Changes to the recommended use of herpes zoster vaccines

Australian Technical Advisory Group on Immunisation (ATAGI)

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# Plain-language summary

Herpes zoster disease is also called shingles. It is caused by a reactivation of the chickenpox virus. It causes a painful blistering rash.

Shingles is a serious disease because it can cause severe nerve pain that can last for months. This nerve pain is known as post-herpetic neuralgia or PHN. Shingles can also lead to:

* serious eye problems, including blindness
* pneumonia
* hearing problems
* swelling of the brain
* death.

Shingles is caused by the varicella-zoster virus, the same virus that causes chickenpox (varicella). The first time you catch the virus, you get chickenpox. The virus stays in your body and can reactivate later in life. When it reactivates, it is called shingles.

A vaccine to prevent chickenpox has been free for children under the National Immunisation Program (NIP) since 2005.

Anyone who has had chickenpox is at risk of getting shingles later in life. More than 97% of adults in Australia will have had chickenpox by the age of 30 years, so most adults are at risk of shingles. The risk of getting shingles and the likelihood of complications such as long-lasting nerve pain increase with age. People who have weakened immune systems also have a higher risk of getting shingles or having complications.

Until recently, there were 2 vaccines to prevent shingles in Australia, called Zostavax and Shingrix. Zostavax is no longer available, so Shingrix is now the only vaccine that can be used. Shingrix is free under the NIP for:

* people aged 65 years and older
* First Nations people aged 50 years and older
* adults aged 18 years and older who have certain medical conditions or are taking certain medications that weaken their immune system.

Because Zostavax is no longer available, the Australian Immunisation Handbook will be updated to remove information about Zostavax. Some other recommendations are also changing to account for Shingrix being the only vaccine available.

# Summary of revised recommendations

The key changes to zoster vaccine recommendations are:

* all information and recommendations about Zostavax have been removed, as this vaccine is no longer available
* people who have received a varicella vaccine were previously not recommended to receive a zoster vaccine, but can now consider it.

## Revised recommendations

* People who have previously received varicella vaccine when it was indicated can receive zoster vaccine
* Serological testing is not recommended before zoster vaccination

## Recommendations with updated supporting information

* People aged ≥50 years who are immunocompetent are recommended to receive zoster vaccine
* People aged ≥18 years who are immunocompromised or shortly expected to be immunocompromised are recommended to receive zoster vaccine
* People who inadvertently received a varicella vaccine when a zoster vaccine was indicated are recommended to receive a subsequent zoster vaccine

## Recommendations to be deleted

* People aged ≥50 years who are household contacts of a person who is immunocompromised are recommended to receive a zoster vaccine
* People who have previously received Shingrix need to be assessed on a case-by-case basis to receive Zostavax
* Serological testing is recommended before administration of Zostavax in people who are immunocompromised or shortly expected to be immunocompromised
* Serological testing after Zostavax is not recommended

## Recommendations that are not changing

* People who have previously received Zostavax can receive Shingrix
* People who have had a previous episode of herpes zoster can receive zoster vaccine

# Background and rationale

The Australian Technical Advisory Group on Immunisation (ATAGI) advises the Australian Government on clinical recommendations for vaccinations. ATAGI is proposing changes to the recommendations for the use of zoster vaccine.

The proposed changes reflect the current best clinical practice to prevent herpes zoster disease (shingles) and its complications. The revised recommendations will be published online in the [Australian Immunisation Handbook](https://immunisationhandbook.health.gov.au/).

## Herpes zoster (shingles)

Primary infection with the varicella-zoster virus (VZV) is known as chickenpox. After primary infection, the virus resides in the sensory ganglia.1

Herpes zoster, or shingles, occurs when latent VZV reactivates. It causes a painful vesicular rash, usually in a dermatomal distribution on one side of the body. This could be due, in part, to a decline in cellular immunity to the virus.2 Virus-specific cellular immunity most commonly declines with ageing, or with immunocompromising medical conditions or treatment.

Post-herpetic neuralgia (PHN) is the most frequent debilitating complication of herpes zoster. PHN is a neuropathic pain syndrome that persists or develops after the dermatomal rash has healed. PHN is most commonly defined as the persistence of pain for longer than 3 months after the onset of the rash.

Herpes zoster occurs most commonly in people who:

* are of older age – particularly >50 years
* are immunocompromised
* had varicella in the first year of life.

The lifetime risk of reactivation of VZV is about 50%. It affects half of people who live to 80 years.1,3-5

Overall, 13–26% of patients with herpes zoster develop complications. Complications occur more often in older people and people who are immunocompromised.6,7

Further attacks of herpes zoster occur in approximately 5% of immunocompetent people but are more common in people who are immunocompromised.2,8-10

## Zoster vaccines in Australia

Zostavax was funded under the NIP for older adults until 31 October 2023. Zostavax is a live-attenuated vaccine. It is contraindicated in people with current or recent significant immunocompromise due to the risk of disseminated varicella disease from the Oka varicella virus strain used in the vaccine. Zostavax is no longer available in Australia.

From 1 November 2023, Shingrix replaced Zostavax on the NIP for vaccination in older adults and adults with certain immunocompromising conditions. Shingrix is not a live vaccine, so it can be used safely in people who are immunocompromised.

# Changes to recommendations

## Revised recommendations

Revised recommendation

**People who have previously received varicella vaccine when it was indicated can consider zoster vaccine**

People who have received varicella vaccine when it was indicated (such as in childhood or as a catch-up vaccine) and are indicated to receive zoster vaccine (that is, are aged ≥50 years, or ≥18 years with severe immunocompromise) can consider zoster vaccine, regardless of their history of varicella infection.

A history of varicella infection can be incorrect or uncertain before vaccination. Even where there is a confirmed history of vaccination, breakthrough varicella can occur, particularly in people who have only received 1 dose of varicella vaccine. Exposure to wild-type varicella either through unknown infection before vaccination, or by breakthrough infection, means there is a risk of herpes zoster in the future.

Herpes zoster in people who have been vaccinated against varicella is rare, and can be due to reactivation of either wild-type virus or vaccine virus. The incidence of herpes zoster in people who have received varicella vaccine is up to 5 times lower than in unvaccinated people infected with wild-type varicella (48 per 100,000 person-years compared with 230 per 100,000 person-years, in a study of children aged <18 years).11 However, when herpes zoster does occur in varicella-vaccinated people, up to 45% of cases may be due to vaccine strain virus.11,12

Studies of the safety and immunogenicity of Shingrix in people who have received varicella vaccine are limited. Studies have not specifically investigated whether Shingrix vaccination provides protection following breakthrough varicella infection, or against vaccine-type herpes zoster.

Data suggest that the risk of herpes zoster following varicella vaccination is greater in people who are immunocompromised than in immunocompetent people.11 Shingrix is therefore likely to have greater benefit in immunocompromised people who have previously received varicella vaccine.

**Current recommendation**

ATAGI currently recommends the following:

* [People who have received varicella vaccine when it was indicated and have no history of prior or subsequent varicella infection are not recommended to receive zoster vaccine](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#people-previously-vaccinated-with-varicella-vaccine).

**Key differences**

The revised recommendation uses ‘can consider zoster vaccine’ rather than ‘not recommended to receive zoster vaccine’. This acknowledges the uncertainty of previous or breakthrough varicella infection, and the potential benefit of zoster vaccination in these circumstances, particularly for people who are immunocompromised.

Revised recommendation

**Serological testing is not recommended before zoster vaccination**

It is not necessary to have serological evidence of immunity to varicella-zoster virus (VZV) or a history of previous varicella infection before administering zoster vaccine. More than 97% of people in Australia are seropositive to VZV by 30 years of age,13 even if they cannot recall having varicella at a younger age.

Zoster vaccine effectively boosts humoral and cellular immune responses from prior infection. For people known to be VZV-seronegative, varicella vaccine is preferred over a zoster vaccine. However, in studies of zoster vaccines given to VZV-seronegative people, there were no safety or immunogenicity concerns.14-18

**Current recommendation**

ATAGI currently recommends the following:

* [Serological testing is not recommended before zoster vaccination in people who are immunocompetent](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#serological-testing-before-and-after-zoster-vaccination)

**Key differences**

There was previously a need for serological testing in people who are immunocompromised who were intending to receive Zostavax to assess the safety of administering a live vaccine. Now that Zostavax is no longer available, there is no need for serological testing in any potential zoster vaccine recipients, whether immunocompromised or immunocompetent.

## Recommendations with updated supporting information

The following recommendations will be updated to delete text in the supporting information that refers to Zostavax. No other changes are proposed to these recommendations or their supporting information:

* [People aged ≥18 years who are immunocompromised or shortly expected to be immunocompromised are recommended to receive zoster vaccine](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#people-aged-18-years-who-are-immunocompromised-or-shortly-expected-to-be-immunocompromised)
* [People who inadvertently received a varicella vaccine when a zoster vaccine was indicated are recommended to receive a subsequent zoster vaccine](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#people-previously-vaccinated-with-varicella-vaccine).

The following recommendation includes more substantial updates to the supporting information:

Revised recommendation

**People aged ≥50 years who are immunocompetent are recommended to receive zoster vaccine**

All people aged ≥50 years who are immunocompetent are recommended to receive zoster vaccine.

People who are immunocompetent are recommended to receive a 2-dose schedule of Shingrix, 2–6 months apart, for the prevention of herpes zoster and associated complications.

The optimal timing of receiving zoster vaccine depends on individual circumstances, including the following:

* Age-related risk of herpes zoster and its complications – herpes zoster can occur at any age after primary infection with varicella zoster virus, but the risk increases with age. The risk of herpes zoster in the general population increases from an estimated annual rate of 6 per 1000 in people aged 50–59 years to 15 per 1000 in people aged 70–79 years.19 The likelihood and severity of complications such as post-herpetic neuralgia also increase with age.
* Duration of protection – Shingrix has demonstrated high vaccine efficacy for at least 7 years after vaccination in people without immunocompromise,19 and immunogenicity data suggest that protection may persist for at least 10 years.19 A person vaccinated at a younger age (such as 50 years) may have reduced protection from vaccination as they age, when the risk of zoster is higher. There is no recommendation for a booster dose of zoster vaccine.
* Individuals’ personal preferences – people’s desire to protect themselves from herpes zoster and related complications may vary, and this will influence decision-making on when they should receive zoster vaccination.
* Household contacts who are immunocompromised – people aged ≥50 years who are household contacts of a person who is immunocompromised or shortly expected to become immunocompromised may factor this in to their decision making. Vaccination will provide some indirect protection to the immunocompromised household member from exposure to varicella-zoster virus, particularly if the household member cannot be vaccinated themselves.
* NIP funding for vaccination – Shingrix is funded through the NIP for non-Indigenous people aged ≥65 years, and for Aboriginal and Torres Strait Islander people aged ≥50 years of age. For details, see the [National Immunisation Program Schedule](https://www.health.gov.au/topics/immunisation/when-to-get-vaccinated/national-immunisation-program-schedule).

**Current recommendation**

ATAGI currently recommends the following:

* [People aged ≥50 years who are immunocompetent are recommended to receive zoster vaccine](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#people-aged-50-years-who-are-immunocompetent)
* [People aged ≥50 years who are household contacts of a person who is immunocompromised are recommended to receive a zoster vaccine](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#household-contacts-of-people-who-are-immunocompromised).

**Key differences**

The revised recommendation now includes the previous recommendation for zoster vaccination of people aged ≥50 years who are household contacts of a person who is immunocompromised. This has been changed from a stand-alone recommendation to a consideration in the optimal timing section of the recommendation for immunocompetent people aged ≥50 years.

This is because immunocompromised adults can be vaccinated directly with Shingrix and gain direct protection against zoster, so there is less need for indirect protection from household members.

However, not all immunocompromised people will be eligible for, or will receive, zoster vaccine (for example, immunocompromised children). Household contacts aged ≥50 years may factor this into their considerations about receiving a zoster vaccine.

The revised recommendation has also been updated to delete text in the supporting information that refers to Zostavax.

## Recommendations to be deleted

The following recommendation has been incorporated into the supporting information for the recommendation ‘People aged ≥50 years who are immunocompetent are recommended to receive a zoster vaccine’, so the standalone recommendation will be deleted:

* [People aged ≥50 years who are household contacts of a person who is immunocompromised are recommended to receive a zoster vaccine](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#household-contacts-of-people-who-are-immunocompromised).

The following recommendations will be deleted because they refer specifically to Zostavax, so are no longer relevant:

* [People who have previously received Shingrix need to be assessed on a case-by-case basis to receive Zostavax](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#receiving-zostavax-if-previously-vaccinated-with-shingrix)
* [Serological testing is recommended before administration of Zostavax in people who are immunocompromised or shortly expected to be immunocompromised](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#serological-testing-before-and-after-zoster-vaccination)
* [Serological testing after Zostavax is not recommended](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#serological-testing-before-and-after-zoster-vaccination).

## Recommendations that are not changing

No changes are proposed for the following recommendations:

* [People who have previously received Zostavax can receive Shingrix](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster" \l "receiving-shingrix-if-previously-vaccinated-with-zostavax)
* [People who have had a previous episode of herpes zoster can receive zoster vaccine](https://immunisationhandbook.health.gov.au/contents/vaccine-preventable-diseases/zoster-herpes-zoster#people-who-have-had-a-previous-episode-of-herpes-zoster).

# Benefits and potential risks

Key benefits from the revised recommendations include the following:

* People who are immunocompromised can be safely vaccinated with Shingrix. This may help to reduce the risk of herpes zoster and its complications in this population.
* Immunisation providers will have clearer and simpler guidance on zoster vaccination, as recommendations that are no longer relevant (because Zostavax is no longer available) will be removed.

The potential risks that may arise from the new recommendations include the following:

* Shingrix is funded under the NIP for the following groups:
  + people aged 65 years and older
  + First Nations people aged 50 years and older
  + immunocompromised people aged 18 years and older with the following medical conditions – haematopoietic stem cell transplant, solid organ transplant, haematological malignancy, or advanced or untreated HIV.

This means that other people who are recommended to receive Shingrix or can consider receiving Shingrix will need to pay out-of-pocket costs. This will create inequities, as not everyone who is recommended to receive Shingrix may be able to pay for it. ATAGI is responsible for providing recommendations on the best clinical use of vaccines in Australia. Recommendations about NIP funding are made by the Pharmaceutical Benefits Advisory Committee (PBAC).

* Duration of protection after zoster vaccination is uncertain. Vaccination at an earlier age may mean that people are not well protected later in life when their risk of herpes zoster increases. There are no recommendations for additional doses later in life because there is not enough evidence to support the need for and safety of booster doses of zoster vaccine. Providers and consumers should consider this when making decisions about zoster vaccination.

# Glossary

A [glossary of technical terms](https://immunisationhandbook.health.gov.au/technical-terms) is available on the Australian Immunisation Handbook website.

# References

1. Levin M. Zoster vaccines. In: Plotkin S, Orenstein W, Offit P, Edwards K, eds. Plotkin's vaccines. 7th ed. Philadelphia, PA: Elsevier; 2018.

2. Dworkin R, Johnson R, Breuer J, et al. Recommendations for the management of herpes zoster. Clinical Infectious Diseases 2007;44:S1-S26.

3. Schmader K. Herpes zoster in older adults. Clinical Infectious Diseases 2001;32:1481-6.

4. Brisson M, Edmunds W, Law B, et al. Epidemiology of varicella zoster virus infection in Canada and the United Kingdom. Epidemiology and Infection 2001;127:305-14.

5. Thomas S, Hall A. What does epidemiology tell us about risk factors for herpes zoster? The Lancet Infectious Diseases 2004;4:26-33.

6. Edmunds W, Brisson M, Rose J. The epidemiology of herpes zoster and potential cost-effectiveness of vaccination in England and Wales. Vaccine 2001;19:3076-90.

7. Scott F, Johnson R, Leedham-Green M, et al. The burden of herpes zoster: a prospective population based study. Vaccine 2006;24:1308-14.

8. Ragozzino M, Melton LI, Kurland L, Chu C, Perry H. Population-based study of herpes zoster and its sequelae. Medicine 1982;61:310-6.

9. Yawn BP, Wollan PC, Kurland MJ, St Sauver JL, Saddier P. Herpes zoster recurrences more frequent than previously reported. Mayo Clinic Proceedings 2011;86:88-93.

10. Whitley R. Chickenpox and herpes zoster (varicella-zoster virus). In: Bennett J, Dolin R, Blaser M, eds. Mandell, Douglas, and Bennett's principles and practice of infectious diseases. 8th ed. Philadelphia, PA: Elsevier Saunders; 2015.

11. Weinmann S, Chun C, Schmid D, et al. Incidence and clinical characteristics of herpes zoster among children in the varicella vaccine era, 2005-2009. Journal of Infectious Diseases 2013;208:1859-68.

12. Woodward M, Marko A, Galea S, Eagel B, Straus W. Varicella virus vaccine live: a 22-year review of postmarketing safety data. Open Forum Infectious Diseases 2019;6:ofz295.

13. Gidding HF, MacIntyre CR, Burgess MA, Gilbert GL. The seroepidemiology and transmission dynamics of varicella in Australia. Epidemiology and Infection 2003;131:1085-9.

14. Cunningham A, Lal H, Kovac M, et al. Efficacy of the herpes zoster subunit vaccine in adults 70 years of age or older. New England Journal of Medicine 2016;375:1019-32.

15. Lal H, Cunningham A, Godeaux O, et al. Efficacy of an adjuvanted herpes zoster subunit vaccine in older adults. New England Journal of Medicine 2015;372:2087-96.

16. Diaz C, Dentico P, Gonzalez R, et al. Safety, tolerability, and immunogenicity of a two-dose regimen of high-titer varicella vaccine in subjects ≥13 years of age. Vaccine 2006;24:6875-85.

17. Macaladad N, Marcano T, Guzman M, et al. Safety and immunogenicity of a zoster vaccine in varicella-zoster virus seronegative and low-seropositive healthy adults. Vaccine 2007;25:2139-44.

18. Cunningham A, Heineman T, Lal H, et al. Immune responses to a recombinant glycoprotein E herpes zoster vaccine in adults aged 50 years or older. Journal of Infectious Diseases 2018;217:1750-60.

19. MacIntyre R, Stein A, Harrison C, et al. Increasing trends of herpes zoster in Australia. PLoS One 2015;10:e0125025.