



JOHNS HOPKINS  
M E D I C I N E

# HERPES ZOSTER VACCINATION

## What Clinicians Need to Know to Improve Vaccination Rates

# Describing Herpes Zoster (HZ) to Patients



- Latent varicella-zoster virus (chickenpox) reactivates
  - Results in HZ outbreak (shingles)
- Symptoms
  - Usually painful rash along a nerve pattern and eruption on the skin
  - On the face, eyes, torso, or anywhere on the body most frequently in a dermatomal pattern
  - Prodrome of burning, tingling, and irritation

# Complications of Shingles



- Most commonly – postherpetic neuralgia (PHN)<sup>1</sup>
  - Affects 10-50% of those with HZ, with higher rates increasing with age
  - Can last weeks to months
  - Interferes with patients' daily functioning
  - Difficult to treat pharmaceutically
- Other complications
  - Eyesight loss if the optic nerve is involved<sup>1</sup>
  - Pancreatic and liver involvement<sup>1</sup>
  - Scarring and keloid formation<sup>2</sup>

1. Cohen JL. *N Engl J Med.* 2013;369(3):255-263.

2. Ogawa R. *Int J Mol Sci.* 2017;18(3).



# Risk Factors for Shingles



- Age is the biggest risk factor
  - 1 in 3 lifetime risk
  - 1 in 2 risk by the age of 85 years
- Immunocompromising conditions
  - HIV, cancer, solid organ transplant recipients
- Chronic disease (eg, diabetes)
- Physical or psychological stressors
- Patients are still at risk after an HZ outbreak
  - Second or third outbreak of HZ is possible, in the same or different dermatomal pattern

# Vaccination Rates for HZ



- First live-attenuated vaccine licensed in 2006
  - Only about 1/3 of adults aged >60 years have received vaccination<sup>3</sup>
  - More than 60% remain unvaccinated in 2018
- Geographic disparities – some regions have lower vaccination rates<sup>4</sup>
- Ethnic disparities<sup>5</sup>
  - Caucasian patients vaccinated more frequently than minority groups

3. Centers for Disease Control and Prevention. February 2018.

4. Lu P-J, et al. *Am J Prev Med.* 2017;52(3):362-372.

5. Centers for Disease Control and Prevention. May 2019.

# Potential Reasons for Vaccine Hesitancy



- Patient concerns
  - Cost
  - Worry about pain at the injection site
  - Worry about being contagious
  - Myths about immunization
- Provider concerns
  - Adequate follow-up
  - Adequate record keeping throughout the health systems

# Strategies to Improve Vaccine Uptake



- Using statewide immunization information systems (IIS) or registries
- Encouraging patient record keeping
- Offering vaccinations at every encounter
- Reviewing preventative care at every visit
- Making a strong recommendation and the potential benefits of vaccination
- Connecting data through IIS so all healthcare providers are aware of immunization status

# FDA-licensed HZ Vaccines



## Zoster Vaccine, Live (attenuated) (ZOSTAVAX®, or ZVL)

- Efficacy
  - 70% – 50-59 years of age<sup>6</sup>
  - 64% – 60-69 years of age<sup>7</sup>
  - 38% – >70 years of age<sup>7</sup>
- Duration
  - 70% after 1 year<sup>10</sup>
  - <35% after 4-6 years<sup>11</sup>

## Zoster Vaccine Recombinant, Adjuvanted (SHINGRIX, or RZV)

- Efficacy
  - >95% – 50-69 years of age<sup>8</sup>
  - >90% – >70 years of age<sup>9</sup>
- Duration
  - >90% after 1-2 years<sup>9</sup>
  - 85% after 3-4 years<sup>9</sup>

ZOSTAVAX® – Merck.

SHINGRIX – GlaxoSmithKline; Trademarks are owned by or licensed to the GSK group of companies.

6. Schmader KE, et al. *Clin Infect Dis*. 2012;54(7):922-928. 7. Oxman MN, et al. *N Engl J Med*. 2005;352(22):2271-2284.  
8. Lal H, et al. *N Engl J Med*. 2015;372(22):2087-2096. 9. Cunningham AL, et al. *N Engl J Med*. 2016;375(11):1019-1032.  
10. Schmader KE, et al. *Clin Infect Dis*. 2012;55(10):1320-1328. 11. Izurieta HS, et al. *Clin Infect Dis*. 2017;64(6):785-793.



# FDA-licensed HZ Vaccines



## Zoster Vaccine, Live (attenuated) (ZOSTAVAX®, or ZVL)

- PHN prevention\*
  - 67% efficacy in those >70 years<sup>7</sup>
- Adverse events<sup>12</sup>
  - Injection site reactions
    - Some people will develop a mild, contagious chickenpox-like rash at the injection site
  - Serious side effects are extremely rare

\*mean duration of HZ surveillance – 3.12 years

## Zoster Vaccine Recombinant, Adjuvanted (SHINGRIX, or RZV)

- PHN prevention†
  - 88% efficacy in those >70 years<sup>9</sup>
- Adverse events<sup>13</sup>
  - Injection site reactions
    - Treatable with OTC pain medicine
    - Not considered contagious
  - Serious side effects are extremely rare

†mean duration of PHN surveillance – 3.8 years

7. Oxman MN, et al. *N Engl J Med.* 2005;352(22):2271-2284. 9. Cunningham AL, et al. *N Engl J Med.* 2016;375(11):1019-1032.

12. Centers for Disease Control and Prevention. January 2018. 13. Centers for Disease Control and Prevention. January 2018.

# ACIP Recommendations: Prevention of HZ and Its Complications



RZV is preferred over ZVL based on efficacy and is recommended for:

- Immunocompetent adults aged  $\geq 50$  years:
  - **Previously unvaccinated:** 2 doses administered 2-6 months apart regardless of past episode(s) of HZ or receipt of ZVL
  - **Previously vaccinated with ZVL:** 2 doses administered 2-6 months apart at least 2 months after receipt of ZVL.

ZVL can still be administered to adults beginning at 60 years of age

- RZV is preferred

# Practical Considerations



	ZVL – Live (Attenuated)	RZV – Recombinant, Adjuvanted
Administration	Subcutaneous	Intramuscular
Storage	Vaccine – frozen Diluent – room temp	Vaccine and adjuvant – refrigerated (2°-8°C)
Dose/schedule	1 dose	<ul style="list-style-type: none"><li>• 2 doses</li><li>• 2<sup>nd</sup> dose 2-6 months after the 1<sup>st</sup></li><li>• If &gt;6 months after 1<sup>st</sup> dose, administer 2<sup>nd</sup> dose as soon as possible</li></ul>

# Other Practical Considerations



- Influenza, pneumonia, and HZ vaccines can be administered at the same visit in different limbs
- Varicella (chickenpox) vaccination
  - Serology testing is not needed before vaccine can be administered
- Previous or current HZ outbreak
  - Vaccination is recommended because multiple recurrences can happen and PHN can persist
  - Wait until outbreak process has resolved before administering HZ vaccine
- Risk of spreading HZ
  - RZV [recombinant] – injection site reaction is not an indicator of being infectious or contagious
  - ZVL [live] – considered contagious if a rash develops at the injection site
    - Avoid others with high risk of complications until no new lesions for 24 hours or scabs have healed



# HZ Vaccine and Insurance Coverage



- Insurances provide coverage
  - May be covered under pharmacy benefit (Medicare Part D) and not under major medical coverage
  - Check to see if covered at pharmacy or primary care office
- For patients without insurance
  - Local health department may have a reduced fee schedule
  - VaccineFinder.org – to locate pharmacies that carry the vaccine
  - Federally qualified health centers may be able to provide at much lower rate
  - Patient assistance programs directly from manufacturers

# Vaccination by Pharmacists



- Many practical benefits
  - Located in nearly every zip code
  - Proliferation of community pharmacies
  - Increased access to care
  - Extended hours of available service
- Communication between provider, pharmacist, and patient
  - Prescription can be sent electronically
  - Pharmacy can let the patient know when/if the vaccine is stocked
    - Send reminders for booster vaccination

# Vaccination by Pharmacists



- Provide support for an immunization community
- 80% of national large pharmacy chains input immunization data into state registries whenever possible
- Offer another cross-check of medications and immunizations between providers
  - Can be proactive in offering the vaccine to eligible patients
  - Advocate the patient's need for vaccination with other providers
  - State laws vary regarding which vaccines a pharmacy can offer to patients<sup>15</sup>

# Clinical Pearls



- Highlight the efficacy and duration of the recombinant HZ vaccine (RZV)
- Use the pharmacist as a key administrator of HZ vaccines
  - Recognize that HZ cost is covered at the pharmacy
    - In many states, pharmacists don't need a prescription to administer the vaccine
  - Update patient information in state registries
  - Reinforce the importance of vaccination



# Summary



- Herpes zoster remains a healthcare issue for the growing aging population
  - More than 1 million cases occurs annually
  - Majority of eligible adults do not receive immunization
  - Significant geographic and racial disparities exist
  - Steps are needed to lessen burden and increase vaccination rates for those over 50 years of age
- Clinicians can improve vaccination rates by:
  - Remaining mindful of risk factors, disease burden, and morbidity
  - Reviewing ACIP recommendations, efficacy and safety data of available vaccines, and practical differences
  - Supporting pharmacy-based immunization and the role of pharmacists as educators and immunizers

# References



1. Cohen JL. Herpes Zoster. *N Engl J Med*. 2013;369(3):255-263.
2. Ogawa R. Keloid and Hypertrophic Scars Are the Result of Chronic Inflammation in the Reticular Dermis. *Int J Mol Sci*. 2017;18(3).
3. Centers for Disease Control and Prevention. Vaccination Coverage Among Adults in the United States, National Health Interview Survey, 2016. February 2018. Accessed at: <https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/pubs-resources/NHIS-2016.html>
4. Lu P-J, O'Halloran A, Williams WW, Harpaz R. National and State-Specific Shingles Vaccination Among Adults Aged  $\geq 60$  Years. *Am J Prev Med*. 2017;52(3):362-372.
5. Centers for Disease Control and Prevention. Vaccination Coverage among Adults in the United States, National Health Interview Survey, 2017. May 2019. <https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/pubs-resources/NHIS-2017.html>
6. Schmader KE, Levin MJ, Gnann JW, et al. Efficacy, safety, and tolerability of herpes zoster vaccine in persons aged 50-59 years. *Clin Infect Dis*. 2012;54(7):922-928.
7. Oxman MN, Levin MJ, Johnson GR, et al. A Vaccine to Prevent Herpes Zoster and Postherpetic Neuralgia in Older Adults. *N Engl J Med*. 2005;352(22):2271-2284.

# References



8. Lal H, Cunningham AL, Godeaux O, et al. Efficacy of an Adjuvanted Herpes Zoster Subunit Vaccine in Older Adults. *N Engl J Med*. 2015;372(22):2087-2096.
9. Cunningham AL, Lal H, Kovac M, et al. Efficacy of the Herpes Zoster Subunit Vaccine in Adults 70 Years of Age or Older. *N Engl J Med*. 2016;375(11):1019-1032.
10. Schmader KE, Oxman MN, Levin MJ, et al. Persistence of the Efficacy of Zoster Vaccine in the Shingles Prevention Study and the Short-Term Persistence Substudy. *Clin Infect Dis*. 2012;55(10):1320-1328.
11. Izurieta HS, Wernecke M, Kelman J, 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):785-793.
12. Centers for Disease Control and Prevention. What everyone should know about Zostavax. January 2018. Available at: <https://www.cdc.gov/vaccines/vpd/shingles/public/zostavax/index.html>
13. Centers for Disease Control and Prevention. What everyone should know about Shingles Vaccine (Shingrix). January 2018. Available at: <https://www.cdc.gov/vaccines/vpd/shingles/public/shingrix/index.html>
14. Dooling KL, Guo A, Patel M, et al. Recommendations of the Advisory Committee on Immunization Practices for Use of Herpes Zoster Vaccines. *MMWR Morb Mortal Wkly Rep*. 2018;67(3):103-108.
15. APhA Immunization Center. Accessed October 22, 2019. <https://www.pharmacist.com/immunization-center>