**42.1**	**9.0**	**3.0**	**3.0**	**2.0**	--	**108.2**

[†] Adapted from Lane JM, Ruber FL, Neff JM, Millar JD. Complication of smallpox vaccination, 1968: results of ten statewide surveys. J Infect Dis. 1970;122:303-309.
[*] See text for descriptions of complications.
[§] Referenced as accidental implantation.
[¶] Referenced as vaccinia necrosum.
[#] Death from all complications.[10]
[**] Rates of overall complications by age group include complications not provided in this table, including severe local reactions, bacterial superinfection of the vaccination site, and erythema multiforme.
[††] No instances of this complication were identified during the 1968 10-state survey.
[§§] Overall rates for each complication include persons of unknown age.

The risk of complications associated with revaccination is low. Complications have occurred, especially in patients with underlying diseases or in patients receiving therapy which impairs immunologic competence, or in subjects who have not been vaccinated for many years. Subjects who have not been

vaccinated for many years may respond as primary vaccinees as regards both the local and systemic reaction to vaccine administration and risk of occurrence of the above-mentioned serious complications.[2]

The Centers for Disease Control and Prevention (CDC) can assist physicians in the diagnosis and management of patients with suspected complications of vaccinia (smallpox) vaccination. Vaccinia Immune Globulin (VIG) is indicated for certain complications of smallpox vaccination. Several antiviral compounds have been shown to have activity against vaccinia virus or other orthopoxviruses in vitro and in animal models. However, insufficient information exists on which to base recommendations for any antiviral compound to treat postvaccination complications or Orthopoxvirus infections, including smallpox.[2] If VIG is needed or additional information is required, physicians should contact the CDC at (404) 639-3670, Monday through Friday 8AM to 4:30 PM Eastern Standard Time; at other times call (404) 639-2888.

The United States Department of Health and Human Services (DHHS) has established the Vaccine Adverse Event Reporting System (VAERS) to accept all reports of suspected adverse events of any vaccine. The VAERS toll-free number for VAERS forms and information is (800-822-7967).

DOSAGE AND ADMINISTRATION

READ ALL DIRECTIONS COMPLETELY BEFORE BEGINNING RECONSTITUTION AND

ADMINISTRATION. WHEN RECONSTITUTING AND ADMINISTERING THE VACCINE, USE PROTECTIVE GLOVES AND ASEPTIC TECHNIQUE.

Directions for Reconstitution:

Note: The healthcare provider must have available a sterile 21 gauge or smaller needle to release the vacuum in the vials prior to adding diluent. This needle must only be used to release the vacuum. The needle to release the vacuum is NOT included in the kit.

1. Lift up tab of aluminum seal on vaccine vial. DO NOT BREAK OFF OR TEAR DOWN TAB.

2. Wipe off vial stopper with an alcohol sponge and allow to dry.

3. Place vaccine vial upright on a hard, flat surface. Insert a sterile 21 gauge or smaller needle into the rubber stopper to release the vacuum from the vaccine vial. Discard the needle in biohazard waste container.

4. To reduce viscosity of cold diluent, warm by holding diluent-cartridge in palm of hand for a minute or so.

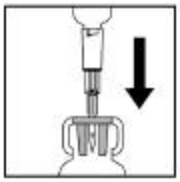
5. Peel open the vented needle package (provided with the kit) and aseptically remove the vented needle.

6. Remove rubber cover from end of the diluent syringe.

7. With a twisting motion, aseptically attach the vented needle to the hub of the diluent syringe.

8. Remove protective cover from the vented needle and expel the air from the diluent syringe.

9. Aseptically insert the needle through the rubber stopper into the vaccine vial up to the first hub.



10. Depress the plunger to ensure the entire volume of diluent is delivered into the vial.

11. Withdraw diluent syringe/vented needle and discard in biohazard waste container.

12. Allow vaccine vial to stand undisturbed for 3 to 5 minutes. Then if necessary, swirl vial gently to effect complete reconstitution.

13. Record date of reconstitution.

14. Store reconstituted vaccine at 2° to 8°C (36° to 46°F) when not in actual use. The vaccine may be stored for no more than 15 days after reconstitution.

Sites of Vaccination:

The skin over the insertion of the deltoid muscle or the posterior aspect of the arm over the triceps muscle is the preferred site for smallpox vaccination.

Method of Vaccination:

USE 2 OR 3 NEEDLE PUNCTURES FOR PRIMARY VACCINATION; 15 FOR REVACCINATION.

Reconstituted vials should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit. Do not use vaccine if particulate matter or discoloration is present.

1. First pull down the “tear off” tab from the aluminum seal of the vaccine vial.

2. Remove entire aluminum seal from the vaccine vial. Then remove rubber stopper from vaccine vial and aseptically retain stopper (set aside inverted) for subsequent reuse.

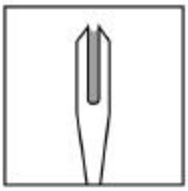
3. The skin over the insertion of the deltoid muscle or the posterior aspect of the arm over the triceps muscle is the preferred site for smallpox vaccination. If alcohol is used to clean the site, the skin must be allowed to dry thoroughly to prevent inactivation of the vaccine by the alcohol.

4. Tear off a packette containing a single, sterile bifurcated vaccinating needle.

5. Peel back the packaging approximately halfway exposing the butt-end of needle.

6. Hold butt-end of needle and gently pull bifurcated point end free of packaging.

7. Carefully dip bifurcated end of needle into vaccine. Visually confirm that the needle picks up a drop of vaccine in the space between the two tips.



8. Deposit the drop of vaccine onto clean, DRY site previously prepared for vaccination. ***Do not redip needle into vaccine if needle has touched skin.***

9. With the same needle, and using multiple-puncture technique, vaccinate through drop of vaccine. Holding the bifurcated needle perpendicular to the skin, punctures are rapidly made with strokes vigorous enough to allow a trace of blood to appear after 15-20 seconds. Two or 3 punctures are recommended for primary vaccination; 15 punctures for revaccination.

Any remaining vaccine should be wiped off with dry sterile gauze and the gauze disposed of in a

biohazard waste container.

10. Discard needle in a biohazard waste container.

11. Repeat Steps 3 through 10 for each individual to be vaccinated utilizing a new bifurcated needle for each individual vaccinated.

12. If vaccine is to be stored for subsequent use, re-stopper the vial with the rubber stopper and store at 2° to 8°C (36° to 46°F). The vaccine may be stored for no more than 15 days after reconstitution.

13. When next needed, remove vial from refrigerator, gently swirl suspension to ensure resuspension, and then carefully take off stopper-cap.

14. Repeat Steps 3 through 10.

15. If vaccine is to be restored for subsequent use, replace stopper-cap and store at 2° to 8°C (36° to 46°F). The vaccine may be stored for no more than 15 days after reconstitution.

Interpretation of Responses:

The vaccination site should be inspected 6 to 8 days after vaccination. Two types of responses have been defined by the World Health Organization (WHO) Expert Committee on Smallpox.[3] They are: 1) major reaction, indicating that virus replication has taken place and vaccination was successful; or 2) equivocal reaction, indicating a possible consequence of immunity capable of suppressing viral multiplication or allergic reactions to an inactive vaccine with production of immunity.

Major Reaction

Major reaction is defined as a vesicular or pustular lesion or an area of definite palpable induration or congestion surrounding a central lesion that might be a crust or an ulcer. The inoculation site becomes reddened and pruritic 3-4 days after vaccination. A vesicle surrounded by a red areola then forms, which becomes umbilicated and then pustular the 7th to 11th day after vaccination, and the pustule begins to dry, the redness subsides, and the lesion usually becomes crusted between the 14th and 21st days. By the end of approximately the third week, the scab falls off, leaving a permanent scar, which at first is pink in color but eventually becomes flesh-colored (see **CLINICAL PHARMACOLOGY**).[2]

Primary vaccination may be accompanied by fever, regional lymphadenopathy, and malaise persisting for a few days.

Revaccination is considered successful if a vesicular or pustular lesion is present or an area of definite palpable induration or congestion surrounding a central lesion, which may be a scar or ulcer, is present on examination 6-8 days after revaccination.[3] Major reactions, especially when there has been an interval of many years since the last successful vaccination, may be accompanied by fever, regional lymphadenopathy, and malaise persisting for a few days.

Equivocal Reaction

Equivocal reactions are defined as all responses other than major reactions.[3] If an equivocal reaction is observed, vaccination procedures should be checked and vaccination repeated with vaccine from

another vial or vaccine lot, if available. If a repeat vaccination by using vaccine from another vial or vaccine lot fails to produce a major reaction, healthcare providers should consult CDC or their state or local health department before giving another vaccination.[2]

HOW SUPPLIED

Combination package of 1 vial of Dried Smallpox Vaccine, 1 Diluent syringe (0.25 mL), 1 vented needle, 100 individually wrapped bifurcated needles (20 strips, 5 needles per strip). Note: The healthcare provider must have available a sterile 21 gauge or smaller needle to release the vacuum in the vials prior to adding diluent. The needle to release the vacuum is NOT included in the kit.

NDC# 0008-0348-08

STORAGE

Store un-reconstituted Dryvax® in the refrigerator (2° to 8°C, 36° to 46°F). DO NOT FREEZE. RECONSTITUTED Dryvax® may be used for 15 days if stored at 2° to 8°C (36° to 46°F) when not in actual use. At time of reconstitution, record date. Dryvax® should not be used after the expiration date regardless of whether it is in the dry or reconstituted form.

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