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Pharmacy Pearls

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Case Presentation

A 65 year old female presents to her primary care provider for an annual influenza vaccination. She is interested in receiving the high dose flu vaccine but is slightly concerned because she was told by a friend that even though it is highly effective in older adults, there are more side effects associated with it.

To Treat or Not to Treat?

- The CDC recommends treating **high risk patients** with confirmed or suspected influenza
- Benefit is greatest when antiviral treatment is **within 48 hours** of symptom onset
- Treatment **should not wait** for laboratory confirmation of influenza

Prophylaxis

To limit potential for resistance, the CDC does not recommend routine use of antiviral prophylaxis, however, it may be considered in high risk populations

A Word on Tamiflu

- FDA approved for **treatment** and **prophylaxis** of influenza
- Nausea and vomiting are common adverse effects
- As of Dec 2016, Tamiflu is available as **generic oseltamivir** 30 mg, 45 mg, 75 mg capsules

Influenza 2017-2018 Season

For a complete summary visit https://www.cdc.gov/flu/professionals/acip/2017-18summary.htm

Older Adults (≥65 years)

- **Any** age-appropriate inactivated influenza vaccine formulation (standard-dose or high-dose, trivalent or quadrivalent, unadjuvanted or adjuvanted) or recombinant influenza vaccine are acceptable options
- Studies show at least some evidence of benefit of Fluzone (high-dose, trivalent), Fluad (adjuvanted, trivalent) and FluBlok (recombinant, quadravalent) ***over*** standard-dose, unadjuvanted vaccine. However, no data comparing Fluzone, Fluad, and FluBlok with one another among older adults is available. **This prevents recommending one of these three vaccines over another for this population.** Recent data:

FluBlok vs. standard-dose, quadravalent
In an exploratory analysis of data from a single-season randomized trial among 8,604 adults aged ≥50 y, FluBlok demonstrated 30% greater relative efficacy over standard-dose, quadravalent (95% CI 10-47).

Fluzone HD vs. standard-dose, trivalent
Fluzone HD met prespecified criteria for superior efficacy in age ≥65 y in a two-season randomized control trial among 31,989 adults (relative efficacy 24%, 95% CI 9.7 – 36.5).

Fluad vs. standard-dose, trivalent
Fluad was more effective among 227 adults aged ≥65 y in an analysis from an observational study (relative efficacy 63%, 95% CI 4 – 86).

Some High-dose Vaccine Notes

- Fluzone HD vaccine contains 4 times the amount of antigen, intended to create a stronger immune response in older adults.
- Safety of high-dose vs. standard-dose vaccine is similar. While some adverse events (injection-site reaction, headache, muscle pain, malaise) were reported more frequently with high-dose, most have minimal or no adverse effects.

FluMist (LAIV4) Nasal Spray

Continues to be **not recommended** for the 2017-2018 season due to lack of efficacy.

Updates in Pregnancy

Administration can occur at any time during pregnancy, before and during the influenza season *(data are limited for the first trimester)*.

Reminder

New York State Public Health Law prohibits (with select exceptions) administration of vaccines containing more than trace amounts of thimerosal to women who know they are pregnant and children <3 years.

Immunity

- It takes about 2 weeks for antibodies to develop after vaccination.
- Immunity lasts at least 6-8 months in non-elderly patients.
- Studies show that 2 vaccine doses provide better protection than 1 dose during the first season a child is vaccinated.
- Some evidence suggests a decline in effectiveness late season, primarily among patients > 65 years.
- Increasing dysregulation of the immune system with aging likely contributes to the increased likelihood of serious complications of influenza infection.
- Limited or no increase in antibody response is reported in elderly adults when a second dose is administered during the same season.

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Not Egg-cited about Allergies?

Reaction to Eggs	Action / Management
Hives	Any licensed and recommended vaccine appropriate for age and health status may be administered with typical supervision
Symptoms other than hives / epinephrine required	Any licensed and recommended influenza vaccine may be administered in a medical setting under the supervision of a provider able to manage severe allergic conditions
Previous severe allergic reaction **to influenza vaccine**	Future receipt of the vaccine is contraindicated

- FluBlok is the only egg-free product, however, severe reactions to other formulations is unlikely
- It is no longer recommended to observe egg allergic patients for 30 minutes *(however, vaccine providers should consider observing patients for 15 minutes after any vaccine to decrease the risk for injury should syncope occur)*

Influenza Vaccine Composition for 2017 – 2018 Season

Trivalent	Quadrivalent
• **A**/Michigan/45/2015 (H1N1)pdm09–like virus, • **A**/Hong Kong/4801/2014 (H3N2)–like virus, and • **B**/Brisbane/60/2008–like virus (Victoria lineage)	• Same three antigens as trivalent **PLUS** • **B**/Phuket/3073/2013–like virus (Yamagata lineage)

Note: Compared with 2016–17, the composition for 2017–18 represents a change in the influenza A(H1N1)pdm09–like virus

See page 3 for comprehensive vaccine table

Available Vaccines for the 2017-2018 Influenza Season

Note: No preferential recommendation is made for one influenza vaccine product over another for persons for whom more than one licensed, recommended product is appropriate.

Name	Vaccine Strains	Age Range	Preservative free?	Contains latex?
Inactivated influenza vaccines, quadrivalent, standard-dose (IIV4s)				
Afluria Quadrivalent	Quadrivalent			
0.5mL prefilled syringe		≥18 years	Yes	No
5.0mL multidose vial		≥18 years (18-64 years by jet injector)	No	No
Fluarix Quadrivalent	Quadrivalent			
0.5mL prefilled syringe		≥3 years	Yes	No
FluLaval Quadrivalent	Quadrivalent			
0.5mL prefilled syringe		≥6 months	Yes	No
5.0mL multidose vial		≥3 years*	No	No
Fluzone Quadrivalent	Quadrivalent			
0.25mL prefilled syringe		6-35 months	Yes	No
0.5mL prefilled syringe		≥3 years	Yes	No
0.5mL single-dose vial		≥3 years	Yes	No
5.0mL multidose vial		≥3 years*	No	No
Inactivated influenza vaccine, quadrivalent, standard-dose, cell culture-based (ccIIV4)				
Flucelvax Quadrivalent	Quadrivalent			
0.5mL prefilled syringe		≥4 years	Yes	No
5.0mL multidose vial		≥4 years	No	No
Inactivated influenza vaccine, quadrivalent, standard-dose, intradermal (IIV4)				
Fluzone Intradermal Quadrivalent	Quadrivalent			
0.1mL single-dose prefilled microinjection system		18-64 years	Yes	No
Recombinant influenza vaccine, quadrivalent (RIV4)				
Flublok Quadrivalent	Quadrivalent			
0.5mL prefilled syringe		≥18 years	Yes	No
Inactivated influenza vaccines, trivalent, standard-dose (IIV3s)				
Afluria	Trivalent			
0.5mL prefilled syringe		≥5 years	Yes	No
5.0mL multidose vial		≥5 years (18-64 years by jet injector)	No	No
Fluvirin	Trivalent			
0.5mL prefilled syringe		≥4 years	No	Yes§
5.0mL multidose vial		≥4 years	No	No
Adjuvanted inactivated influenza vaccine, trivalent, standard-dose (aIIV3)				
Fluad	Trivalent			
0.5mL prefilled syringe		≥65 years	Yes	Yes§
Inactivated influenza vaccine, trivalent, high-dose (IIV3)				
Fluzone High-Dose	Trivalent			
0.5mL prefilled syringe		≥65 years	Yes	No
Recombinant influenza vaccine, trivalent (RIV3)				
Flublok	Trivalent			
0.5mL single-dose vial		≥18 years	Yes	No

These vaccines vary in the amount of vaccine HA antigen they contain (15µg of each antigen for standard-dose IM vaccines, 9µg of each antigen for the intradermal vaccine, 60µg of each antigen for high-dose vaccines, and 45µg of each antigen for recombinant vaccines)

Note: No preferential recommendation is made for one influenza vaccine product over another for persons for whom more than one licensed, recommended product is available.

*May be approved for younger ages, but per NYS Public Health Law, cannot be given to <3 years due to presence of thimerosal

§Syringe tip caps on prefilled syringes may contain natural rubber latex