NCIRS National Centre for Immunisation Research and Surveillance

FactSheet

Zoster vaccines for Australian adults

This fact sheet provides information on herpes zoster disease and the available vaccines to assist immunisation providers in the delivery of zoster vaccinations.

Rarely, disseminated varicella-zoster virus (VZV) infection with the vaccine (Oka) strain can occur in patients after receiving Zostavax vaccine. There have been reports of fatal disseminated vaccine-related VZV infection in Australia, including in patients on low-dose immunosuppressive medication. The risk increases with the degree of immunosuppression. Zostavax is contraindicated in people with current or recent severe immunocompromising conditions from either primary or acquired medical condition or medical treatment.

Careful pre-screening and a risk-based assessment is required before administration of any dose of Zostavax. If appropriate, this assessment should include medical specialist consultation and, potentially, screening for pre-existing antibody to VZV. In such cases, vaccination should be deferred until such advice and/or results have been obtained.

Any patient who experiences a disseminated vesicular (chickenpox-like) rash 2 to 4 weeks after vaccine administration, or who feels unwell or has a fever, should seek medical attention immediately and ensure that their treating health professional is aware of their recent zoster vaccination.

Disease

- Herpes zoster or ‘shingles’ is a localised, painful, vesicular skin rash resulting from reactivation of varicella-zoster virus (VZV, the same virus that causes chickenpox earlier in life).
- Although shingles is usually self-limiting, it can lead to post-herpetic neuralgia (PHN), a chronic neuropathic pain syndrome, and other complications.
- About 20–30% of people will have shingles in their lifetime, most after the age of 50 years. Older people (particularly those aged over 70 years) are also more likely to experience complications such as PHN.

Vaccines

- From 2021 there are two zoster vaccines available in Australia for use in people aged ≥50 years to prevent herpes zoster and its complications:
  - **Zostavax** (Merck): a live-attenuated VZV vaccine given as a single dose.
  - **Shingrix** (GlaxoSmithKline): an adjuvanted recombinant VZV glycoprotein E (gE) subunit (non-live) vaccine given in a two-dose schedule, 2–6 months apart.

Who should be vaccinated

- Unless contraindicated, all people aged ≥50 years are recommended to receive vaccination to prevent herpes zoster and its complications.

- People previously vaccinated with Zostavax can receive Shingrix if they wish to increase their protection against herpes zoster.
- The optimal age to receive vaccination depends on the patient's age and immune status, the duration of protection of the chosen vaccine, and the individual's desire to protect themselves from the disease.

Which vaccine should be used

- Shingrix is preferred over Zostavax for prevention of herpes zoster and its complications in people aged ≥50 years because it has higher efficacy. However, Shingrix needs to be privately prescribed.
- Zostavax is a readily available and is effective for **immunocompetent** people aged ≥50 years who do not have any contraindication. Zostavax is NIP-funded for people aged 70 years (with catch-up for those aged 71–79 years until October 2021).
- In people aged ≥50 years who are **immunocompromised**, Zostavax is generally contraindicated and so Shingrix should be used. Zostavax may be considered for use in people with **mild immunocompromise**. In this situation, Zostavax should only be administered after careful assessment of the degree of immunocompromise using the Live shingles vaccine (Zostavax) screening for contraindications tool.
- Very rarely, a non-localised VZV-like rash occurs around 2–4 weeks after receipt of Zostavax. People immunised with Zostavax should be advised to be alert for a VZV-like rash. If they develop a VZV-like rash they should seek immediate medical attention and inform their medical practitioner of their recent receipt of Zostavax.

Contraindications to vaccination

- Zostavax is generally contraindicated in people who are currently or recently immunocompromised due to disease or medication. Shingrix should be offered to this population.
- Pregnant women should not receive Zostavax. There are currently no data on the use of Shingrix in pregnant women.
- People with anaphylaxis to a zoster vaccine or a vaccine component within Zostavax or Shingrix should not be vaccinated with that respective vaccine.

The disease

Herpes zoster (also known just as 'zoster' or 'shingles') is caused by reactivation of varicella-zoster virus (VZV). Primary (or initial) infection with VZV causes varicella (chickenpox). Once the primary infection resolves, VZV remains dormant in nerves and can then reactivate, usually much later in life, to cause shingles. Anyone who has had varicella in the past may develop shingles. In most cases, the episode of shingles occurs for no apparent reason. Shingles occurs more frequently among older adults and in people who are immunocompromised.

Clinical features

In most patients, shingles presents as an acute, self-limiting, vesicular rash which is often painful, lasting approximately 10–15 days. The rash is usually unilateral (i.e. does not cross the midline) and has a dermatomal distribution, most commonly affecting thoracic or lumbar dermatomes, but capable of affecting any cutaneous area. In 80% of shingles cases there is a prodromal phase of 48–72 hours before the appearance of the rash with symptoms of itching, tingling or severe pain in the affected dermatome.

Complications

The most common complication of shingles is persistent chronic neuropathic pain known as post-herpetic neuralgia (PHN). PHN is usually defined as pain that persists beyond 90 days from the onset of rash.[1,2]

PHN can have a substantial impact on the quality of life in those affected and can be refractory to treatment. The majority of PHN cases occur in patients aged ≥50 years, and incidence increases with age,[3-6] from approximately 1 in 10 cases in 50–59 year olds to 1 in 4 cases in those aged >80 years.[4,5,7]

Other complications of shingles include:

- skin pigmentation changes and scarring
- secondary bacterial infection of the rash
- eye involvement, called herpes zoster ophthalmicus (in about 10–20% of shingles patients[1])
- cutaneous hypersensitivity or allodynia (in 5–10% of shingles patients[8])
- neurological complications (commonly nerve palsies)

Disseminated disease, which can include generalised spread of skin lesions and, in some cases, organ involvement (e.g. meningitis, pneumonia), occurs rarely and is more likely in people who are immunocompromised.

Diagnosis

Shingles is usually diagnosed on the basis of clinical assessment, particularly once the rash appears. However, conditions such as herpes simplex virus infection, eczema herpeticum, impetigo, contact dermatitis and others can be mistaken for shingles. Laboratory confirmation can be obtained by taking a sample from the base of the skin lesions and performing a nucleic acid detection test (such as PCR) or direct-fluorescent antibody test (DFA).[9]

Treatment

Antiviral medication can accelerate the healing of the zoster rash and reduce acute pain; however, it has not been conclusively shown to reduce the likelihood of PHN.[2,9-11] Antiviral therapy should be started within 72 hours of rash appearing for optimal benefit. The therapy may still be beneficial if it is started after this time, particularly if new lesions are still forming or if the patient is immunocompromised.[1,9]

Even with optimum early antiviral therapy for shingles, approximately 20% of people aged >50 years who develop PHN will still have persistent neuropathy after 6 months. Zoster vaccines have not been studied as a ‘treatment’ for shingles or PHN and should not be administered for that purpose.

Disease transmission

Direct contact with skin vesicles can transmit VZV to cause chickenpox in susceptible people. However, the transmission rate is less from a person with shingles (about 15% of susceptible household contacts will be infected) than a person with chickenpox (61–100% of susceptible contacts will be infected).[12-14]

VZV is usually present in the skin lesions of shingles rash until the lesions dry and crust over. A person with shingles who has susceptible household contacts should cover their rash until after the lesions have crusted and should avoid contact with people who are immunocompromised and pregnant women.

Epidemiology

Previous primary infection with VZV is a prerequisite for shingles to develop. In a national serosurvey conducted in 2007, more than 95% of the adult population in Australia had antibodies to VZV by the age of 30 years. This means they had been previously infected with the virus.[15] Therefore, almost the entire adult population is at risk of shingles.[16]

Most cases of shingles (over 70%) occur in people aged >50 years. The lifetime risk of shingles is about 20–30% across the population, and about half of people who live to 85 years of age will develop shingles.[3,9,17] The rate of shingles rises with age, from 6.5 per 1,000 population in people aged 50–59 years to over 14 per 1,000 population in those aged >70 years.[6,7,18]

A decline in cell-mediated immunity with age appears to be the most important risk factor for shingles.[19,20] 'Exogenous boosting', from exposure to chickenpox cases in the community, and/or 'endogenous boosting', from either sub-clinical reactivation of VZV or an episode of shingles, may play a role in maintaining immunity.[12]

Incidence of herpes zoster is significantly higher among people with immunocompromise than in the general population. A large 2014 Australian cohort study reported that people who had a recent immunosuppressive condition had >50% higher risk of herpes zoster than the general population.[21] In people with severe immunocompromise, such as those with haematological malignancy, the risk can be up to four times higher.[22] People with immunocompromise are also significantly more likely to experience severe herpes zoster disease/complications, requiring hospitalisation, than the general population.[23]

Second or subsequent episodes of shingles are rare. The lifetime risk of recurrence in people who have had a previous shingles episode is about 1–5%. However, rates of recurrence are greater in people who are immunocompromised.[24]

Which zoster vaccine to use?

People who are immunocompetent

Shingrix is preferred over Zostavax for prevention of herpes zoster and associated complications in immunocompetent people.

Both Shingrix and Zostavax have good efficacy in preventing herpes zoster, but they have not been compared in head-to-head clinical trials. Studies of each vaccine against placebo suggest that Shingrix may be substantially more efficacious, particularly in the elderly, than Zostavax. Shingrix may also offer longer lasting protection against herpes zoster.[25] Recipients must complete the two-dose schedule of Shingrix to ensure adequate and long-lasting protection (even if Shingrix is received by someone who has previously been vaccinated with Zostavax or who has previously suffered from shingles).

Zostavax remains an effective alternative to Shingrix for the prevention of herpes zoster and associated complications in immunocompetent people. A single dose of Zostavax is readily available on the NIP for those aged 70 years, and for those aged 71–79 years via a catch-up program until 31 October 2023.

The safety of administering Zostavax should be considered in all patients on a case-by-case basis. Immunisation providers are recommended to use the Live shingles vaccine (Zostavax) screening for contraindications tool to determine the suitability of Zostavax for their patients. Where safety is uncertain, vaccination should be delayed and expert opinion sought from the patient's treating specialist and/or an immunisation expert.

People who are immunocompromised

As with other live viral vaccines, Zostavax is generally contraindicated in people who are currently or recently immunocompromised due to disease or medication. Shingrix is the recommended vaccine in this population.

Zostavax may only be considered in those with **mild** immunocompromise, and only if Shingrix is not accessible. This should be decided on a case-by-case basis after careful assessment of the degree of immunocompromise, using the Live shingles vaccine (Zostavax) screening for contraindications tool. If there is any uncertainty about the level of immunocompromise, Zostavax should not be administered.

Refer to the section Use of Zostavax in people with immunocompromise below, and the *Australian Immunisation Handbook*, for more details.

Who should be vaccinated?

Unless contraindicated, all people aged ≥50 years are recommended to receive vaccination to prevent herpes zoster and its complications. However, the optimal age to receive vaccination will differ for individuals.

What should you consider when offering a zoster vaccine?

While both zoster vaccines are registered and can be given from 50 years of age, it is important to consider several factors when deciding when to offer any zoster vaccine:

- **age-related risk of herpes zoster and its complications**. The risk of herpes zoster increases from an estimated annual rate of 6.5 per 1000 in people aged 50–59 years, to 14 per 1,000 in people aged 70–79 years. The likelihood of complications such as PHN also increases with age.[6]
- **duration of protection offered by the vaccine chosen**. Shingrix has demonstrated high vaccine efficacy up to 4 years after vaccination, and immunogenicity data suggest protection may persist to at least 10 years.[26-28] The effectiveness of Zostavax appears to wane more quickly, decreasing significantly by 5–10 years after vaccination.[29-31]
    - It is possible that a person vaccinated at a younger age, for example, in their 50s or 60s, may have reduced protection from vaccination as they age, when the risk of zoster is higher.
    - Booster doses for either vaccine are not currently recommended, based on a lack of data. Clinical studies to assess the need for booster doses will inform future recommendations by the Australian Technical Advisory Group on Immunisation (ATAGI).
- **immune status**. People who are immunocompromised are at significantly higher risk of herpes zoster and severe complications than immunocompetent people of a similar age.[21-23] If there is uncertainty about the optimal timing of vaccination, it should be discussed with the patient's specialist. Duration of protection of zoster vaccines in this population is less certain.
    - Household contacts (≥50 years of age) of unvaccinated immunocompromised people should also consider receiving zoster vaccination to offer some indirect protection against VZV to the immunocompromised household member.
- **individual's desire to protect themselves from disease**. A person's desire to protect themselves from herpes zoster and related complications may vary and this will influence decision-making about when to receive zoster vaccination. Cost is also a factor.

The recommendations for the use of Zostavax are outlined in the *Australian Immunisation Handbook*.

Use of Zostavax in people with immunocompromise

Zostavax **MUST NOT** be administered to people with severe immunocompromise. These include:

People with a primary or acquired immunodeficiency

- haematological neoplasms — leukaemia, lymphoma, myelodysplastic syndromes, including people under follow-up for chronic lymphoproliferative disorders, and people who are currently not receiving treatment or who have never received treatment
- post-transplant — solid organ transplant recipients who are on immunosuppressive therapy or have used immunosuppressive therapy within the past 6 months; people who have had a haematopoietic stem cell transplant within the past 24 months (or longer if they have immunosuppression or graft versus host disease)
- symptomatic HIV infection or AIDS
- other significantly immunocompromising conditions

People currently or recently (up to 1 year in some cases) receiving immunosuppressive therapy

- chemotherapy or radiotherapy
- corticosteroids (≥20 mg per day of prednisolone equivalent dose)
- most biologic disease-modifying anti-rheumatic drugs (DMARDs)

Use of Zostavax in people who are immunocompromised can result in disseminated disease from the Oka vaccine strain; three deaths have occurred in Australia in this context.

However, people aged ≥50 years with mild immunocompromise ***may*** receive Zostavax on a case-by-case basis, after careful assessment, when Shingrix is not accessible.

Immunisation providers must undertake careful pre-screening and a risk-based assessment before administering Zostavax to any person who is immunocompromised. This should include use of the Live shingles vaccine (Zostavax) screening for contraindications tool. Assess each person individually and, if uncertain, DO NOT administer Zostavax and seek appropriate specialist advice. It is important to monitor for a disseminated (non-localised) VZV-like rash as a potential adverse event after Zostavax administration in these people. Refer to the *Australian Immunisation Handbook* for more details.

People who are anticipated to become immunocompromised/immunosuppressed (e.g. because of an existing illness or future immunosuppressive therapy/immunotherapy) may also be considered for Zostavax at least 1 month before they become immunocompromised. If this is not possible, do not give the vaccine, and seek specialist advice.

Serological testing before vaccination in people with mild to moderate immunocompromise

Serological testing (for VZV IgG) before vaccination is recommended if it is unclear whether a person with mild to moderate immunocompromise can safely receive Zostavax. This includes eligible HIV patients and may include people on low-dose immunosuppressive medications. In someone with a mild level of immunocompromise, pre-existing immunity provides additional reassurance that use of the vaccine will act as a booster to protect against reactivation of latent infection. If a person who is immunocompromised has a negative VZV IgG (i.e. there is no evidence of previous VZV natural infection), it is possible they may have very severe outcomes after receiving Zostavax and so they should not be vaccinated.[26] They should consider Shingrix instead.

Serological testing before administration of Shingrix is not necessary in people who are immunocompetent or immunocompromised.

Serological testing after administration of either zoster vaccine is not necessary or recommended.

Use of zoster vaccines in other groups

Women who are pregnant

Live-attenuated VZV-containing vaccines are contraindicated in pregnancy. However, having a non-immune pregnant household contact is *not* a contraindication to Zostavax or varicella vaccination. Women should avoid pregnancy for 28 days after vaccination with a live-attenuated VZV-containing vaccine.

There are currently no data on the use of Shingrix in pregnancy (Category B2).[32]

Breastfeeding women

Breastfeeding women can receive Zostavax if they are eligible for vaccination.

There are currently no data on the use of Shingrix in breastfeeding women.[32]

People with a negative clinical history of chickenpox

Although an adult may report not having had chickenpox, it is unlikely that they will actually be seronegative for VZV.[16]

In people who are seronegative, Zostavax is likely to be well tolerated and immunogenic, although the incidence of injection site reactions may be slightly higher.[33] It is *not* necessary to provide laboratory evidence of a history of chickenpox in **immunocompetent** people aged >50 years before administering Zostavax. For people with **mild immunocompromise**, pre-vaccination serological testing may have a role. Refer to the section Use of Zostavax in people with immunocompromise above.

People with a history of shingles

People who have experienced a prior episode of shingles are at risk of recurrence (refer to Epidemiology). The safety and immunogenicity profile of both Shingrix and Zostavax in people with a documented history of shingles is similar to that in those with no known history of shingles.[34-36] People with a clinical history of shingles can receive zoster vaccine.

The optimal time for administration of zoster vaccine following an episode of shingles is uncertain. It is suggested that zoster vaccine can be given at least 12 months after an episode of shingles.[37]

People previously vaccinated with Zostavax

People who have previously received Zostavax can receive Shingrix if they wish to increase their protection against herpes zoster. Although evidence in this population is limited, a single study identified no safety concerns when Shingrix was administered to those who had received Zostavax a minimum of 5 years earlier, and the vaccine appears to be immunogenic in this population.[38] In the absence of evidence to support a minimum interval, at least 12 months between receipt of Zostavax and receipt of Shingrix is currently recommended.

A trial in this population is ongoing to investigate this issue.[39]

There are currently no recommendations for the use of Zostavax booster doses in those who have previously received Zostavax or Shingrix.

Contraindications and precautions

Contraindications

Zostavax is **contraindicated** in people with current or recent significant immunosuppression. These people are recommended to receive Shingrix.

Zoster vaccines should not be administered to people with a history of anaphylaxis to any component of that individual vaccine. Zostavax should additionally not be administered to people who have had anaphylaxis following a previous dose of varicella vaccine.

Zostavax is contraindicated in pregnant women. There are currently no data on the use of Shingrix in pregnant women (Category B2).

Precautions

Zoster vaccines are not recommended for use in people under 50 years of age and are not registered in Australia for use in this age group.

Zoster vaccines are not indicated for therapeutic use during an acute shingles episode or for the treatment of PHN.

Zoster vaccines are *not* indicated to provide primary protection against varicella infection. In addition, the licensed varicella vaccines (Varilrix and Varivax) are *not* indicated for the primary purpose of preventing shingles in older people (who are likely to have already had varicella).

Zostavax is not currently recommended in people who have previously received varicella vaccine.

Use of Zostavax in people with mild to moderate immunocompromise should only be considered after careful case-by-case assessment (refer to the section Use of Zostavax in people with immunocompromise).

There are currently no data on the use of Shingrix in breastfeeding women. However, Zostavax is safe to give if the woman is eligible for the vaccine.

Managing people who are immunocompromised and inadvertently receive Zostavax

In Australia, three people have died from disseminated infection with the Oka VZV vaccine strain following receipt of Zostavax. Two of these patients had severe immunocompromise (due to chronic lymphocytic leukaemia[40] or prednisone/checkpoint inhibitor use) and were contraindicated to receive Zostavax. One person had a mild immunocompromise due to long-term hydroxychloroquine and low-dose prednisolone use (5 mg per day[41]), but was not contraindicated to vaccination.

It is important for Zostavax recipients to monitor for a disseminated (non-localised) VZV-like rash as a potential adverse event after vaccination. If present, consideration should be given to possible disseminated VZV infection.

If a person with immunocompromise is inadvertently vaccinated with Zostavax, the immunisation provider should:

- promptly assess them
- discuss their management with an infectious disease expert and/or immunisation expert
- notify the relevant state or territory health authority, and the Therapeutic Goods Administration (TGA).

Patient management after administration of Zostavax to an immunocompromised patient depends on the degree of immunocompromise and risk of vaccine-associated adverse effects. It may include:

- pre-emptive or therapeutic use of antiviral medication as soon as possible
- clinical investigations, such as laboratory testing for VZV from any rash or other affected sites, to determine if infection is due to the Oka vaccine strain or due to wild-type virus
- cessation or reduction of immunosuppressant therapy, if appropriate, in consultation with the patient's treating specialist.

The TGA and ATAGI continue to monitor global evidence on the safety of Zostavax.

Vaccines

Zostavax

Zostavax (Seqirus/Merck Sharp & Dohme) is a live-attenuated viral vaccine using the VZV vaccine strain (Oka-derived), similar to varicella vaccines but about 14x higher dose. This higher viral potency is needed to get a satisfactory boost in the immune response in older adults.[42] (See also Vaccine efficacy.) Zostavax is registered for use in people aged ≥50 years in Australia.

Administration

Zostavax is given as a single 0.65 mL dose by subcutaneous injection.

Vaccine efficacy

In the Shingles Prevention Study (SPS), 38,546 immunocompetent adults aged ≥60 years received either Zostavax or a placebo.[43]

In this study, Zostavax was efficacious against incidence of shingles and PHN. [43] Overall, efficacy against shingles was 51.3% and against PHN was 66.5% over a median of 3.1 years of follow-up.[43]

In a separate study in adults aged 50–59 years, Zostavax vaccine efficacy (VE) against shingles was higher (69.8%).[44]

In the SPS, Zostavax was more efficacious in reducing the incidence of shingles in people aged 60–69 years than in those aged >70 years. However, efficacy in reducing the incidence of PHN and the burden of illness of shingles (a composite measure used in the clinical trial to describe the total pain, severity and duration of shingles) was similar across both age groups.[43] In people aged >80 years, VE was lower and not statistically significant, but the number of participants in this age group was low in this study.[12]

Duration of protection

Two extension studies of the SPS (the Short-term and Long-term Persistence Substudies, STPS and LTPS), in which a subset of original participants was followed up for up to 11 years, suggested significant waning of Zostavax VE with time.[29,30]

In the STPS (4–7 years after vaccination), VE had reduced to 39.6% against shingles and 60.1% against PHN.[30] In the LTPS (7–11 years after vaccination), VE was 21.1% against shingles and 35.4% against PHN. However, these LTPS data were not as robust as they were compared with 'modelled' control estimates.[29] Currently, revaccination with Zostavax is not recommended.

In several large population-based post-licensure studies in the United States of America (USA), early estimates of the effectiveness of Zostavax against shingles and PHN in people aged ≥60 years were, in general, comparable with those from the SPS. A recent population-based cohort study in the USA showed that in people aged ≥60 years, Zostavax VE decreased from

68.7% (95% CI: 66.3%–70.9%) in the first year to 4.2% (95% CI: –24.0% to 25.9%) in the eighth year.[31]

Vaccine safety

Based on clinical trials, Zostavax is safe and well tolerated among adults aged ≥50 years.[43,45-47] In the SPS safety substudy, one or more injection site reactions (such as swelling, pain or redness) occurred in 48.3% of vaccine recipients compared with 16.6% of placebo recipients. However, the reactions were generally mild and lasted less than 4 days; none were considered serious.[43] The incidence of serious adverse events after vaccination was very low and did not differ between vaccine and placebo recipients.

Zostavax recipients rarely developed varicella-like rashes around the injection site (0.1% of recipients in clinical trials). Generalised varicella-like rashes were similar between Zostavax and placebo recipients (0.1% in both groups). In clinical trials where rashes were analysed by PCR for VZV, the majority of rashes were due to wild-type virus, indicating coincidental natural shingles, with only very few participants found to have rashes due to the Oka/Merck VZV vaccine strain.[48]

The rate of systemic symptoms was somewhat higher in Zostavax recipients than in placebo recipients (6.3% versus 4.9%), with the most frequently reported systemic symptoms being headache and fatigue. Fever >38.3°C after Zostavax occurred in <0.1% of subjects overall, no different from placebo.[43,44]

The safety profile of Zostavax from post-marketing surveillance is consistent with that in clinical trials. In a study that used data from the Vaccine Safety Datalink network in the USA, the most common side effects were injection site reactions (83%). The remainder were localised or diffuse rashes.[46,47]

Very rarely, a non-localised VZV-like rash occurs around 2–4 weeks after receipt of Zostavax. This type of rash may be due to the Oka vaccine strain. In vaccine recipients who are immunocompromised, this may indicate disseminated infection. Management of these patients should be as detailed in the section Managing people who are immunocompromised and inadvertently receive Zoster vaccine.

Concomitant administration

Zostavax can be given at the same visit as inactivated influenza vaccine (at separate sites and using separate syringes) with no effect on safety or efficacy of either vaccine.[49]

Zostavax can also be given at the same time as 23-valent pneumococcal polysaccharide vaccine (23vPPV)[50] or 13-valent pneumococcal conjugate vaccine, using separate syringes and injection sites. Although in one clinical trial antibody responses for Zostavax were lower when it was co-administered with 23vPPV,[51] VZV antibody levels have not been shown to directly correlate with clinical protection.[52]

Zostavax can be administered at the same visit as, or at any time following, receipt of other inactivated vaccines (e.g. tetanus-containing vaccines).

There is limited evidence on the concomitant use of Zostavax with COVID-19 vaccines. Co-administration can occur if required, but providers should balance the opportunistic need for co-administration with giving the vaccines on separate visits. There is a potential for an increase in mild to moderate adverse events when more than one vaccine is given at the same time. Please refer to the ATAGI clinical guidance on COVID-19 vaccine in Australia for the most up-to-date information regarding COVID-19 vaccines.

As with other live viral vaccines, if Zostavax is to be given around the same time as another live viral parenteral vaccine (e.g. measles-mumps-rubella, yellow fever), the vaccines should be given either at the same visit or at least 4 weeks apart.[12,37]

Shingrix

Shingrix (GlaxoSmithKline) is an adjuvanted recombinant varicella zoster virus glycoprotein E (gE) subunit vaccine, available in Australia from June 2021.[32] It is registered for use in people aged ≥50 years. This vaccine does not contain live virus and can be administered to both people who are immunocompetent and immunocompromised in the eligible age groups.

Shingrix is available through private prescription only in Australia.

For more information regarding Shingrix vaccine please refer to Shingrix Product Information TGA.

Administration

Shingrix requires two doses administered intramuscularly, with an interval of 2–6 months between doses. Two doses are required even if a patient has previously received Zostavax or suffered from shingles.

Vaccine efficacy

Shingrix is highly efficacious in preventing herpes zoster episodes. In two large clinical trials Shingrix provided 97% protection against herpes zoster among immunocompetent adults aged ≥50 years and 91% protection in immunocompetent adults aged ≥70 years.[26,53] Protection against PHN was also high (about 89–91%).

There has been no head-to-head comparison to date of Shingrix and Zostavax efficacy. Indirect evidence, in the form of a network meta-analysis, suggests Shingrix is probably more effective than Zostavax in protecting against herpes zoster, but the evidence for the relative efficacy against other complications of zoster remains uncertain.[25]

Evidence for VE against herpes zoster and associated complications in people who are immunocompromised is more limited than in those who are immunocompetent. Shingrix has been shown to provide good protection against herpes zoster, post-herpetic neuralgia and HZ-related hospitalisation in a highly immunocompromised post-haematopoietic stem cell transplant (HSCT) population.[54] Shingrix VE against herpes zoster in a population of haematological malignancy patients was also high, at 87%.[55]

Shingrix has shown a robust immune response (based on immunogenicity data) in a broader range of people with immunocompromise aged ≥18 years (including patients with HSCT, haematological malignancy, HIV, solid tumour receiving chemotherapy and post renal transplant).[54-59] This suggests the vaccine is likely to be effective in the immunocompromised population more generally.

Duration of protection

Shingrix has shown high rates of protection against herpes zoster up to 4 years post vaccination in people who are immunocompetent, with minimal waning over that time (efficacy remained >80%).[26,53] Although there are no clinical follow-up data beyond 4 years post vaccination, immunogenicity data demonstrate a persistent immune response to at least 10 years post vaccination.[28] The waning of protection from Shingrix appears slower than that from Zostavax.

Evidence for the duration of protection against herpes zoster in people who are immunocompromised is more limited. A single randomised controlled trial in post-HSCT recipients indicated significant protection was maintained to 2 years post vaccination;[54] however, no data beyond this follow-up point are currently available.

Vaccine safety

Shingrix causes moderately high rates of local and systemic reactions, and non-serious adverse events. Common reactions include injection site pain (up to 79%), redness (up to 39%) and swelling (up to 26%). Systemic symptoms include fatigue and myalgia (up to 46%), headache (up to 39%), shivering (up to 28%), fever (up to 22%) and gastrointestinal symptoms (up to 18%).[26,53] Shingrix appears to be associated with higher rates of non-serious reactogenicity than Zostavax;[25] however, the two vaccines have not been compared head-to-head.

In a small proportion of people (about 10%), reactions may be severe enough to disrupt normal functioning, but these generally resolve within an average of 1–3 days.

Shingrix has demonstrated safety in clinical trials, with rates of serious adverse events in the Shingrix arm no different from those in the placebo arm in clinical trials.[26,53]

Immunisation providers should counsel recipients regarding expected local and systemic reactions before vaccination and the importance of completing the two-dose schedule for an adequate level and duration of protection.

Preliminary US data suggest a very rare association between cases of Guillain Barre Syndrome (GBS), a demyelinating neurological condition, and Shingrix (an estimated 3–6 additional cases per million doses administered).[60] However, GBS may also be triggered by an episode of zoster itself[61] and the overall benefits of vaccination currently outweigh the risks[62] of GBS.

Concomitant administration with other vaccines

Shingrix may be administered concomitantly, in different injection sites, with most other vaccines.

Trials of concomitant administration of Shingrix with other vaccines (quadrivalent influenza vaccine, Pneumovax and Boostrix) suggest no safety concerns or interference with vaccine immune response.[63-65]

Safety and efficacy of concomitant administration of Shingrix with the adjuvanted influenza vaccine (Fluad Quad) and COVID-19 vaccines has not yet been evaluated.

There is limited evidence on the concomitant use of Shingrix with COVID-19 vaccines. Co-administration can occur if required, but providers should balance the opportunistic need for co-administration with giving the vaccines on separate visits. There is a potential for an increase in mild to moderate adverse events when more than one vaccine is given at the same time. Please refer to the ATAGI clinical guidance on COVID-19 vaccine in Australia for the most up-to-date information regarding COVID-19 vaccines.

It is acceptable to co-administer Shingrix and Fluad Quad on the same day if necessary. However, given the lack of co-administration data for these two adjuvanted vaccines, it is preferred to separate their administration by a few days, and ensure that any adverse events following immunisation with the first vaccine have resolved before administration of the other vaccine.

Additional resources for primary medical care/vaccination providers

- NCIRS Zoster vaccine FAQ fact sheet
- ATAGI statement on the clinical use of zoster vaccine in older adults in Australia
- The Australian Immunisation Handbook
- Therapeutic Goods Administration Product Information: Shingrix
- Immunise Australia

- For information regarding the varicella-zoster vaccine refer to *The Australian Immunisation Handbook* and NCIRS fact sheet Varicella-zoster (chickenpox) vaccines for Australian children

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