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# Focus on Shingles and the Shingles Vaccines

- by Allen Lefkovitz

The current estimates from the Centers for Disease Control and Prevention (CDC) are that one in three persons in the United States and 50% of adults 85 years or older will develop shingles (aka herpes zoster). Shingles is a painful, localized skin rash that is caused by the same virus as chickenpox [i.e., the varicella zoster virus (VZV)]. Following chickenpox, VZV remains in the body, but may reactivate many years later resulting in shingles. Shingles is generally characterized by pain followed by a rash on one side of the body (usually in one or two areas called dermatomes). The rash goes on to develop into fluid-filled blisters that typically scab over in 7 to 10 days, and then gradually resolve in 2 to 4 weeks. Beyond pain and itching, other symptoms of shingles may include fever, headache, sensitivity to light, and/or nausea.

While exposure to someone with shingles does not increase your risk of shingles, individuals who have never had chickenpox and who have never been vaccinated for chickenpox are at risk of contracting VZV. Most cases of shingles occur in adults 50 years of age and older. In addition to those who are not vaccinated for shingles, others at greater risk for developing shingles are individuals with weakened immune systems such as those:

- with cancer, especially leukemia or lymphoma
- with human immunodeficiency virus
- who have undergone bone marrow or organ transplantation, or
- who are taking immunosuppressant medications (e.g., corticosteroids, chemotherapy, anti-rejection medications).

The risk of complications associated with shingles also increases with age. Complications associated with shingles include, but are not limited to the following:

| | |
|---|---|
| **Postherpetic neuralgia (PHN)** | **Scarring** |
| **Bacterial skin infections** *(e.g., Staphylococcus aureus)* | **Vision and/or hearing impairment** |
| **Pneumonia** | **Social isolation** |
| **Brain inflammation** | **Hepatitis** |
| **Weakness or paralysis** | **Death** |

PHN is the most common complication of shingles and may occur in up to 20% of individuals with shingles. PHN involves persistent pain in the area where the rash used to be and can last for weeks or months, and occasionally for several years.

Although most individuals will only develop shingles once, it can recur. Recent estimates are that 1 million Americans develop shingles each year, but with the continued advancement of vaccines, shingles is now considered a “vaccine-preventable disease”.

Zostavax, a live attenuated zoster vaccine, became available in May 2006 and was the only vaccine available

*Continued on next page >*

**Inside This Issue**

for more than a decade. In October 2017 the US Food and Drug Administration (FDA) approved Shingrix, a new recombinant zoster vaccine that includes an adjuvant to boost the body's response to the vaccine. Furthermore, in January 2018, the Advisory Committee on Immunization Practices (ACIP) published updated recommendations for use of the herpes zoster vaccines including:

| | |
|---|---|
| 1 | Shingrix is recommended for the prevention of shingles and its complications for healthy adults age 50 years and older. |
| 2 | Shingrix is recommended for healthy adults who **previously** were vaccinated with Zostavax. |
| 3 | Shingrix is **preferred over** Zostavax for the prevention of shingles and its complications. |
| 4 | Zostavax may still be used to prevent shingles in healthy adults 60 years and older, such as with someone allergic to Shingrix, or when they cannot wait for vaccination and Shingrix is unavailable. |

Since the approval of a second shingles vaccine, numerous vaccination errors have been reported due to mix-ups between products. Some of the differences between Shingrix and Zostavax are outlined in the chart below to assist in avoiding shingles vaccine errors.

| | Shingrix (RZV) | Zostavax (ZVL) |
|---|---|---|
| **Vaccine Type** | Recombinant, adjuvanted | Live |
| **Storage** | Refrigerator | Freezer; may be kept in refrigerator for a maximum of 3 days |
| **Dosing** | 2 doses (0.5 mL each) administered intramuscularly given 2 to 6 months apart | 1 dose (0.65 mL) administered subcutaneously |
| **Recommended Age** | ≥ 50 years | ≥ 60 years |

While Zostavax demonstrated a 64% reduction in shingles for those 60 to 69 years of age, and a 38% reduction for those 70 years and older, the clinical trials for Shingrix revealed a 97.4% reduction in shingles for those 60 to 69 years of age and a 91.3% reduction for those 70 years and older. Additionally, Shingrix reduced PHN by about 90% while Zostavax reduced PHN by about 60%.

The most common adverse effects for both shingles vaccines include pain, redness, and swelling at the injection site, and headache. One in six individuals vaccinated with Shingrix experienced side effects (e.g., swelling, muscle pain) that prevented them from doing regular activities (compared to < 1% with Zostavax), but with both shingles vaccines, side effects typically resolve within a couple of days.

**Treating Shingles**

When shingles does occur, oral antiviral medications [i.e., Zovirax (acyclovir), Famvir (famciclovir), or Valtrex (valacyclovir)] are commonly prescribed to help shorten the duration of symptoms, but they must be started as soon as possible after the rash appears (i.e., within 48 hours) in order to have an effect. Adequate pain control is also important and may include use of analgesics such as acetaminophen, non-steroidal anti-inflammatory drugs (e.g., ibuprofen), tricyclic antidepressants (e.g., nortriptyline), anticonvulsants (e.g., carbamazepine, gabapentin), or in the case of severe pain, opioids (e.g., morphine). Prevention with vaccination remains the best defense against shingles and its potentially devastating complications.

Additional information on shingles is available at **www.cdc.gov/shingles/**.

# Stronger Fluoroquinolone Warnings

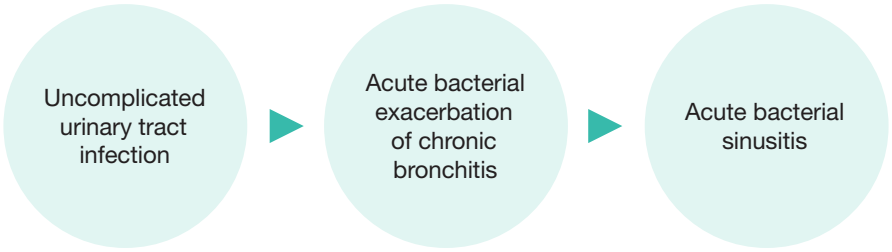
- by Mary Mehrabian

On July 10, 2018, the Food and Drug Administration (FDA) issued another warning for the fluoroquinolone antibiotic class (e.g., levofloxacin, ciprofloxacin, moxifloxacin). A stronger warning was placed on two adverse effects: hypoglycemia and mental health effects. The FDA also mandated consistency across all oral and injectable fluoroquinolone labeling for these adverse effects.

Previous warnings associated with fluoroquinolones encompassed the link between fluoroquinolones and disabling and potentially permanent effects involving tendons, muscles, joints, nerves, and the central nervous system (e.g., tendinitis, tendon rupture, peripheral neuropathy), and risk for worsening symptoms in those with myasthenia gravis.

The prescribing information previously included the risk of hypoglycemia, but all manufacturers now must include a statement that there is a potential risk of hypoglycemia with coma. Also prior to this change, the prescribing information had mental effects listed under CNS effects with differing lists of effects between the different fluoroquinolones. All fluoroquinolones will now list the following mental health side effects separate from the CNS side effects: disturbances in attention, disorientation, agitation, nervousness, memory impairment, and delirium.

When considering antibiotic therapy, and due to the potentially serious adverse effects associated with fluoroquinolones, their use should be limited to patients who have no alternate treatment options for the following indications:




When taking care of the frail elderly and diabetics receiving antidiabetic medications while on fluoroquinolone therapy:

| Prescribers should | Nursing should |
|---|---|
| • ensure frequent blood glucose (BG) monitoring for diabetics<br>• adjust antidiabetic medication (e.g., glipizide, insulin) as appropriate<br>• discuss hypoglycemia management and prescribe medications for managing symptoms (e.g., glucagon)<br>• perform a thorough evaluation of the cause of delirium, if present<br>• stop fluroquinolone therapy immediately, and if warranted, switch to another antibiotic class if symptoms are present | • monitor for signs and symptoms of hypoglycemia (e.g., shaking, hunger, anxiety, palpitations, sweating, dizziness)<br>• offer snacks when appropriate<br>• closely monitor food intake (e.g., make sure meals are not missed)<br>• check BG frequently<br>• ensure the availability of emergency supplies to treat hypoglycemia (e.g., glucose tablets, glucagon)<br>• monitor for new onset and/or worsening of mental health symptoms |

As with any drug therapy, the risks versus benefits of fluoroquinolone therapy should be considered prior to initiating drug therapy, and monitoring should be in place during therapy to decrease the potential for adverse consequences.

Additional information about this new warning is available at **https://www.fda.gov/Drugs/DrugSafety/ucm611032.htm**

# NEW Generic Medications

- by Allen Lefkovitz

| Generic Name | Brand Name | Date Generic Available |
|---|---|---|
| **Tadalafil 20 mg Tablet** | Adcirca® Tablet | 8/10/18 |

# NEW Drug

## Xerava™ for Injection

- by Dave Pregizer

| **Brand Name** (Generic Name) | **Xerava [ZER-a-va] (eravacycline) [ER-a-va-SYE-kleen]** |
|---|---|
| **How Supplied** | 50 mg of eravacycline as a lyophilized powder in a single-dose vial for reconstitution and further dilution |
| **Therapeutic Class** | A tetracycline class antibacterial |
| **Approved Indication** | Treatment of complicated intra-abdominal infections in adults 18 years of age and older |
| **Usual Dosing** | 1 mg/kg by IV infusion over 60 minutes every 12 hours for a total duration of 4 to 14 days. Severe Hepatic Impairment: 1 mg/kg every 12 hours on Day 1, then 1 mg/kg every 24 hours starting on Day 2 for a total duration of 4 to 14 days. Concomitant use with a strong CYP3A inducer: 1.5 mg/kg every 12 hours for a total duration of 4 to 14 days. |
| **Select Drug Interactions** | Strong CYP3A inducers (e.g., rifampin) decrease the exposure of eravacycline. Increase eravacycline dose with concomitant use of a strong CYP3A inducer. Use with anticoagulant therapy may require reduction of anticoagulant dosage and increased monitoring. |
| **Most Common Side Effects** | Infusion site reactions, nausea, and vomiting |
| **Miscellaneous** | Avoid use with known hypersensitivity to tetracyclines. Permanent tooth discoloration and enamel hypoplasia may occur if used during tooth development (last half of pregnancy, infancy, and childhood to the age of 8 years). Xerava is compatible with 0.9% Sodium Chloride Injection but compatibility with other drugs and infusion solutions has not been established. |
| **Website** | xerava.com |



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