**Smallpox Vaccination**

**Vaccination Method**

This pocket guide provides health care personnel with concise information on the vaccine, method of vaccination, immunity, contraindications, reactions, and revaccination. The focus of the guide is to help differentiate the more common, self-limiting adverse reactions of vaccination from those that are serious and may require intervention. The guide also includes images and text to help differentiate the various reactions, with special attention to selecting the appropriate course of action that might transfer vaccinia virus to the eye or other mucosal surfaces.

In the event of a smallpox outbreak, those who normally would have a contraindication for vaccination, but who might need vaccination, can be vaccinated. Vaccination should be performed 30 years after birth. Vaccination is not performed in pregnant women or those with an allergy to Dryvax component: polymyxin B sulfate, chlortetracycline hydrochloride, neomycin sulfate, bacitracin, streptomycin sulfate, sulfadiazine.

**Normal Primary Vaccination**

**About the Vaccine**

The vaccinia virus is a live virus that infects the skin. Female vaccinia virus is a live virus that causes lesions. A vaccinia vaccine is made by inactivating vaccinia virus. Vaccinia immune globulin (VIG) is produced in the vaccinia (smallpox) vaccine. VIG has been produced in mammalian cells and in tissue culture. The vaccine is given by injection into the skin. The vaccine is given as a smallpox vaccine, using a needle, syringe, and lancet.

**Recommended Vaccination Method**

Routine vaccination is carried out at the standard dose of 0.1 mL per site, using a sterile, individually wrapped, sterilized lancet.

**Vaccination**

**Immunity**

Required: After 2 years, after 10 years, prototypically up to 20 years. Required: After 10 years, prototypically up to 20 years.

**Contraindications**

- Pregnancy
- Immunodeficiency
- Eczema
- Generalized vaccinia
- Progressive vaccinia
- Erythema multiforme
- Vaccinia keratitis
- Viremia vaccinata or progressive vaccinia that present with exanthems or with vesicles, followed by lymphadenopathy.

**Equivocal reaction**

- Minor reaction
- No reaction
- Major reaction

**Normal Variants**

- Normal Variants: Normal variants (rate: 2.4% - 6.6%) are NOT adverse reactions. These reactions are considered normal variability and are not reported as adverse reactions.

**Potential revaccination responses**

- Normal variants
- Intense erythema (viral cellulitis)
- Considerable local edema at the site
- Regional lymphadenopathy
- Satellite lesions
- Lymphangitis
- Edema

**Systemic Symptoms**

- Soreness at the vaccination site
- Myalgia
- Malaise
- Fever

Approximately one week after vaccination:

- **Day 1**: Minor reaction
- **Day 2**: No reaction
- **Day 3**: Minor reaction
- **Day 4**: Major reaction
- **Day 5**: Minor reaction
- **Day 6**: Major reaction
- **Day 7**: Equivocal reaction
- **Day 8**: Normal variants
- **Day 9**: Normal variants
- **Day 10**: Normal variants
- **Day 11**: Normal variants
- **Day 12**: Normal variants
- **Day 13**: Normal variants
- **Day 14**: Normal variants

**Vaccinia Immune Globulin (VIG)**

Vaccinia immune globulin (VIG) was produced in the vaccinia (smallpox) vaccine. VIG has been produced in mammalian cells and in tissue culture. The vaccine is given by injection into the skin. The vaccine is given as a smallpox vaccine, using a needle, syringe, and lancet.

**Dosage**

Recommended: 10 mL intramuscularly into the deltoid or suboccipital area of the muscle. VIG is available only under IND protocols.

**Storage**

Store at room temperature between 15° and 30°C (59° and 86°F). Do not freeze. VIG is stable for at least 15 months if stored at room temperature. Under these conditions, VIG has been shown to be stable for at least 18 months. VIG is stable for at least 6 months when held at 2° to 8°C (36° to 46°F). Once opened, VIG should be stored in the refrigerator at 2° to 8°C (36° to 46°F). If a patient has never had a successful take, the patient should be informed that he/she is almost certainly NOT immune to smallpox. If a patient has had a successful take, the patient should be informed that he/she is almost certainly immune to smallpox. If a patient has had a negative reaction, the patient should be informed that he/she is almost certainly immune to smallpox.
ADVERSE REACTIONS

Adverse Reactions:

Severity:

Less common - hospitalize

Common

Benign

Frequency:

Unknown

Rare

Indicated (if severe or recurrent)

Adverse Reaction: Vaccinia Keratitis

A rare complication of vaccinia infection, Vaccinia Keratitis can lead to severe ocular disease. The virus can cause a central, grayish, disciform corneal lesion, which can progress to permanent corneal scarring or clouding. Early recognition and treatment with Vaccinia Immune Globulin (VIG) can reduce the risk of severe complications.

Adverse Reaction: Progressive Vaccinia

Progressive Vaccinia is a rare complication of vaccinia vaccination occurring primarily in very young children. Progressive vaccinia can progress to necrosis of the skin, subcutaneous tissue, and underlying organs. Vaccinia Immune Globulin (VIG) should be administered in cases of severe or recurrent progressive vaccinia.

Adverse Reaction: Generalized Vaccinia

Generalized vaccinia is a rare complication of vaccinia vaccination occurring primarily in very young children. Generalized vaccinia can progress to necrosis of the skin, subcutaneous tissue, and underlying organs. Vaccinia Immune Globulin (VIG) should be administered in cases of severe or recurrent generalized vaccinia.

Adverse Reaction: Erythema Multiforme

Erythema Multiforme is a rare complication of vaccinia vaccination occurring primarily in very young children. Erythema Multiforme can progress to necrosis of the skin, subcutaneous tissue, and underlying organs. Vaccinia Immune Globulin (VIG) should be administered in cases of severe or recurrent erythema multiforme.

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