

Zoster Vaccine: Q&A

CDC Answers Your Questions

For complete information on CDC's recommendations for the use of zoster vaccine, go to www.immunize.org/acip

Experts from the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention answer your questions about zoster vaccine.

Please describe the zoster vaccines available in the United States.

There are two different zoster vaccines available in the United States. Live zoster vaccine (ZVL; Zostavax, Merck) has been available since 2006. A recombinant adjuvanted zoster vaccine (RZV; Shingrix, GlaxoSmithKline) was approved in 2017. They differ in their schedule (1 dose for ZVL, 2 doses for RZV), efficacy (RZV is more effective than ZVL), contraindications and storage requirements. Refer to the 2018 Advisory Committee on Immunization recommendations (available at www.cdc.gov/mmwr/volumes/67/wr/pdfs/mm6703a5-H.pdf) for more details on these issues.

To whom should zoster vaccine be given?

The Advisory Committee on Immunization Practices (ACIP) recommends a 2-dose series of RZV for all persons age 50 years and older or a single dose of ZVL for all persons age 60 years and older. Use of RZV is preferred. Persons of the appropriate age should be vaccinated whether or not they report a prior episode of herpes zoster. Persons with a previous history of ZVL should receive a 2-dose series of RZV beginning at least 2 months after the ZVL dose. Persons with chronic medical conditions may be vaccinated unless a contraindication or precaution exists for their condition. Contraindications and precautions differ by vaccine type.

Is there an upper age limit for receipt of the zoster vaccine?

There is no upper age limit for receiving zoster vaccine. The incidence of herpes

zoster increases with increasing age; about 50% of persons living until age 85 years will develop zoster. ACIP recommends the vaccine for everyone age 50 and older. The efficacy of ZVL declines with increasing age. RZV efficacy declines slightly with increasing age but much less than ZVL.

Before administering zoster vaccine is it necessary to ask (or test) if the person has ever had chickenpox or shingles?

No. All persons age 50 years or older – whether they have a history of chickenpox or shingles or not – should be given RZV unless they have a medical contraindication to vaccination (described below). It is also not necessary to test for varicella antibody prior to giving the vaccine.

What are the contraindications and precautions to zoster vaccine?

The contraindications for zoster vaccine differ by vaccine type. Contraindications for ZVL are:

- Severe allergic reaction to a vaccine component or following a prior dose
- Immunosuppression from any cause (disease or treatment of a disease)
- Pregnancy

The only contraindication for RZV is a severe allergic reaction to a vaccine component.

For both zoster vaccines the presence of a moderate or severe acute illness is a precaution. Vaccination should be deferred until the illness improves. There are no available data to establish whether RZV is safe in pregnant or lactating women. There is currently no ACIP recommendation for RZV use in this population. Consider delaying vaccination with RZV in such circumstances.

By what route should zoster vaccines be administered?

RZV should be administered by the intramuscular route in the deltoid. ZVL should be administered by the subcutaneous route in the tissue overlying the triceps muscle of the upper arm.

When reconstituted, the volume of ZVL is 0.65 mL. Should 0.65 mL or 0.5 mL be administered to the patient?

The recommended dose for ZVL is the full reconstituted amount.

How effective are zoster vaccines in preventing shingles?

In the key pre-licensure ZVL clinical trial, vaccine recipients had a 51% reduction in shingles, less severe illness when shingles did occur, and 66.5% less post-herpetic neuralgia, compared with placebo recipients.

In the key pre-licensure clinical trial of RZV recipients 50 years of age and older had a 98% reduction in shingles compared to placebo recipients. In a separate trial among persons 70 years of age and older RZV recipients had an 89% reduction in shingles compared to placebo recipients. In both trials postherpetic neuralgia was reduced by 86% to 100%.

What adverse reactions have been reported with zoster vaccines?

In the pre-licensure clinical trials of ZVL local adverse reactions such as pain, redness and swelling were more common in the vaccinated group (25%–36%) than in the placebo group (5%–8%).

In pre-licensure clinical trials of RZV the most common adverse reactions were pain at the injection site (78%), myalgia (45%), and fatigue (45%). Any grade 3 adverse event (reactions related to vaccination which were severe enough to pre-

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vent normal activities) was reported in 17% of vaccine recipients compared with 3% of placebo recipients. Grade 3 injection-site reactions (pain, redness, and swelling) were reported by 9% of vaccine recipients, compared with 0.3% of placebo recipients. Grade 3 solicited systemic events (myalgia, fatigue, headache, shivering, fever, and gastrointestinal symptoms) were reported by 11% of vaccine recipients and 2.4% of placebo recipients. The occurrence of local grade 3 reactions did not differ by vaccine dose. However systemic grade 3 reactions were reported more frequently after dose 2.

For both RZV and ZVL rates of serious adverse events (an undesirable experience associated with the vaccine that results in death, hospitalization, disability or requires medical or surgical intervention to prevent a serious outcome) were similar in vaccine and placebo groups.

What should I advise my patients about adverse reactions after RZV?

Before vaccination, providers should counsel RZV recipients about expected systemic and local adverse reactions (described above). Reactions to the first dose do not strongly predict reactions to the second dose. RZV recipients should be encouraged to complete the series even if they experienced a grade 3 reaction to the first dose.

The Zostavax package insert says that the vaccine is contraindicated in a person with a history of primary or acquired immunodeficiency states, leukemia, lymphoma, or other malignant neoplasms affecting the bone marrow or lymphatic system. Does this mean that a person who was treated for lymphoma many years ago and is now healthy should not receive zoster vaccine?

No. A person who was treated for leukemia, lymphoma, or other malignant cancers in the past and is now healthy and not receiving immunosuppressive treatment may receive ZVL. However, a person who is immunosuppressed for any reason (disease or treatment) should not receive ZVL.

How long should we wait before giving zoster vaccine to a patient who has had a blood transfusion?

There is no waiting period for administering either zoster vaccine following blood or blood product transfusion. The amount of antigen in ZVL is so substantial that it overpowers any antibody to herpes zoster that may be in the blood product. Inactivated and subunit vaccines like RZV are generally not affected by circulating antibody.

How should zoster vaccine be stored?

All live varicella-containing vaccines, including ZVL, must be stored frozen at a temperature of between -50°C and -15°C (-58°F and +5°F) until it is reconstituted. CDC recommends the use of a separate stand-alone freezer to store frozen vaccines. A storage unit that is frost-free or has an automatic defrost cycle is preferred. The diluent should be stored separately at room temperature or in the refrigerator.

ZVL may be stored at refrigerator temperature between 2°C and 8°C (36°F and 46°F) for up to 72 continuous hours prior to reconstitution. Vaccine stored between 2°C and 8°C (36°F and 46°F) that is not used within 72 hours of removal from a freezer should be discarded.

Both the RZV adjuvant suspension (diluent) and the lyophilized antigen component must be stored refrigerated between 2°C and 8°C (36°F and 46°F). Protect the

vials from light. Neither the diluent nor antigen should be frozen. Discard if either vial has been frozen.

After reconstitution, administer RZV immediately or store refrigerated between 2°C and 8°C (36°F and 46°F) and use within 6 hours. Discard reconstituted vaccine if not used within 6 hours. Do not freeze. Discard if the vaccine has been frozen.

How should zoster vaccine be transported to an off-site clinic location?

RZV is stored at refrigerator temperature. Transport of refrigerated vaccines is described in detail in the CDC *Storage and Handling Toolkit*, available at www.cdc.gov/vaccines/hcp/admin/storage/toolkit/storage-handling-toolkit.pdf, pages 35–36.

Neither CDC nor the vaccine manufacturer recommends transporting live varicella-containing vaccines, including ZVL

People are picking up live zoster vaccine at local pharmacies and transporting it to the physician's office to be given. Should this vaccine be given?

This practice is not acceptable. If ZVL has been exposed to temperature conditions outside of those specified in the package insert, the provider must contact Merck for guidance prior to administering the vaccine. Merck's contact information is included in the package insert.

REFERENCE

Recommendations of the Advisory Committee on Immunization Practices (ACIP) for Use of Herpes Zoster Vaccines. *MMWR*, January 26, 2018;67 (No.3): 103-8. Available at www.cdc.gov/mmwr/volumes/67/wr/pdfs/mm6703a5-H.pdf.