Vaccinia Immune Globulin (Intravenous) (Lexi-Drugs)

ALERT: US Boxed Warning

Interactions with glucose monitoring systems:

Blood glucose measurement in patients receiving Vaccinia Immune Globulin Intravenous (Human) (VIGIV) must be done with a glucose-specific method (monitor and test strips) to avoid interference by maltose contained in VIGIV. Glucose dehydrogenase pyrroloquinolinequinone (GDH-PQQ) or glucose-dye-oxidoreductase method (monitor and test strips) must not be used for blood glucose testing in patients receiving VIGIV, since maltose in IGIV products has been shown to give falsely high blood glucose levels in these testing systems. This could result in the inappropriate administration of insulin, resulting in life-threatening hypoglycemia. Cases of true hypoglycemia may go untreated if the hypoglycemic state is masked by falsely elevated glucose readings.

Carefully review the product information of the blood glucose testing system, including that of the test strips, to determine if the system is appropriate for use with maltose-containing parenteral products.

Pronunciation

Vm

P

(vax IN ee a i MYUN GLOB yoo lin IN tra VEE nus)

Brand Names: US

CNJ-016

Pharmacologic Category

Blood Product Derivative; Immune Globulin

Dosing: Adult

Vaccinia conditions

Vaccinia conditions: IV: 6,000 units/kg as soon as symptoms appear; may repeat dose based on severity of symptoms and response to treatment (specific data are lacking); 9,000 units/kg may be considered if patient does not respond to initial dose. Single doses up to 24,000 unit/kg were tolerated in healthy volunteers. **Note:** Maximum dose for patients with risk factors for thrombosis: 12,000 units/kg/day.

Dosage adjustment for concomitant therapy: Significant drug interactions exist, requiring dose/frequency adjustment or avoidance. Consult drug interactions database for more information.

* See Dosage and Administration in AHFS Essentials for additional information.

Dosing: Altered Kidney Function: Adult

There are no dosage adjustments provided in the manufacturer’s labeling; use caution. In patients with preexisting renal impairment, at risk of renal dysfunction or volume overload, do not exceed recommended infusion rate; follow infusion schedule closely, and ensure adequate hydration; consider discontinuing if renal function deteriorates.

Dosing: Hepatic Impairment: Adult

There are no dosage adjustments provided in the manufacturer’s labeling.

Dosing: Pediatric

Vaccinia conditions:

Adolescents ≥16 years:

Initial dosing: IV: 6,000 units/kg/dose as soon as symptoms appear.

Repeat dosing: IV: May repeat dose (6,000 units/kg/dose) based on severity of symptoms and response to treatment despite lack of specific clinical data; a higher dose (eg, 9,000 units/kg/dose) may be considered depending on clinical response. A specific time frame in which to administer repeat dose is not provided in manufacturer's labeling. Clinical efficacy for maximum doses is lacking; single doses up to 24,000 units/kg were tolerated in healthy adult volunteers. In patients with risk factors for thrombosis, do not exceed 12,000 units/kg/**day**.

Dosage adjustment for concomitant therapy: Significant drug interactions exist, requiring dose/frequency adjustment or avoidance. Consult drug interactions database for more information.

Dosing: Altered Kidney Function: Pediatric

There are no dosage adjustments provided in the manufacturer's labeling; use caution. In patients with preexisting renal impairment or who are at risk of renal dysfunction or volume overload, do not exceed recommended infusion rate; follow infusion schedule closely and ensure adequate hydration; consider discontinuing if renal function deteriorates.

Dosing: Hepatic Impairment: Pediatric

There are no dosage adjustments provided in the manufacturer's labeling.

Use: Labeled Indications

Vaccinia conditions: Treatment and/or modification of the following conditions:

- Aberrant infections induced by vaccinia virus that include its accidental implantation in eyes (except in cases of isolated keratitis), mouth, or other areas where vaccinia infection would constitute a special hazard.

- Eczema vaccinatum

- Progressive vaccinia

- Severe generalized vaccinia

- Vaccinia infections in individuals who have skin conditions such as burns, impetigo, varicella-zoster, or poison ivy; or in individuals who have eczematous skin lesions because of either the activity or extensiveness of such lesions

The Advisory Committee on Immunization Practices (ACIP) recommends the following (CDC 2009; CDC [Rotz 2001]; CDC [Wharton 2003]):

Use is recommended for:

- Inadvertent inoculation (considering severity, toxicity of affected person, and pain)

- Eczema vaccinatum

- Generalized vaccinia (severe form or if underlying illness is present)

- Progressive vaccinia

Use may be considered for:

- Severe ocular complications except isolated keratitis

Use is not recommended for:

- Inadvertent inoculation that is not severe

- Mild or limited generalized vaccinia

- Nonspecific rashes, erythema multiforme, or Stevens-Johnson syndrome

- Postvaccinial encephalitis or encephalomyelitis

* See Uses in AHFS Essentials for additional information.

Clinical Practice Guidelines

CDC, "Recommendations for Using Smallpox Vaccine in a Pre-Event Vaccination Program," Supplemental Recommendations April 4, 2003.

CDC, "Vaccinia (Smallpox) Vaccine Recommendations," June 22, 2001.

Administration: IV

For IV infusion only. May be administered undiluted or diluted. If dedicated line not available, flush with NS prior to administration of VIGIV. Do not exceed recommended rates of infusion.

Patients ≥50 kg: Infuse at ≤2 mL/minute; Patients <50 kg: Infuse at ≤0.04 mL/kg/minute. Maximum rate of infusion: 2 mL/minute. Decrease rate of infusion in patients who develop minor adverse reactions (eg, flushing) and in patients with risk factors for thrombosis/thromboembolism.

Administration: Injectable Detail

pH: 5 to 6.5

Administration: Pediatric

IV: May be administered undiluted or diluted. Administer through a dedicated IV line at the weight-based rate as follows. If a dedicated line is not available, the preexisting catheter must be flushed with NS prior to administration of vaccinia immune globulin.

Weight <50 kg: Infuse at 0.04 mL/kg/minute not to exceed 2 mL/minute.

Weight ≥50 kg: Infuse at ≤2 mL/minute.

Decrease rate of infusion in patients who develop minor adverse reactions (eg, flushing) and in patients with risk factors for thrombosis/thromboembolism and/or renal insufficiency.

Storage/Stability

Store at 2°C to 8°C (36°F to 46°F); may also be frozen (≤15°C [≤5°F]). If frozen, use within 60 days of thawing at 2°C to 8°C (36°F to 46°F).

Preparation for Administration: Adult

Allow frozen vials to reach room temperature prior to preparation; vials may be thawed in refrigerator at 2°C to 8°C (36°F to 46°F) until contents are thawed (~14 hours) or at room temperature for 1 hour followed by a water bath at 37°C (98.6°F) until thawed; do not thaw in microwave or refreeze. Do not shake; avoid foaming. Do not administer if solution is turbid. Remove the entire contents of the vial to obtain the labeled dosage; if partial vials are required for the dosage calculation, the entire contents of the vial should be withdrawn to ensure accurate calculation of the dosage requirement. Do not dilute more than 1:2 (v/v) in NS. Infusion should begin within 4 hours after entering vial.

Preparation for Administration: Pediatric

IV: Allow frozen vials to reach room temperature prior to preparation; vials may be thawed in refrigerator at 2°C to 8°C (36°F to 46°F) until contents are thawed (~14 hours) or at room temperature for 1 hour followed by a water bath at 37°C (98.6°F) until thawed; do not thaw in microwave or refreeze. Do not shake; avoid foaming. Do not administer if solution is turbid. Remove calculated volume of drug for patient dose; if partial vials are required for the dosage calculation, the entire contents of the vial should be withdrawn to ensure accurate calculation of the dosage requirement. May further dilute in NS to a concentration not to exceed 1:2 (v/v). Infusion should begin within 4 hours after entering vial.

Compatibility

See Trissel’s IV Compatibility Database

Open Trissel's IV Compatibility

Medication Patient Education with HCAHPS Considerations

What is this drug used for?

• It is used to treat certain infections caused by the vaccinia virus.

All drugs may cause side effects. However, many people have no side effects or only have minor side effects. Call your doctor or get medical help if any of these side effects or any other side effects bother you or do not go away:

• Sensation of cold or warmth

• Headache

• Vomiting

• Lack of appetite

• Muscle spasm

• Back pain

• Tremors

• Sweating a lot

• Nausea

WARNING/CAUTION: Even though it may be rare, some people may have very bad and sometimes deadly side effects when taking a drug. Tell your doctor or get medical help right away if you have any of the following signs or symptoms that may be related to a very bad side effect:

• Kidney problems like not able to pass urine, blood in urine, change in amount of urine passed, or weight gain

• Weakness on 1 side of the body, trouble speaking or thinking, change in balance, drooping on one side of the face, or blurred eyesight

• Lung problems like shortness of breath or other trouble breathing, cough that is new or worse

• Aseptic meningitis like headache, fever, chills, severe nausea or vomiting, stiff neck, rash, bright lights that bother eyes, fatigue, or illogical thinking

• Blood clots like numbness or weakness on one side of the body; pain, redness, tenderness, warmth, or swelling in the arms or legs; change in color of an arm or leg; chest pain; shortness of breath; fast heartbeat; or coughing up blood

• Severe loss of strength and energy

• Dark urine

• Yellow skin or eyes

• Severe dizziness

• Passing out

• Injection site pain

• Chills

• Joint pain

• Burning or numbness feeling

• Pale skin

• Signs of an allergic reaction, like rash; hives; itching; red, swollen, blistered, or peeling skin with or without fever; wheezing; tightness in the chest or throat; trouble breathing, swallowing, or talking; unusual hoarseness; or swelling of the mouth, face, lips, tongue, or throat.

Note: This is not a comprehensive list of all side effects. Talk to your doctor if you have questions.

Consumer Information Use and Disclaimer: This information should not be used to decide whether or not to take this medicine or any other medicine. Only the healthcare provider has the knowledge and training to decide which medicines are right for a specific patient. This information does not endorse any medicine as safe, effective, or approved for treating any patient or health condition. This is only a limited summary of general information about the medicine's uses from the patient education leaflet and is not intended to be comprehensive. This limited summary does NOT include all information available about the possible uses, directions, warnings, precautions, interactions, adverse effects, or risks that may apply to this medicine. This information is not intended to provide medical advice, diagnosis or treatment and does not replace information you receive from the healthcare provider. For a more detailed summary of information about the risks and benefits of using this medicine, please speak with your healthcare provider and review the entire patient education leaflet.

Prescribing and Access Restrictions

Vaccinia immune globulin is not available for general public use. All supplies are currently owned by the federal government for inclusion in the Strategic National Stockpile. The CDC Smallpox Adverse Events Clinical Consultation team will coordinate shipment. The State Health Department should be contacted first concerning severe or unexpected adverse events from smallpox vaccination.

Contraindications

Isolated vaccinia keratitis; history of anaphylaxis or prior severe systemic reaction associated with the parenteral administration of VIGIV or other human immune globulin preparations; IgA-deficient patients with antibodies against IgA and a history of IgA hypersensitivity

Warnings/Precautions

Concerns related to adverse effects:

• Anaphylaxis/hypersensitivity reactions: Hypersensitivity and anaphylactic reactions can occur; discontinue therapy and institute immediate treatment (including epinephrine 1 mg/mL). Contains trace amounts of IgA; use caution in IgA-deficient patients; contraindicated in IgA-deficient patients with antibodies against IgA and a history of IgA hypersensitivity.

• Aseptic meningitis: Aseptic meningitis syndrome (AMS) has been reported with intravenous immune globulin administration and usually begins within several hours to 2 days following treatment; may occur more frequently with high total doses (2 g/kg). Discontinuation of treatment has resulted in remission of AMS within several days without sequelae.

• Hemolysis: Intravenous immune globulin has been associated with antiglobulin hemolysis; monitor for signs of hemolytic anemia. Risk factors for hemolysis include high doses given either as a single

administration or divided over several days, underlying associated inflammatory conditions (eg, elevated C-reactive protein or erythrocyte sedimentation rate), and non-O blood group.

• Infusion reactions: Adverse reactions may be related to rate of infusion. Closely follow the recommended infusion rates.

• Pulmonary edema: Noncardiogenic pulmonary edema has been reported with intravenous immune globulin use. TRALI is characterized by severe respiratory distress, pulmonary edema, hypoxemia, and fever in the presence of normal left ventricular function. Usually occurs within 1 to 6 hours after infusion. If TRALI is suspected, perform appropriate tests for the presence of antineutrophil antibodies in both the product and patient's serum.

• Renal effects: Renal dysfunction, acute renal failure, osmotic nephropathy, proximal tubular nephropathy, and fatalities may occur; usually occurs in patients receiving total doses containing ≥400 mg/kg of sucrose (VIGIV does not contain sucrose).

• Thrombotic events: Thrombotic events have been reported with administration of intravenous immune globulin; use with caution in patients with a history of cardiovascular risk factors or arterial or venous thrombosis, advanced age, estrogen use, indwelling central venous catheters, impaired cardiac output, hypercoagulable disorders, prolonged periods of immobilization, and/or known or suspected hyperviscosity. For patients at risk for of thrombosis, administer at the minimum dose (do not exceed maximum dose), minimum concentration available, and minimum infusion rate practicable, ensure adequate hydration before administration.

Disease-related concerns:

• Hypovolemia: Patients should not be volume depleted prior to therapy.

• Postvaccinial encephalitis: Not effective for use in postvaccinial encephalitis.

• Renal impairment: Use with caution in patients with preexisting renal insufficiency and in patients at risk of developing renal insufficiency (eg, diabetes mellitus, patients >65 years, volume depletion, paraproteinemia, sepsis, patients receiving known nephrotoxic drugs); administer at the minimum rate of infusion (do not exceed the recommended infusion rate). Ensure patients are not volume depleted prior to VIGIV infusion. If renal function deteriorates, consider discontinuing therapy.

• Vaccinia keratitis: Exercise caution when using VIGIV in the treatment of patients with complications due to vaccinia vaccination that include concomitant vaccinia keratitis, because a single study in rabbits demonstrated increased corneal scarring upon intramuscular vaccinia immune globulin administration in vaccinia keratitis.

Special populations:

• Older adult: Use with caution in the elderly; may be at increased risk for renal dysfunction/failure and thromboembolic events.

Dosage form specific issues:

• Human plasma: Product of human plasma; may potentially contain infectious agents which could transmit disease. Screening of donors, as well as testing and/or inactivation or removal of certain

viruses, reduces the risk. Infections thought to be transmitted by this product should be reported to the manufacturer.

• Maltose: Product may contain maltose. Falsely elevated blood glucose readings may result in unnecessary insulin use and life-threatening hypoglycemia; cases of true hypoglycemia may go untreated if the hypoglycemic state is masked by falsely elevated glucose readings. Glucose specific monitoring systems and test strips are recommended.

• Polysorbate 80: Some dosage forms may contain polysorbate 80 (also known as Tweens). Hypersensitivity reactions, usually a delayed reaction, have been reported following exposure to pharmaceutical products containing polysorbate 80 in certain individuals (Isaksson 2002; Lucente 2000; Shelley 1995). Thrombocytopenia, ascites, pulmonary deterioration, and renal and hepatic failure have been reported in premature neonates after receiving parenteral products containing polysorbate 80 (Alade 1986; CDC 1984). See manufacturer's labeling.

Other warnings/precautions:

• Appropriate use: Vaccinia immune globulin is currently not recommended for use in persons with contraindications to smallpox vaccine; inadvertent exposure to smallpox vaccine in high-risk populations should be reported to the CDC so that standardized treatment may be provided. VIGIV is not considered to be effective in the treatment of postvaccinial encephalitis.

* See Cautions in AHFS Essentials for additional information.

Pregnancy Considerations

Animal reproduction studies have not been conducted.

IV vaccinia immune globulin (VIGIV) is made from purified human plasma. Human IgG crosses the placenta (Clements 2020).

In general, VIGIV may be administered to pregnant patients when otherwise indicated, considering the risks and benefits of the individual patient (CDC 2003; CDC 2022).

Breastfeeding Considerations

Caution is recommended if administered to a lactating patient (CDC 2003; CDC 2022).

Briggs' Drugs in Pregnancy & Lactation

- Immune Globulin Intravenous

Adverse Reactions

The following adverse drug reactions and incidences are derived from product labeling unless otherwise specified.

Frequency not defined. Actual frequency varies by dose and rate of infusion.

Cardiovascular: Peripheral edema

Central nervous system: Dizziness, fatigue, feeling hot, headache, pain, paresthesia, rigors, sensation of cold

Dermatologic: Diaphoresis, erythema, pallor

Gastrointestinal: Decreased appetite, nausea, vomiting

Local: Injection site reaction

Neuromuscular & skeletal: Back pain, muscle spasm, tremor, weakness

Miscellaneous: Fever

<1%, postmarketing, and/or case reports: Abdominal pain, acute intravascular hemolysis, acute renal failure, altered blood pressure, anaphylaxis, apnea, acute respiratory distress, arthralgia, aseptic meningitis, bronchospasm, bullous rash, chills, circulatory shock, coma, cyanosis, diarrhea, dyspnea, epidermolysis, erythema multiforme, flushing, hemolysis, hepatic insufficiency, hypersensitivity reaction, hypoxemia, hypotension, leukopenia, loss of consciousness, malaise, myalgia, pancytopenia, positive direct Coombs test, proximal tubular nephropathy, pulmonary edema, renal disease (osmotic nephropathy), renal insufficiency, seizure, Stevens-Johnson syndrome, syncope, tachycardia, thrombocytopenia, thromboembolism, transfusion-related acute lung injury (TRALI), urticaria, wheezing

* See Cautions in AHFS Essentials for additional information.

Metabolism/Transport Effects

None known.

Drug Interactions Open Interactions

Note: Interacting drugs may **not be individually listed below** if they are part of a group interaction (eg, individual drugs within "CYP3A4 Inducers [Strong]" are NOT listed). For a complete list of drug interactions by individual drug name and detailed management recommendations, use the Lexicomp drug interactions program by clicking on the "Open Interactions" button above.

Efgartigimod Alfa: May diminish the therapeutic effect of Fc Receptor-Binding Agents. *Risk C: Monitor therapy*

Vaccines (Live): Immune Globulins may diminish the therapeutic effect of Vaccines (Live). Management: Live organism vaccination should be withheld for as long as 6 to 11 months following immune globulin administration. Recommendations vary by product and immune globulin dose, see full monograph for details. *Risk D: Consider therapy modification*

Test Interactions

Passively transferred antibodies may yield false-positive serologic testing results; may yield false-positive direct and indirect Coombs test.

Monitoring Parameters

Renal function (including BUN, serum creatinine) and urine output (before initial infusion and at clinically appropriate intervals). Consider baseline assessment of blood viscosity in patients at risk for

hyperviscosity, including those with cryoglobulins, fasting chylomicronemia/markedly high triglycerides, or monoclonal gammopathies. During infusion, monitor patient for signs of infusion-related reactions, including (but not limited to) flushing, fever, chills, respiratory distress, BP or heart rate changes; transfusion-related lung injury (typically 1 to 6 hours after infusion), and signs/symptoms of hemolysis (prior to infusion and ~36 to 96 hours postinfusion); signs and symptoms of thrombosis.

Advanced Practitioners Physical Assessment/Monitoring

Hypersensitivity and anaphylactic reactions can occur; immediate treatment (including epinephrine 1 mg/mL) should be available. During infusion, monitor patient for signs of infusion-related reactions, including flushing, fever, chills, and respiratory distress. Monitor vital signs closely. If patient has diabetes, monitor blood sugars via specific monitoring systems and test strips. Maltose in medication can interact with glucose monitoring systems and test strips, resulting in falsely-elevated blood glucose readings. Monitor for signs of hemolytic anemia. All serious adverse reactions must be reported to the U.S. DHHS. U.S. federal law also requires entry into the patient's medical record.

Nursing Physical Assessment/Monitoring

Hypersensitivity and anaphylactic reactions can occur; immediate treatment (including epinephrine 1 mg/mL) should be available. During infusion, monitor patient for signs of infusion-related reactions, including flushing, fever, chills, and respiratory distress. Monitor vital signs closely. If patient has diabetes, monitor blood sugars via specific monitoring systems and test strips. Maltose in medication can interact with glucose monitoring systems and test strips, resulting in falsely-elevated blood glucose readings. Monitor for signs of hemolytic anemia. All serious adverse reactions must be reported to the U.S. DHHS. U.S. federal law also requires entry into the patient's medical record.

Dosage Forms: US

Excipient information presented when available (limited, particularly for generics); consult specific product labeling.

Injection, solution [preservative free; solvent-detergent treated]:

CNJ-016: ≥50,000 units/15 mL (15 mL) [contains maltose 10% and polysorbate 80 0.03%]

Anatomic Therapeutic Chemical (ATC) Classification

- J06BB07

Generic Available (US)

No

Mechanism of Action

Antibodies obtained from pooled human plasma of individuals immunized with the smallpox vaccine provide passive immunity

Pharmacokinetics

Distribution: V_d: 6.6 L

Half-life elimination: 30 days (range: 13 to 67 days)

Time to peak, plasma: 1.8 to 2.6 hours

Dental: Local Anesthetic/Vasoconstrictor Precautions

No information available to require special precautions

Dental: Effects on Dental Treatment

No significant effects or complications reported

Dental: Effects on Bleeding

No information available to require special precautions

Related Information

- Immunization Administration Recommendations
- Immunization Schedules

Index Terms

IV-VIG; VIG; VIGIV

FDA Approval Date

February 18, 2005

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