



Please familiarise yourself with the information in the *Zoster (herpes zoster/shingles)* chapter in the *Immunisation Handbook 2017*.

### What is Zostavax used for?

Zostavax is a live attenuated varicella-zoster vaccine used to reduce the risk of herpes zoster (shingles), acute herpes zoster-related pain and the development of chronic pain from post-herpetic neuralgia. Zostavax is around ten times stronger than the varicella (chickenpox) vaccine.

Herpes zoster is caused by the reactivation of latent (sleeping) varicella-zoster virus, usually years after having chickenpox disease or vaccination.

- » The risk of developing herpes zoster increases with advancing age.
- » As many as one in three people will have herpes zoster in their lifetime. Of those aged 85 years, at least half will have had herpes zoster.
- » The risk of post-herpetic neuralgia increases with older age at the time of herpes zoster.

### Who can have Zostavax?

Zostavax is licensed for adults aged 50 years or older. There is no upper age limit to receive the vaccine.

- » The ability of Zostavax to prevent herpes zoster decreases over a few years after vaccination, so giving Zostavax too young cannot guarantee protection for older ages.

### Who can receive funded Zostavax?

From 1 April 2018, Zostavax will be funded for adults aged 65 years. Zostavax will also be funded for adults aged 66–80 years inclusively from 1 April 2018 to 31 March 2020 only, as a catch-up immunisation programme.

Zostavax is available for non-funded adults aged 50–64 years and 81 years or older from general practices and some pharmacies. Non-funded vaccine stock is supplied by Healthcare Logistics. In general practice, Zostavax for non-funded adults must be prescribed by a doctor or nurse practitioner with prescribing rights.

### Does the adult have to have had chickenpox in the past to have Zostavax?

No. It is not necessary to ask about a chickenpox disease history.

- » Adults can receive a dose of Zostavax regardless of whether or not they recall a history of having chickenpox disease or vaccination.
- » Serology to check varicella immunity is not required, **except** for adults who:
  - » Have asymptomatic HIV infection with a CD4+ lymphocyte count  $\geq 200$  cells/mm<sup>3</sup>, or
  - » Anticipate being significantly immunocompromised in the future.
  - » Refer to the *Immunisation Handbook 2017* for more information about serological testing and Zostavax recommendations for individuals in these two groups.

### Can Zostavax be given at the same visit as other vaccines?

Yes. Zostavax can be administered at the same visit as any other vaccine, including influenza (Influvac® Tetra), pneumococcal (Pneumovax® 23), Tdap (Boostrix®) and Td (ADT™ Booster) vaccines. Separate syringes and different injection sites should be used.

Studies where influenza and Zostavax vaccines or pneumococcal polysaccharide (Pneumovax 23) and Zostavax vaccines were administered at the same visit have shown that the immune response to each of the vaccines, and likelihood of local or systemic vaccine responses were similar regardless of whether the vaccines were administered on the same or different days.

### Can an adult who has had herpes zoster have Zostavax?

Yes. Adults who have previously had herpes zoster can receive Zostavax. An episode of herpes zoster is expected to boost natural immunity against a further episode of herpes zoster, so vaccinating soon after having herpes zoster is unlikely to provide any benefit. However, it is not possible to predict how long the natural immunity boost will last in an individual. It is generally recommended to wait at least one year after an episode of herpes zoster before having Zostavax.

### Can an adult receive a second dose of Zostavax?

Receipt of Zostavax is expected to boost immunity, particularly during the first year after vaccination. Although not currently recommended, in the absence of specific data regarding whether booster vaccinations are required or what time period between doses would be most beneficial and in the absence of any safety concerns, a minimum interval of one year between the first and second doses of Zostavax would be considered reasonable for individuals who choose to receive a funded dose, if eligible.

### How well does Zostavax prevent herpes zoster?

The ability of Zostavax to prevent herpes zoster is highest in adults aged 50–59 years (around 70%) and becomes less effective with advancing age, around 48% in adults aged 65–69 years, and around 42% in adults aged 80 years or older.

Although vaccination may not be sufficient to prevent herpes zoster in some older adults, studies suggest that vaccination boosts enough immunity to reduce acute herpes zoster pain and the risk of post-herpetic neuralgia.

### How long does Zostavax protect for?

Long-term follow up showed that the ability of Zostavax to prevent herpes zoster decreases over time. After vaccination, the most significant decreases were seen after one year (from around 70% to 50% protected) and after six years (around 33% protected).

### Can a person taking antiviral medication for cold sores receive Zostavax?

Yes. However, treatment with antiviral medication, such as acyclovir, valganciclovir, should be stopped for at least 24 hours prior to Zostavax vaccination and for 14 days post-vaccination so the vaccine virus is able to replicate and induce an immune response.

### Can a person who is receiving blood products receive Zostavax?

Yes. Circulating varicella-zoster antibodies do not affect the immune response to Zostavax. No minimum interval is required between receipt of a blood transfusion or immunoglobulin product and Zostavax.

### How is Zostavax stored and/or transported?

Zostavax must be stored between +2°C to +8°C in the original packaging and protected from light.

### Are there any special vaccine preparation and administration instructions?

Yes.

- » Only reconstitute the lyophilised Zostavax vaccine using the diluent supplied in the pre-filled syringe.
- » **Take care not to pull the plunger out of the syringe** when withdrawing the reconstituted vaccine from the vaccine vial.
- » Administer the vaccine immediately after reconstitution to minimise loss of potency.
- » Discard reconstituted vaccine if not used within 30 minutes.
- » Inject the total volume of reconstituted vaccine (0.65 mL) subcutaneously in the deltoid area.

## Contraindications

### Can a person who is immunosuppressed receive Zostavax?

No. People who are immunosuppressed such as those who are receiving medication to treat immune-mediated inflammatory diseases such as rheumatoid arthritis or Crohn's disease, or chemotherapy to treat cancer, or people who are HIV-positive with a low CD4 count, cannot receive Zostavax.

Ideally, anyone needing Zostavax should be vaccinated at least one month before commencing immunosuppressive treatment.

### Can a person who is living in the same household as someone who is immunosuppressed or pregnant receive Zostavax?

Yes. Zostavax can be administered to adults in close contact with infants, pregnant women or individuals who are immunosuppressed. The extremely small risk of a vaccine related rash and low possibility of vaccine-virus transmission should be weighed against the risk of herpes zoster and possibility of wild-type varicella-zoster virus transmission.

## After immunisation

### What are the possible vaccine responses?

Zostavax is generally well tolerated. Expected, common vaccine responses include mild to moderate pain, redness, and/or swelling at the injection site. Itching or rash around the injection site, arm pain or headache following immunisation have also been reported.

As with any medicine, very rarely a severe allergic response (anaphylaxis) can occur following vaccination. For this reason individuals are advised to wait at their practice or pharmacy for 20 minutes after receiving Zostavax.

Zostavax does not cause herpes zoster. However, extremely rarely a vaccine recipient may develop a vaccine related rash. Although the risk of transmission of vaccine-VZV from the rash is low there is a possibility that a person who is not immune to chickenpox and who is a close contact of someone with vaccine related rash could develop chickenpox. If a rash occurs, covering the rash will minimise the risk of transmission.

## References

- Breuer J, Pacou M, Gautier A, Brown MM. Herpes zoster as a risk factor for stroke and TIA: A retrospective cohort study in the UK. *Neurology*. 2014;83(2):e27-33.
- Drolet M, Brisson M, Levin MJ, Schmader KE, Oxman MN, Johnson RW, et al. A prospective study of the herpes zoster severity of illness. *Clin J Pain*. 2010;26(8):656-66.
- Forbes HJ, Thomas SL, Smeeth L, Clayton T, Farmer R, Bhaskaran K, et al. A systematic review and meta-analysis of risk factors for postherpetic neuralgia. *Pain*. 2016;157(1):30-54.
- The Immunisation Advisory Centre. Antigen literature review for the New Zealand National Immunisation Schedule, 2016: Herpes zoster [Internet]. Auckland: The Immunisation Advisory Centre; 2016. Available from: <http://www.immune.org.nz/antigen-literature-review-new-zealand-national-immunisation-schedule-2016-herpes-zoster>.
- Izurieta HS, Werneck M, Kelman J, Wong S, Forshee R, Pratt D, et al. Effectiveness and duration of protection provided by the live-attenuated herpes zoster vaccine in the Medicare population ages 65 years and older. *Clin Infect Dis*. 2017;64(6):785-93.
- Johnson R, Bouhassira D, Kassianos G, Leplege A, Schmader K, Weinke T. The impact of herpes zoster and post-herpetic neuralgia on quality-of-life. *BMC Medicine*. 2010;8(1):37.
- Johnson RW. Herpes zoster and postherpetic neuralgia. *Expert Rev Vaccines*. 2010;9(Suppl 3):21-6.
- Katz J, Cooper EM, Walther RR, Sweeney EW, Dworkin RH. Acute pain in herpes zoster and its impact on health-related quality of life. *Clin Infect Dis*. 2004;39(3):342-8.
- Kawai K, Yawn B. Risk factors for herpes zoster: A systematic review and meta-analysis. *Mayo Clin Proc*. 2017;92(12):1806-21.
- Keating GM. Shingles (herpes zoster) vaccine (Zostavax®): A review in the prevention of herpes zoster and postherpetic neuralgia. *BioDrugs*. 2016;30(3):243-54.
- Langan SM, Smeeth L, Margolis DJ, Thomas SL. Herpes zoster vaccine effectiveness against incident herpes zoster and post-herpetic neuralgia in an older US population: a cohort study. *PLoS Med*. 2013;10(4):e1001420.
- Keating GM. Shingles (herpes zoster) vaccine (Zostavax): A review in the prevention of herpes zoster and postherpetic neuralgia. *BioDrugs*. 2016;30(3):243-54.
- Langan SM, Smeeth L, Margolis DJ, Thomas SL. Herpes zoster vaccine effectiveness against incident herpes zoster and post-herpetic neuralgia in an older US population: a cohort study. *PLoS Med*. 2013;10(4):e1001420.
- Levin MJ, Buchwald UK, Gardner J, Martin J, Stek JE, Brown E, et al. Immunogenicity and safety of zoster vaccine live administered with quadrivalent influenza virus vaccine. *Vaccine*. 2018;36(1):179-85.
- Medsafe. Datasheet: Zostavax [Internet]. Wellington: New Zealand Medicines and Medical Devices Safety Authority; 2008 [updated 2017 August 7]. Available from: <http://www.medsafe.govt.nz/profs/Datasheet/z/zostavaxinj.pdf>.
- Ministry of Health. Immunisation handbook 2017. Wellington: Ministry of Health; 2017.
- Ministry of Health. National standards for vaccine storage and transportation for immunisation providers 2017 [Internet]. Wellington: Ministry of Health; 2017 [cited 2017 March 27]. Available from: <http://www.health.govt.nz/publication/national-standards-vaccine-storage-and-transportation-immunisation-providers-2017>.
- Morrison VA, Oxman MN, Levin MJ, Schmader KE, Guatelli JC, Betts RF, et al. Safety of zoster vaccine in elderly adults following documented herpes zoster. *J Infect Dis*. 2013;208(4):559-63.
- Oxman MN, Levin MJ, Johnson GR, Schmader KE, Straus SE, Gelb LD, et al. A vaccine to prevent herpes zoster and postherpetic neuralgia in older adults. *N Engl J Med*. 2005;352(22):2271-84.
- Schmader KE, Dworkin RH. Natural history and treatment of herpes zoster. *J Pain*. 2008;9(1, Suppl 1):S3-9.
- Schmader KE, Levin MJ, Gnann JW, McNeil SA, Vesikari T, Betts RF, et al. Efficacy, safety, and tolerability of herpes zoster vaccine in persons aged 50-59 years. *Clin Infect Dis*. 2012;54(7):922-8.
- Tseng H, Smith N, Harpaz R, Bialek SR, Sy LS, Jacobsen SJ. Herpes zoster vaccine in older adults and the risk of subsequent herpes zoster disease. *JAMA*. 2011;305(2):160-6.
- Tseng HF, Schmid DS, Harpaz R, LaRussa P, Jensen NJ, Rivaller P, et al. Herpes zoster caused by vaccine-strain varicella zoster virus in an immunocompetent recipient of zoster vaccine. *Clin Infect Dis*. 2014;58(8):1125-8.
- Tseng HF, Lewin B, Hales CM, Sy LS, Harpaz R, Bialek S, et al. Zoster vaccine and the risk of postherpetic neuralgia in patients who developed herpes zoster despite having received the zoster vaccine. *J Infect Dis*. 2015;212(8):1222-31.
- Tseng HF, Harpaz R, Luo Y, Hales CM, Sy LS, Tartof SY, et al. Declining effectiveness of herpes zoster vaccine in adults aged ≥60 Years. *J Infect Dis*. 2016;213(12):1872-5.
- Vesikari T, Hardt R, Rumke H, Icardi G, Montero J, Thomas S, et al. Immunogenicity and safety of a live attenuated shingles (herpes zoster) vaccine (Zostavax) in individuals aged ≥ 70 years: A randomized study of a single dose vs. two different two-dose schedules. *Hum Vaccin Immunother*. 2013;9(4):858-64.