

Vax and Relax

An Immunization Update for Pharmacists and Technicians 2023
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Financial Disclosure

We have not had a financial relationship over the past 24 months with any commercial sponsor with a vested interest in this presentation.

Pharmacist Objectives

- Compare previous guideline standards with the current recommendations for administration
- Identify patients who are now eligible for vaccination under new practice guidelines
- Apply effective patient counseling to overcome vaccine hesitancy

Technician Objectives

- Identify vaccines approved for administration under the current guidelines
- Demonstrate methods for proper vaccine handling and storage
- Apply vaccine advocacy techniques to overcome vaccine hesitancy

Influenza

Case Study

A 70 year old female approaches the pharmacy to receive her yearly flu vaccine. She states she has a history of severe allergy to eggs.

Which vaccine should this patient receive today?

- A. Inactivated adjuvanted influenza vaccine (Fluad)
- B. Inactivated influenza vaccine (Fluzone)
- C. Inactivated influenza vaccine (Flucelvax)
- D. Live attenuated influenza vaccine (Flumist)
- E. She can receive any age appropriate vaccine

Influenza Vaccine Available for 2023-2024

Inactivated

- 5 products on the market for ages 6 months+
- 2 products for 65+
 - 1 high dose
 - 1 adjuvant
- Recombinant vaccine (Flublok) is 18+

Live/Attenuated

- LAIV-4 vaccine (FluMist)
 - Approved for ages 2-49
 - Administered nasally

Influenza Strains 2023-2024⁴

Strains in 2023-2024 egg-based vaccines

- **A/Victoria/4897/2022(H1N1)pdm09-like virus**
- A/Darwin/9/2021 (H3N2)-like virus
- B/Austria/1359417/2021-like virus (B/Victoria lineage)
- B/Phuket/3073/2013-like virus (B/Yamagata lineage)

Strains in 2023-2024 cell- or recombinant-based vaccines

- **A/Wisconsin/67/2022 (H1N1)pdm09-like virus**
- A/Darwin/6/2021(H3N2) like virus
- B/Austria/1359417/2021-like virus (B/Victoria lineage)
- B/Phuket/3073/2013-like virus (B/Yamagata lineage)

ACIP Recommendations for 2023-2024⁵

- Preferential for patients over 65 (must be approved by CDC director to become policy at time of this slide)
 - **Inactivated influenza vaccine (FluzoneHD)**
 - Contains 4 times the antigen as regular vaccine
 - **Inactivated recombinant influenza vaccine (Flublok)**
 - Contains 3 times the antigen dose as regular vaccine
 - **Inactivated adjuvanted influenza vaccine (Fluad)**
 - Contains same amount of antigen as regular vaccine, but uses an adjuvant to boost the immune response
- Timing of Vaccination
 - July and August not recommended for most people

Change ACIP Recommendation for Egg-Allergy

Previous Recommendation

All people 6 months and older with egg allergy should be vaccinated for flu

PLUS

Safety measures recommended for administration with egg-based flu vaccine to people who have had severe allergic reactions to egg.

Current Recommendation⁵

The ACIP voted that people with egg allergy **may receive any flu vaccine (egg-based or non-egg based)** that is otherwise appropriate for their age and health status.

Additional **safety measures are no longer recommended** for flu vaccination beyond those recommended for receipt of any vaccine.

Case Study

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- E. She can receive any age appropriate vaccine

COVID-19

Case Study

A 67 year old male comes to the consult window wondering if he could get another COVID vaccine since he will be traveling overseas soon. He reports that he has type 2 diabetes, hypertension, high cholesterol and atrial fibrillation. He received the monovalent Pfizer vaccines 2/17/21, 3/10/21, and 10/4/21 as primary and booster administrations respectively. He received the bivalent Pfizer vaccine on 10/7/22. Which vaccine listed below can this patient receive? (Select all that apply)

- A. Pfizer COVID-19 mRNA vaccine
- B. Moderna COVID-19 mRNA vaccine
- C. Janssen COVID-19 adenovirus vector vaccine
- D. COVID-19 subunit vaccine (Novavax)
- E. This patient is not eligible

COVID Vaccine History

- Prior to May 2023 "vaccinated" meant:
 - 2 monovalent primary series of either mRNA vaccine **OR**
 - 1 dose of Janssen COVID-19 adenovirus vector vaccine
- On April 18, 2023 the original monovalent mRNA vaccines was discontinued
- On May 6, 2023 the Janssen vaccine was removed from the market
- On September 11, 2023 the mRNA bivalent versions were removed from the market

Covid Guideline Updates²¹

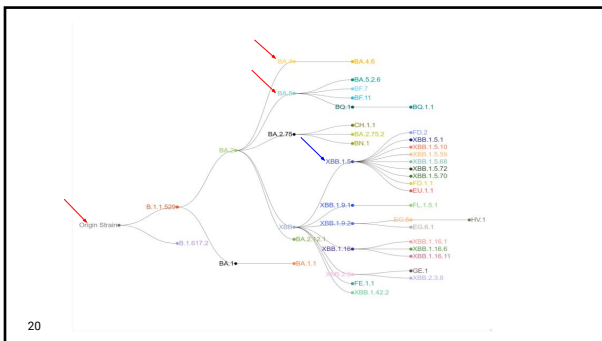
- Per press release from CDC on Sept 12, 2023: All individuals 6 months and older are recommended to receive an updated COVID mRNA vaccine
- New mRNA vaccines are commercially available
 - Monovalent Omicron variant XBB.1.5
 - Pre-filled syringes available!
- Must be 2 months from previous mRNA vaccine

COVID Guideline Change for Primary Series

Currently, the ACIP/CDC recommends that all unvaccinated individuals ages 6 years and up receive one dose of the most current version of mRNA vaccine.¹

Covid Guideline Updates

- History of boosters
 - Fall 2021 monovalent mRNA boosters recommended for ages 12 and up
 - Fall/Winter 2022 bivalent mRNA boosters released to market and recommended for all ages (original+BA.4/BA.5)
 - An additional mRNA bivalent booster was encouraged for those 65 and older during summer 2023



Who is up to date?¹

- **Ages 6 years and up**
 - 1 dose of the most updated version of mRNA vaccine
 - 2 months after previous dose
- **Age 5 years**
 - Pfizer: 1 updated dose
 - Moderna: 2 doses 4 to 8 weeks apart
- **Ages 6 months to 4 years**
 - Pfizer: 3 doses including 1 current dose
 - Moderna: 2 doses including 1 current dose

COVID-19 subunit vaccine (Novavax)³

- Approved under EUA July 13, 2022
 - Ages 12 and up
- Protein subunit vaccine
- Primary series
 - 0.5 mL given in two doses 3 to 8 weeks apart
- Booster
 - 0.5 mL given as a single dose at least 6 months after primary series
 - Not approved for ages 12-17 years
 - Updated version expected to be approved later this year

COVID-19 subunit vaccine³

- | | |
|--|---|
| <ul style="list-style-type: none">• Common side effects<ul style="list-style-type: none">○ Fatigue/malaise○ Pain at inj site/myalgia○ Nausea/vomiting | <ul style="list-style-type: none">• Storage<ul style="list-style-type: none">○ Unopened vials 36-46 degree F○ Opened vials 36-77 degree F for up to 12 hours• Swirl vial and administer IM |
|--|---|

Case Study

A 67 year old male comes to the consult window wondering if he could get another COVID vaccine since he will be traveling overseas soon. He reports that he has type 2 diabetes, hypertension, high cholesterol and atrial fibrillation. He received the monovalent Pfizer vaccines 2/17/21, 3/10/21, and 10/4/21 as primary and booster administrations respectively. He received the bivalent Pfizer vaccine on 10/7/22. Which vaccine listed below can this patient receive? (Select all that apply)

- A. Pfizer COVID-19 mRNA vaccine
- B. Moderna COVID-19 mRNA vaccine
- C. Janssen COVID-19 adenovirus vector vaccine
- D. COVID-19 subunit vaccine (Novavax)
- E. This patient is not eligible

Respiratory Syncytial Virus (RSV)

Case Study

The same 67 year old male, who is going to get the updated Covid 19 mRNA vaccine, may also need other vaccines. You know he has a medical history of type 2 diabetes, hypertension, high cholesterol and atrial fibrillation. Would you also have a conversation with him in regards to the new vaccines available for RSV?

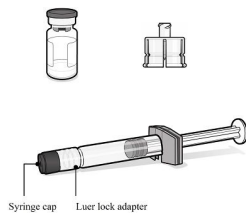
- a. Yes
- b. No

New Vaccines Available for RSV

- **RSV adjuvanted vaccine (AREXVY)¹⁶**
 - Manufactured by GSK
 - **RSV vaccine (ABRYVO)¹⁶**
 - Manufactured by Pfizer
- Both indicated for active immunization for the prevention of lower respiratory tract disease (LRTD) caused by respiratory syncytial virus (RSV) in individuals 60 years of age and older.
- **June 21, 2023 ACIP recommended these persons receive a single dose of RSV vaccine, using shared clinical decision making.¹⁷**

Storage, Handling and Schedule

- Both refrigerated
- Both are given IM
- Both reconstituted using the supplied diluent
- Both 0.5 mL dose



Shared Clinical Decision Making ¹⁷

- Providers and patients should consider the risk for RSV infection
- Most likely to benefit from vaccination:
 - Chronic obstructive pulmonary disease (COPD)
 - Asthma
 - Coronary artery disease (CAD)
 - Congestive heart failure (CHF)
 - Diabetes
 - Long term care (LTC) resident
 - Persons who are frail, or advanced age

Adverse Effects

- Common but generally well tolerated
 - Injection site reactions
 - Fatigue, headache
- Of Note:
 - 6 cases of inflammatory neurologic events (including GBS, ADEM, and others) were reported after RSV vaccination in clinical trials. Whether these events occurred due to chance, or whether vaccination increases the risk for inflammatory neurologic events is currently unknown.

Case Study

The same 67 year old male, who is going to get the updated Covid 19 mRNA vaccine, may also need other vaccines. You know he has a medical history of type 2 diabetes, hypertension, high cholesterol and afib. Would you also have a conversation with him in regards to the new vaccines available for RSV?

- a. Yes
- b. No

Pneumococcal

Case Study

A 67 year old male returns from his vacation and is picking up his refills. You know he has a medical history of type 2 diabetes, hypertension, high cholesterol and afib. Upon searching in the SDHS you notice he has not had a pneumonia vaccine. Which vaccine listed below would you recommend he receive? (Select all that apply)

- A. PCV13
- B. PCV15 followed by PPSV23 in 1 yr
- C. PPSV23 followed by PCV15 in 1 yr
- D. PCV20
- E. None, patient doesn't meet requirements

Previous Pneumococcal Guidelines for Adults

- Patients 65 years old and up
 - 1 dose of PCV13 and 1 dose of PPSV23 separated by 1 year
- Patients aged 19 through 64 with qualifying diagnosis
 - e.g. Chronic lung disease, diabetes, alcoholism, immunocompromised
 - PCV13/PPSV23 1 year apart
 - Up to 2 doses of PPSV23 given in a lifetime given 5 years apart

PCV20 (Pevnar20)⁶

- Approved June 8, 2021
- Same coverage as PCV13 + 7 more *S. pneumoniae* serotypes
- Side effects
 - Inj site reaction/myalgia
 - Fatigue
 - Headache
- Storage
 - 36-46 degree F lying flat
- Prep for admin
 - Shake well until a homogenous white suspension forms
 - Administer IM

PCV15 (Vaxneuvance)⁷

- Approved July 18, 2021
- Covers 15 *S. pneumoniae* serotypes
- Side Effects
 - Inj site reactions/myalgia
 - Fatigue
 - Headache
- Storage
 - Store 36-46 degrees F
 - Protect from light
- Prep for admin
 - Shake well until an opalescent suspension forms
 - Inject IM

Pneumonia Guideline Updates for Ages 65+⁸

- Unvaccinated
 - 1 dose of PCV20 **OR**
 - 1 dose of PCV15 and 1 dose of PPSV23
 - Doses separated by 1 year
- Vaccinated with PPSV23
 - 1 dose of PCV20 **OR** PCV15 1 year after
- Vaccinated with PCV13
 - 1 dose of PCV20 **OR** PPSV23 1 year after

Pneumonia Guideline Updates for Ages 65+ (cont.)

- Vaccinated with PCV13 and PPSV23 BEFORE 65 years old
 - 1 dose PCV20 5 years after PCV13 **OR**
 - 1 dose PPSV23 1 year after PCV13 and 5 years after last PPSV23
- Vaccinated with PCV13 at any age and PPSV23 on or after 65
 - 1 dose PCV20 with shared clinical decision making
 - 5 years after last pneumonia vaccine

Pneumonia Guidelines Updates for Ages 19-64⁸

- Unvaccinated
 - Chronic medical condition or other risk factors
 - 1 dose of PSV20 **OR**
 - 1 dose of PSV15 and 1 dose of PPSV23
 - Separated by a year
- Previously vaccinated with PPSV23
 - 1 dose of PCV20 **OR** PCV15 1 year following PPSV23
- Previously vaccinated with PSV13
 - 1 dose of PCV20 **OR** PPSV23
- Previously vaccinated with PPSV23 AND PCV13
 - 1 dose of PCV20 5 years after last dose

Overwhelmed with Information?
Download
“PneumoRecs VaxAdvisor” app
and make clinical decisions that much simpler!⁸



Case Study

A 67 year old male returns from his vacation and is picking up his refills. You know he has a medical history of type 2 diabetes, hypertension, high cholesterol and afib. Upon searching in the SDIIS you notice he has not had a pneumonia vaccine. Which vaccine listed below would you recommend he receive? (Select all that apply)

- A. PCV13
- B. PCV15 followed by PPSV23 in 1 yr
- C. PPSV23 followed by PCV15 in 1 yr
- D. PCV20
- E. None, patient doesn't meet requirements

Measles, Mumps and Rubella (MMR)

Case Study

A patient comes into the pharmacy to pick up a prescription and shares they started a new job as an aid at the nursing home. They are very excited to start, but first the nursing home was requiring proof of their MMR immunizations. The patient was born after 1957 and did not receive an MMR vaccine, nor did she recall ever having had measles, mumps or rubella. They did draw a titer, which was negative. What can you share with this patient?

- A. They were born before 1957, so they are not eligible for an MMR vaccine
- B. They should receive 2 doses of either MMR vaccine at least 4 weeks apart
- C. They should receive 1 dose of either MMR vaccine
- D. They should receive 3 doses of either MMR vaccine

Approved Vaccines

- MMR vaccine (M-M-R II)¹⁰
 - Merck
 - Only combination product used in USA until PRIORIX
 - Administered IM or SubQ
 - Stored both refrigerated or frozen
 - must be refrigerated before being reconstituted
 - Once reconstituted, it is a clear, yellow liquid
- MMR vaccine (PRIORIX)¹¹
 - GSK
 - Approved June 2022
 - Administered SubQ only
 - Stored in Refrigerator only
 - Should be clear peach- to fuschia pink- colored once reconstituted

Adult Vaccine Schedule updates for MMR

Previous Recommendations

- No evidence of immunity: **1 dose**
 - Evidence of immunity
 - Born before 1957
 - Documentation of receipt of MMR vaccine
 - Laboratory evidence of immunity or disease

Current Recommendations

- Health Care personnel born before 1957 with no evidence of immunity **consider** 2-dose series at least 4 weeks apart for measles and mumps (only 1 dose for rubella)
- OR**
- Born after 1957 with no evidence of immunity: administer 2-dose series at least 4 weeks apart for measles and mumps (only 1 dose for rubella)

Case Study

A patient comes into the pharmacy to pick up a prescription and shares they started a new job as an aid at the nursing home. They are very excited to start, but first the nursing home was requiring proof of their MMR immunizations. The patient was born after 1957 and did not receive an MMR vaccine, nor did she recall ever having had measles, mumps or rubella. They did draw a titer, which was negative. What can you share with this patient?

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- C. They should receive 1 dose of either MMR vaccine
- D. They should receive 3 doses of either MMR vaccine

Hepatitis B

Case Study

A 36 year old female comes to the pharmacy for a recommendation for a multivitamin. She says that she works as a teacher in the local area. Her medical history includes hypothyroidism. She would like you to review her vaccination records to see if she is up to date. Would you recommend the hepatitis vaccine in this patient?

- A. No, based on age she was probably vaccinated as a baby
- B. No, she doesn't have a job that necessitates getting the vaccine
- C. Yes, based on her age
- D. Yes, she has a qualifying condition

Previous Hepatitis B Guidelines

- Universal vaccination of infants began in 1991
- Vaccination recommended for those with certain risk factors
 - I.e. Chronic liver disease, HIV, or healthcare worker with exposure risk

Updated Hepatitis B Guidelines

- Cases were increasing despite universal infant vaccination¹²
- Determined by the ACIP Hepatitis Work Group
 - Via systematic review of literature from Jan 2006-Sept 2020
- Findings
 - Coverage was 30% in those 19 and over
 - 50% acute cases were 30-49 years old

Updated Hepatitis B Guidelines¹³

- All unvaccinated adults 19 to 59 years old
 - No preference on product
- 60 years and over have low rates of incidence
 - Recommend if a patient meets risk-based criteria
 - e.g. Chronic Liver Disease, regular needle use, HIV infection

Product Information

- Recombinant, adjuvanted HepB vaccine (HepBisav-B)
 - Recombinant, adjuvanted
 - 2 doses: 8 weeks apart
 - Not recommended in pregnancy
- HepB/HepA recombinant vaccine (Twinrix)
 - 3 doses normally
 - 4 doses accelerated

Product information (cont.)

- Recombinant hepB vaccine (Engerix-B) (Recombivax HB)
 - Ages 18-19 must receive pediatric formulation
 - Formulation available for dialysis patients
- Schedule: 0, 1 and 6 months or 4 weeks, 8 weeks, and 16 weeks

Trivalent HepB Vaccine (PreHevbrio)¹⁴

- Approved December 2021
- First trivalent recombinant vaccine
 - Do not give with any other vaccines
 - Not recommended in pregnancy
 - Preservative free
- 3 dose series
- Statistically significant seroprotection in 45+

Case Study

A 36 year old female comes to the pharmacy for a recommendation for a multivitamin. She says that she works as a teacher in the local area. Her medical history includes hypothyroidism. She would like you to review her vaccination records to see if she is up to date. Would you recommend the hepatitis vaccine in this patient?

- A. No, based on age she was probably vaccinated as a baby
- B. No, she doesn't have a job that necessitates getting the vaccine
- C. Yes, based on her age
- D. Yes, she has a qualifying condition

Combating Vaccine Hesitancy

Case Study

A parent presents to have their child immunized against the flu. While filling out the paperwork, the parent discloses that their daycare is requiring the vaccine in order for their child to continue to attend daycare. The parent is very upset and has been very vocal about how they will never get another flu shot because the last time they did they got the flu.

I am going to challenge you to think about what you might say to this parent.

Vaccine Hesitancy

- The WHO declared vaccine hesitancy as one of the top 10 threats to global health in 2019¹⁸
- Pharmacists are in a perfect position to address hesitancy with patients by providing accurate information from reliable sources.¹⁹
 - **Be Prepared**
 - **Build Trust**
 - **Make your Recommendation Personal**

Be Prepared

- Having a strong understanding of the most current vaccine information will help you be confident in your conversations with patients and will help put patients at ease
- Stay current on recommendations and guidelines through CDC, APhA, IAC (Immunization Action Coalition)
- Use technology to help you
 - CDC vaccine schedules app
 - PnuemoRecs VaxAdvisor app

Build Trust

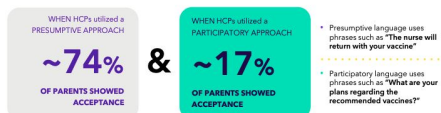
- Do not minimize or dismiss concerns
- Share facts and recommend reliable resources
- Be honest about what to expect
- You will not get through to everyone, and that is ok!

Make your Recommendation Personal

- Feel free to share your personal experiences, and if you can speak to it, why you got the vaccine yourself
- You can also speak to other's experiences if you haven't had a personal experience
- Emphasize why getting the vaccine should be especially important to that patient, such as an underlying condition or at risk family members
- Come from a place of true concern and care about their health

HCP RECOMMENDATIONS ON VACCINATIONS MAKE A DIFFERENCE¹

In a study analyzing 111 vaccine discussions in 9 practices¹:



PARENTS AND PATIENTS REPORT THE VALUE OF A PROVIDER RECOMMENDATION AND STRONGER RECOMMENDATIONS USING PRESUMPTIVE LANGUAGE ARE EFFECTIVE AT IMPROVING VACCINATION RATES¹

Study limitations: Study was limited to a single geographic location; direct observation of the provider-patient interaction may have provided non-natural communication.¹

References: 1. Oprea et al. Pediatrics. 2018; 141(5):e20171000. 2. Jackson RM et al. Ann Intern Med. 2020.

Examples of Recommendations

Mrs. Anderson, you recently had your 65th birthday! When can I schedule you for the new pneumonia vaccine, PCV20? It can prevent pneumonia infections and hospitalizations. I think it is very important for your health that you get the vaccine today. Protection from the vaccine doesn't start until you receive the vaccine.

Recommendation Examples Continued

It's time for your flu shot Abbie! I know it's not your favorite thing, but remember, it is easier to prevent a virus than treat it. We've already had confirmed cases in the area and I want you to be protected, I think you should get your flu shot today.

Recommendation Examples Continued

Margaret, it's so good to see you today! I would love to start your shingles vaccination series today so that we can prevent you from getting shingles like your brother. You keep talking about how miserable he is still. Why don't we get you on your way to protection today? Even better news, it's covered under Medicare D at no cost to you!

Resources Available

[How I Recommend Vaccination Video Series | CDC](#)

[About the Vaccine Conversations with Parents Campaign | CDC](#)

[Talking to Parents about Vaccines Materials | Conversations | CDC](#)

Case Study

What did you decide to say?

What led you to that decision?

Resources

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Questions?

Post-Test Questions

Pharmacists

How many doses of a mRNA COVID-19 vaccine would an unvaccinated adult need to be considered up to date?

- A. 1
- B. 3
- C. 5
- D. 7

Which recommendation would be most appropriate for a 41 year old male who is unvaccinated for hepatitis B under the new guidelines?

- a. Vaccination is not recommended as they were most likely vaccinated as an infant.
- b. Vaccination is not recommended as this patient is outside the recommended age range.
- c. A vaccination series is recommended for this patient.
- d. One dose of a hepatitis B vaccine is recommended as a booster.

A 67 year old comes to the pharmacy for a pneumococcal vaccination. He has Prevnar 13 at age 65. Select which vaccine would be appropriate to complete his series.

- I. PCV13
- II. PCV15
- III. PPSV23
- IV. PCV20

- A. III only
- B. IV only
- C. Both III and IV
- D. II only
- E. None of the above

Which patient would benefit from receiving a vaccine for MMR?

- A. A pregnant patient who has not been vaccinated.
- B. A patient born after 1957 with no evidence of immunity
- C. A nurse working in patient care who has received 2 doses of MMR
- D. A high school student who is going to college and has received 2 doses of MMRV as a child

A patient is turning 65 in one month, which vaccine is most appropriate to administer today?

- A. Inactivated adjuvanted influenza vaccine (Fluad)
- B. Inactivated influenza vaccine (Fluzone HD)
- C. Inactivated influenza vaccine (Afluria)
- D. Live attenuated influenza vaccine (Flumist)

Making a strong recommendation using personal experience is one way to offset vaccine hesitancy.

True or False

Technicians

Which product is NOT a vaccine FDA approved to prevent hepatitis B?

- A. Recombinant hepatitis B vaccine (Engerix B)
- B. Recombinant hepA/hepB vaccine (Twinrix)
- C. Recombinant adjuvanted hepatitis B vaccine (Heplisav-B)
- D. Recombinant hepatitis A vaccine (Havrix)

How should a box of PCV20 prefilled syringes be stored before use?

- a. Refrigerated and lying flat
- b. Room temperature and lying on its side
- c. Refrigerated and lying on its side
- d. Room temperature and lying flat

A patient, who has a confirmed severe egg allergy, can receive which flu vaccine?

- A. Inactivated adjuvanted influenza vaccine (Fluad)
- B. Inactivated influenza vaccine (Fluzone)
- C. Inactivated influenza vaccine (Flucelvax)
- D. Live attenuated influenza vaccine (Flumist)
- E. Any age appropriate vaccine

The new RSV vaccines should be kept in the freezer until they are administered.

True or False

A parent comes into the pharmacy to request a flu shot for their 16 year old child. When you ask the parent if they would like one as well, they reply, "The shot gave me the flu." What would be the most appropriate response?

- A. The vaccines are inactive and cannot pass the flu to you. Our pharmacist can give you more information.
- B. That's not true, the vaccines are not live.
- C. Why would you vaccinate your child if you believe that?
- D. None of the above
