

Improving Shingles Vaccination Rates in Family Medicine

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CONTINUING MEDICAL EDUCATION

LEARNING OBJECTIVES

At the end of the activity, participants will be able to:

- Characterize the burden of herpes zoster infections.
- Recommend the recombinant zoster vaccine to patients in accordance with guidance from the Advisory Committee on Immunization Practices.
- Implement strategies to increase patient acceptance of herpes zoster and other vaccinations.
- Use available resources to increase awareness among patients about the importance and safety of recommended vaccinations.

KEY TAKEAWAYS

- Vaccines represent one of the most important public health advancements of the modern age to reduce the burden of infectious diseases.
- Despite the rigorous methods employed by the Centers for Disease Control and Prevention to ensure vaccine safety, some patients still have concerns about the safety of vaccines.
- The recombinant zoster vaccine is the only approved herpes zoster vaccine available in the United States, and it provides highly effective and durable protection against shingles and post-herpetic neuralgia.
- In addition to supporting national initiatives to increase vaccination rates for shingles and other vaccine-preventable diseases, health care providers can use a variety of strategies to help patients receive recommended vaccines.

TARGET AUDIENCE

Family physicians and clinicians who wish to gain increased knowledge and greater competency regarding shingles.

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INTRODUCTION

The introduction of vaccines over the past several hundred years has been one of the most important innovations in modern society to curb the spread of infectious diseases. With the introduction of the smallpox vaccine in 1798, up through COVID-19 vaccines currently being implemented

and still undergoing development, vaccination has been a significant public health success, and also a source of controversy.^{1,2} In the United States, widespread vaccine use has nearly eliminated polio, diphtheria, rubella, and measles, and has significantly reduced the occurrence of other vaccine-preventable diseases.³

In the United States as of 2017, infectious diseases accounted for about one-fourth of physician office visits and, combined with parasitic diseases, 4.5 million hospital days.⁴ Approximately \$120 billion is spent on direct and indirect medical costs each year for these diseases.⁴ Herpes zoster infection, commonly known as “shingles,” constitutes a significant portion of the infectious disease burden, with about 1 million cases each year in the United States.^{4,5} Shingles can be associated with impaired quality of life and functional disability—approximately 10% of immunocompetent adults experience complications from shingles, including ophthalmic and neurologic complications.⁶ An estimated one-third of individuals will develop shingles during their lifetime, and the potential complications from shingles prompt a need for vaccination to prevent this disease.⁵

The Healthy People 2020 initiative, which began in the United States in 2010, established a shingles vaccination goal of 30%, when the shingles vaccination rate was 10% in the US population.⁷ This goal was met and surpassed in the years following the initiative, starting with a 30.6% vaccination rate in 2015 and increasing to 34.5% in 2018, the most recent available data.^{7,8} In October 2017, the two-dose series recombinant zoster vaccine (RZV) was approved by the Food and Drug Administration (FDA).⁹ This vaccine is highly efficacious, up to 97% effective in preventing shingles, and is likely playing a role in increased vaccination rates. The Healthy People 2030 initiative is currently under development, but the target shingles vaccination rate will likely be higher than 30%, considering current rates and the recent introduction of the RZV.¹⁰ Primary care clinicians are often faced with challenges in helping patients receive recommended vaccines, including the shingles vaccine, and employing effective strategies can help increase vaccination rates.

VACCINE SAFETY

CASE SCENARIO

A 58-year-old man is being seen for a painful skin eruption involving his upper back. Evaluation reveals that he is suffering from an episode of shingles. He is prescribed valacyclovir; instructed to take an over-the-counter analgesic as needed, apply wet compresses, and use calamine lotion; and provided instructions to minimize transmission to his family. He and his wife (who has accompanied him) have a recent history of refusing vaccinations, stating that they have concerns about the safety of vaccines.

The patient case scenario described above is not uncommon in primary care settings. Many patients express hesitancy regarding vaccines for various reasons, and though not all patients who refuse vaccines may contract a vaccine-pre-

ventable disease, this is certainly a possible outcome.¹¹ Concerns about vaccine safety—encompassing adverse effects, allergic reactions, and intolerance—are common objections to receiving vaccines, including the shingles vaccine, and clinicians should be aware of how to discuss vaccine safety concerns to resolve patients’ misconceptions.²

Vaccine safety is a primary concern of the Centers for Disease Control and Prevention (CDC).¹² Starting in the 1970s, an increased focus on personal health caused some individuals to become concerned about vaccine safety, and several personal injury lawsuits were filed against vaccine manufacturers in which compensation was awarded despite a lack of supporting evidence.¹³ This led to a vaccine shortage and the National Childhood Vaccine Injury Act (NCVIA) in 1986. Among other provisions, the NCVIA required health-care providers to report vaccine adverse events to the Vaccine Adverse Event Reporting System (VAERS), which is still in use today as a primary method to monitor adverse events to vaccines.¹²

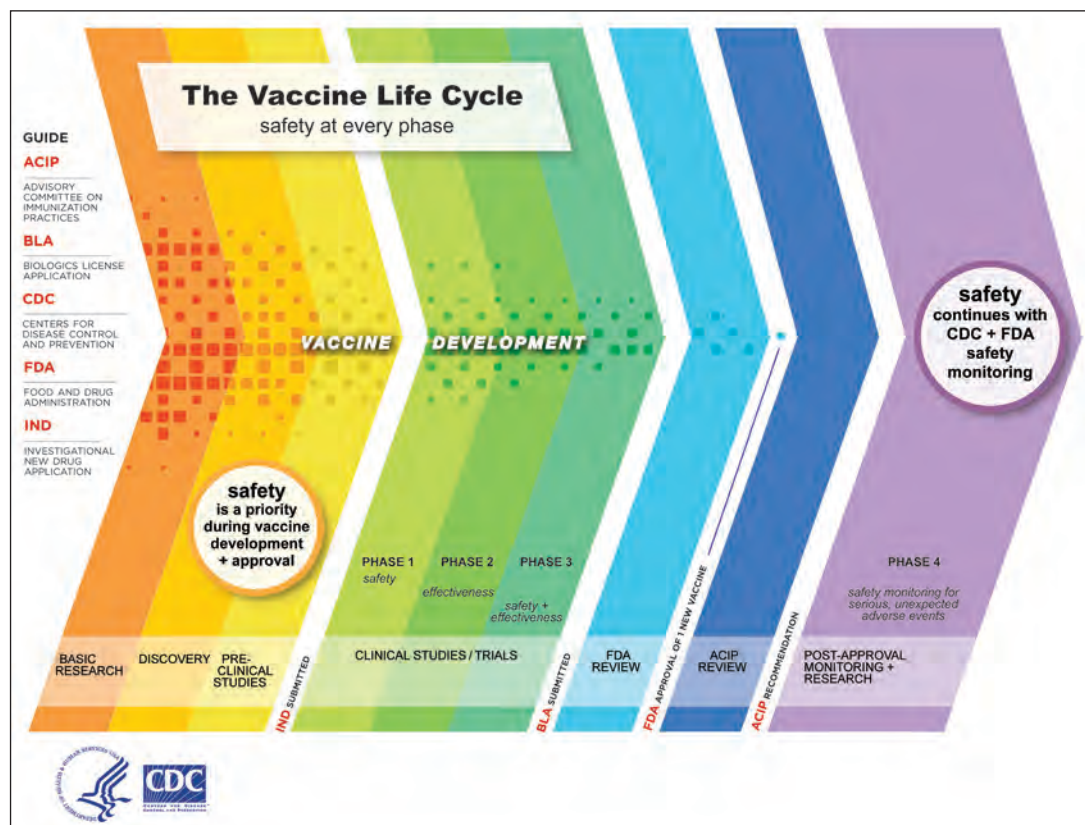
In 2009, a study published about 10 years earlier linking autism to the MMR (measles, mumps, and rubella) vaccine was retracted from the *Lancet*.¹⁴ This is the well-known story of a physician who reported results of a biased and arguably unethical study of the correlation between autism and the MMR vaccine. Although it was eventually proven inaccurate, this misinformation is a source of many false beliefs about vaccines still held by adults and highlights the strong sensitivity individuals have to vaccine safety information.

The CDC seeks to ensure vaccine safety throughout product development by reviewing clinical trial safety data as well as inspecting manufacturing plants and protocols. Since vaccines typically go through the same approval process as prescription drugs and other biologics, there are many checkpoints where safety issues can be identified (**FIGURE**). Once vaccines are approved, the FDA and CDC continue surveillance for safety issues and respond accordingly.

The NCVIA also created the National Vaccine Injury Compensation Program (VICP) to provide remuneration to people injured by vaccines on a no-fault basis.¹² The VICP is still active today, and it is intended to serve as a safety net for very rare cases where individuals have a severe allergic reaction or adverse event to a vaccine.¹⁵ If the person who filed the claim is awarded compensation at the court level, the US Department of Health and Human Services pays the awarded amount.¹⁵

Another tool used by the CDC to monitor vaccine safety is the Vaccine Safety Datalink (VSD), which represents a collaboration between the CDC and 9 healthcare organizations.¹⁶ This tool uses electronic health record information from the participating organizations to conduct vaccine research and

FIGURE. The vaccine life cycle



Source: <https://www.cdc.gov/vaccinesafety/ensuringsafety/history/index.html#four>

monitor safety. Data from the VSD can also inform committees that create immunization schedules and guidelines.¹⁶

HERPES ZOSTER VACCINE

From 2006 to 2017, the live-attenuated herpes zoster vaccine (ZVL) was the only available shingles vaccine. However, with the introduction of the RZV, the ZVL fell out of favor due to lower efficacy rates and eventually was discontinued in November 2020. RZV, administered in 2 separate doses at months 0 and 2-6, is the only shingles vaccine currently available in the United States.⁹

Since development of herpes zoster infection is likely related to a decrease in varicella zoster virus-specific immunity, RZV is targeted at increasing the varicella zoster virus-specific immune response, which is thought to be the mechanism employed by the vaccine to protect against zoster disease.⁹ RZV is labeled for “prevention of herpes zoster (shingles) in adults age 50 years and older.”⁹

Based on clinical trials, RZV is 97% effective at preventing shingles in adults ages 50 to 69 years and 91% effective in adults age 70 years and older.^{17,18} RZV was 91% effective at preventing post-herpetic neuralgia (PHN) in adults ages

50 to 69 years and 89% effective at preventing PHN in adults age 70 and older.^{17,18} Notably, in people age 70 years and older, RZV’s efficacy for prevention of shingles and PHN persisted throughout 4 years in clinical trials, remaining above 85%.¹⁹ As a comparison, ZVL had 51% efficacy preventing shingles and 67% efficacy preventing PHN, and efficacy lasted only for a maximum of 5 years.²⁰ In a meta-analysis comparing RZV and ZVL, RZV was statistically superior for efficacy, but also had more

injection-site reactions than ZVL.²¹ In clinical trials, injection-site reactions from ZVL were reported in 81.5% of adults age 50 years and older and 74.1% of adults age 70 years and older.^{17,18}

The Advisory Committee on Immunization Practices (ACIP) published a guideline in 2018 that outlines recommendations for prevention of herpes zoster infection.²² The following are recommendations for the shingles vaccine within the guideline:

- RZV is recommended for the prevention of herpes zoster and related complications for immunocompetent adults age ≥ 50 years.
- RZV is recommended for the prevention of herpes zoster and related complications for immunocompetent adults who previously received ZVL.

According to ACIP, RZV may be administered regardless of prior varicella vaccine history and does not require a varicella screening.²² RZV is administered as an intramuscular injection, and 2 doses of the vaccine are needed with at least 4 weeks between doses; as mentioned above, the recommended schedule is that the second dose be received 2 to 6 months after the first dose. For patients who

previously received ZVL, there is no established time frame after which they are eligible to receive RZV; studies examined RZV administered ≥ 5 years after ZVL, but based on expert opinion, patients can receive RZV >2 months after ZVL.^{22,23} RZV can be coadministered with other vaccines at different anatomic sites, based on CDC guidance.²⁴ Reactions to the first dose of RZV did not predict second-dose reactions, and patients should be encouraged to receive the second dose of RZV even if they had a mild reaction to the first dose.^{22,25}

ACIP also offers guidance on administration of RZV to special populations.²² Patients with a previous herpes zoster infection should still receive RZV because infection can recur, though if a patient has an active shingles infection, the vaccine should be postponed until symptoms resolve. Patients with chronic medical conditions, taking low-dose immunosuppressive therapy (<20 mg/day of prednisone or inhaled/topical steroid use), anticipating immunosuppression, or recovering from an immunocompromising illness should receive RZV. There is no current recommendation for patients receiving moderate to high doses of immunosuppressive therapy. In patients known to be negative for varicella based on serologic testing, ACIP suggests following recommendations for administering the varicella vaccine, and notes that RZV has not been studied in this population. In patients who are pregnant or breastfeeding, consider delaying RZV.²²

STRATEGIES FOR INCREASING VACCINATION RATES

Many organizations have established initiatives, protocols, and recommendations that healthcare providers can use to assist with increasing vaccination rates for the shingles vaccine, as well as other recommended vaccines. These initiatives are especially prevalent at the current time, as controversy surrounding COVID-19 vaccines is widespread.

Individualize by group

One strategy that can be effective for increasing vaccination rates is targeting specific groups or populations that have similar characteristics. Generally, individuals can be placed into 1 of 3 groups based on their opinions about vaccination²⁶:

1. *Vaccine Adopters.* Patients in this group understand the benefits of vaccination and seek to obtain recommended vaccines. Their support of vaccines can be leveraged to help people unsure about vaccination feel more confident.
2. *Movable Middle.* These patients may feel unsure or hesitant about receiving vaccines but can be responsive to encouragement to receive suggested vaccines. Clinicians should seek to help these individuals build

trust in vaccine safety and boost motivation to accept recommended vaccines, as well as make it easy for them to receive vaccines.

3. *Vaccine Detractors.* Also termed “anti-vaxxers,” individuals in this group are actively opposed to receiving vaccines due to a negative view or misunderstanding of vaccines. Their opposition to vaccines can sway others to become vaccine detractors, and this “movement” has been termed by some “a regression in modern medicine.”²⁷

Non-Hispanic Black patients have lower vaccination rates than other populations,²⁸ and particular attention to this group may help boost rates. One study reported an improvement in influenza immunization rates in a population where 41% of participants self-identified their race as Black or African American.²⁹ This study implemented a practice-based intervention that involved patient tracking, recall, outreach, and provider prompts, and noted a vaccination rate of 64% for the intervention group compared to 22% for the placebo group ($P=0.0001$).²⁹

Many organizations seek to help minority and underserved communities with accurate information about and access to vaccines. The Rochester Health Community Partnership is an example of one of these organizations.³⁰ In response to the COVID-19 pandemic, it provided additional assistance to help disenfranchised communities overcome vaccine hesitancy and help distribute accurate information about COVID-19 vaccines in patients’ native languages. Partnering with community organizations and leaders can be helpful, as minorities may respond more favorably to vaccines offered at trusted community locations, such as community centers or churches.

Another group that may benefit from improved vaccination rates is patients who are immigrants or refugees. These patients are required to have a medical examination where they must either provide proof of vaccination or begin vaccination according to approved CDC/ACIP schedules.³¹ Primary care clinicians who care for immigrants or refugees can consult their state health department for support and guidelines regarding vaccine administration guidance and assistance for these patients.

Shared decision-making and other general strategies

The use of shared decision-making has been widely recognized as a successful and patient-centered approach to medicine, and this includes vaccination.³² Clinicians should seek to consult respectfully with patients regarding vaccines and communicate with empathy. This can be especially important when resolving patients’ concerns about vaccines. The **TABLE** describes several approaches that can be effective when addressing various concerns about vaccines in both children and adults.²

TABLE. **Strategies for communicating with patients about vaccines**

<p>Presumptive Recommendations</p> <ul style="list-style-type: none"> • Use a presumptive statement that the patient is due for whichever vaccine(s) you are recommending • Establish that receiving recommended vaccines is the standard choice for most patients
<p>Motivational Interviewing</p> <ul style="list-style-type: none"> • If a patient is hesitant, use open-ended questions to determine the core objections or concerns • Ask permission to share information • Keep the tone conversational rather than a “lecture” about vaccine facts
<p>Clarifying Vaccine Myths</p> <ul style="list-style-type: none"> • If a patient’s concern is a vaccine-related myth, use care when clarifying the myth • Lots of time spent talking about a myth can paradoxically strengthen it in the patient’s mind • Identify the myth as a myth and state that it is false • Focus on the facts • State the core facts simply; if the truth seems more complicated, it may be easier to continue accepting simple information in the myth
<p>Disconfirmation Bias</p> <ul style="list-style-type: none"> • When presented with evidence about a belief, people more easily accept evidence that supports the existing belief and are critical of evidence that discredits the belief • Rather than discrediting incorrect elements of existing beliefs, try to provide new information to replace those elements • Pivot the conversation to focus on the diseases that vaccines prevent
<p>Storytelling</p> <ul style="list-style-type: none"> • Personal stories and anecdotes are powerful communication tools

Adapted from: McClure CC, Cataldi JR, O’Leary ST. *Clin Ther.* 2017;39(8):1550-1562.²

Clinicians should encourage the use of health technology in helping improve vaccination rates; this can include media such as the internet, email, text messages, social media, and electronic health records.³³ Technology can be used to help communicate accurate vaccine information as well as prompt healthcare professionals to offer vaccines at the appropriate time.

Suggesting that patients can receive vaccines at their local pharmacy, in addition to primary care practices, can promote easier access and reduced costs to many patients. Many pharmacy organizations have implemented initiatives to help

increase vaccine rates; one example was the Project IMPACT pilot program, conducted by the American Pharmacists Association.³⁴ Project IMPACT used an integrated care model in participating pharmacies that allowed pharmacists to use a point-of-care immunization information system to review a patient’s vaccine history, identify unmet vaccine needs, and recommend appropriate vaccines. The pilot program resulted in a 41.4% increase in the number of vaccines administered and provided patients with additional opportunities for vaccine education.³⁴

Standards for adult immunization practice

In coordination with the National Vaccine Advisory Committee, the CDC has developed “Standards for Adult Immunization Practice” that apply to all healthcare professionals.³⁵ These standards are based on gaps in adult vaccination, including low adult vaccination rates, unawareness of vaccine necessity, benefits of healthcare professional vaccine recommendation, and missed vaccination opportunities due to lack of routine assessment. Many organizations have adopted alerts or other tracking methods for immunization schedules within the electronic medical record, which can be an effective way to implement routine vaccine assessment.

The primary recommendations of the Standards for Adult Immunization Practice are as follows³⁵:

1. Assess immunization status of all your patients at every clinical encounter.
 - a. Implement protocols and policies to ensure routine review.
2. Strongly recommend vaccines that patients need.
3. Administer or refer your patients to a vaccination provider.
 - a. Refer patients to other providers that offer vaccines you don’t stock.
4. Document vaccines received by your patients.
 - a. Participate in your state’s immunization registry.

National Adult Immunization Plan

The National Adult Immunization Plan (NAIP) is yet another public health initiative in the United States to reduce the burden of preventable infectious diseases by increasing adult vaccination rates.^{36,37} The focus of the NAIP is a set of recommendations intended for “federal and nonfederal partners” to assist with implementing systematic strategies to increase vaccination rates. The NAIP consists of 4 key goals, each supported by objectives and strategies.

Infrastructure goal: Strengthen the adult immunization infrastructure. Supporting objectives pertinent to primary care clinicians for this goal include monitoring and reporting trends in adult vaccine-preventable diseases and vaccination coverage, assessing vaccine safety, and increasing the use of

electronic health records to track immunization data.

Access goal: Improve access to adult vaccines. Primary care clinicians play a role in helping ensure adequate supply of vaccines at primary care clinic sites and helping to expand the adult immunization provider network.

Demand goal: Increase community demand for adult immunizations. Primary care clinicians can assist in educating and encouraging individuals and groups to be aware of and receive recommended vaccines.

Innovate goal: Foster innovation in adult vaccine development and vaccination-related technologies. NAIP objectives for vaccine innovation are primarily focused on vaccine development, distribution, storage, and delivery.

RESOURCES

For more information about helping patients receive recommended vaccines, including RZV, the following can be helpful resources for primary care clinicians:

1. American Academy of Family Physicians: Immunizations & Vaccines
2. American Geriatrics Society: Health in Aging Foundation
3. CDC: Strategies for Increasing Adult Vaccination Rates
4. National Quality Forum: Addressing Performance Measure Gaps for Adult Immunizations

SUMMARY

Shingles is a common vaccine-preventable disease in older adults and is associated with significant morbidity. RZV is a highly effective vaccine to protect against shingles and PHN in patients age 50 and older, and clinicians should recommend RZV to all eligible patients. While many individuals in the United States exhibit some degree of vaccine hesitancy, primary care clinicians are uniquely positioned to help improve vaccination rates. Implementing effective strategies to communicate accurate information about vaccines can help clinicians overcome patients' concerns and misconceptions. Partnering with organizations to improve vaccine access for minority and underserved populations can help improve patient outcomes and meet national goals for vaccination. ●

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