

# Meeting the Mark: What's New in Adult Immunization?



WV Immunization Network (WIN) Conference  
June 10, 2022

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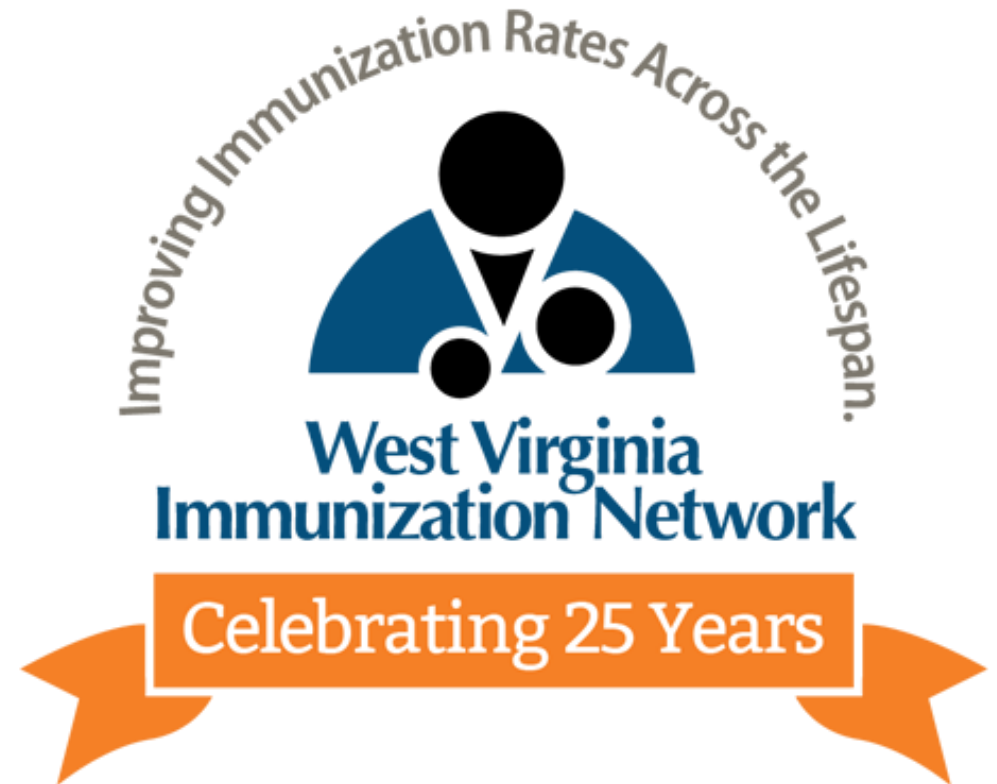
# Objectives



- Identify recent changes in ACIP Adult Vaccine Guidelines
  - Special focuses on Hepatitis, Pneumococcal, HPV, and Flu
- Discuss what's new with COVID 19 vaccines
- Identify evidence-based approaches to increasing adult vaccination in the practice setting.

# Disclosures

- ▶ No financial relationships with any commercial products referenced
- ▶ This presentation was developed on behalf of the West Virginia Immunization Network (WIN) for several healthcare provider audiences.



<https://wvruralhealth.org/programs/win/>

# 2022 ACIP Schedule: (endorsed by CDC, ACP, AAFP, ACOG, AAPA, ACAM, SHEA)



Figure 1. Recommended immunization schedule for persons aged 18 through 64 years - United States, 2012.

These recommendations must be read with the footnotes that follow. For those who fall behind or are late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. For definitive minimum intervals (yellow bars), see the catch-up schedule (Figure 2). Default entry and ability within the age program (blue)

Vaccine	Birth	1 year	1-2 years	3-6 years	11-12 years	16-18 years	19-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years	50-54 years	55-59 years	60-64 years
Measles (MM)†	12-23 mo	15-23 mo	4-6 years												
Poliovirus (IPV)†	12-23 mo	15-23 mo	4-6 years												
Diphtheria, tetanus, and acellular pertussis (DTaP)†	12-23 mo	15-23 mo	4-6 years												
Human papillomavirus (HPV)†															
Shingles (Shingrix)†															
Typhoid (Typhoid)†															
Yellow fever (YF)†															
Smallpox (Smallpox)†															
MMWR, 2012; 58(10):22-32															



**ADULT  
IMMUNIZATION**

## What **Vaccines** do **You** need?

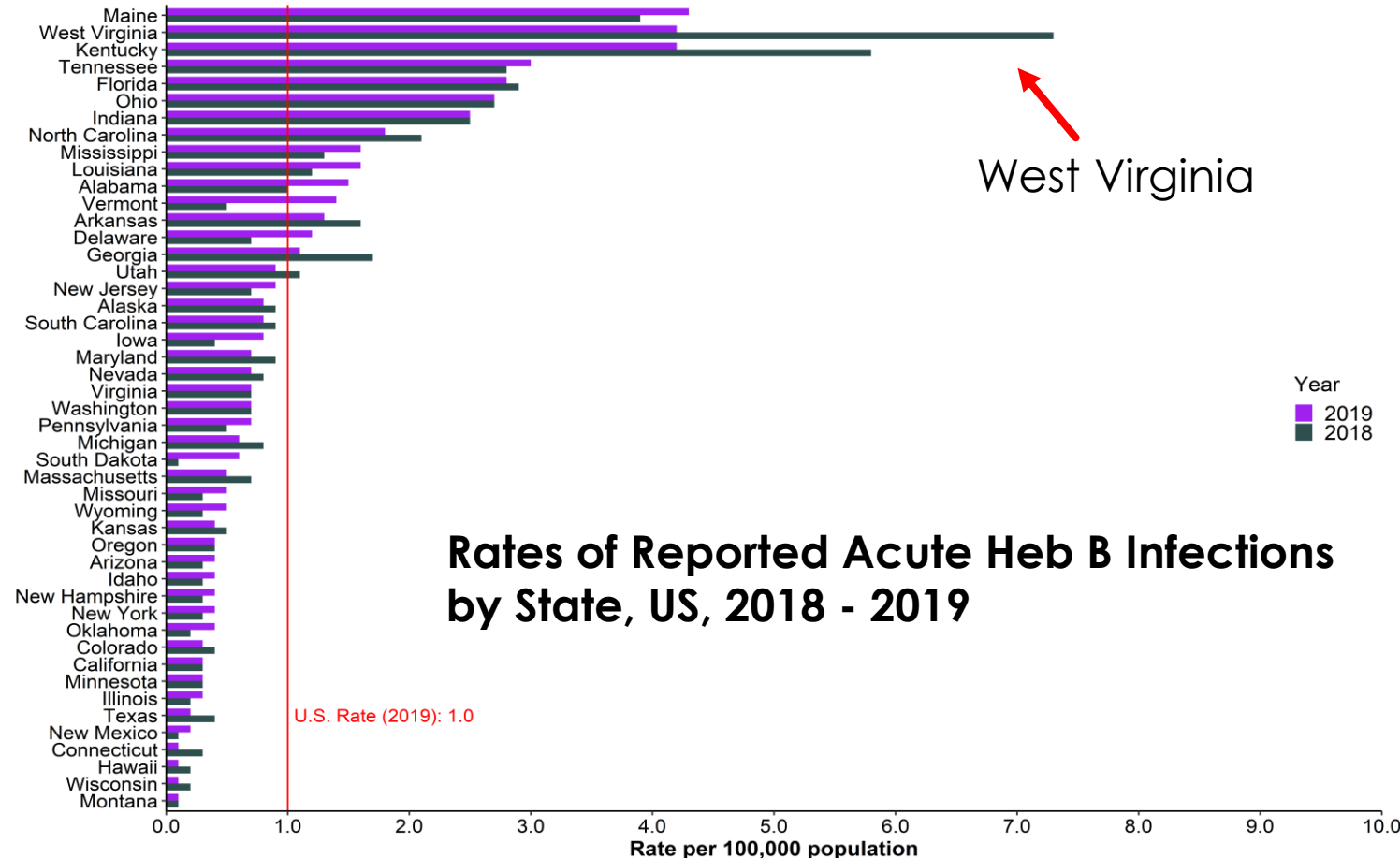
*Adults need vaccines too! Answer a few quick questions to find out which vaccines you may need.*



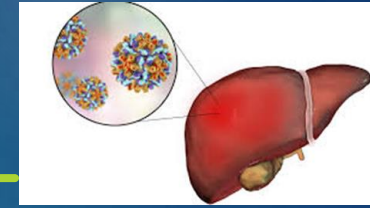
# What's New in 2022 Adult Immunizations?

# Hepatitis B

- ▶ Hep B is the world's leading cause of liver cancer. 6 million Americans have chronic HBV infection (Globally: 296 million; 800,000 deaths/year)
- ▶ Rates declined in recent years but leveling off.
- ▶ WV has long held some of the highest rates of Hepatitis B in the nation



# Hepatitis B Vaccine



- ▶ US has a strategy to eliminate Hep B. Started with universal vaccination of infants in 1991, universal birth dose start – 2005, moved to within 24 hrs of birth in 2018.
- ▶ Traditionally, immunization of adults against HBV was based on risk. Now expanding universality further across the lifespan.
- ▶ **What's new in 2022?**
- ▶ **Hep B Immunization of ALL adults 19-59 yo.**
- ▶ **Risk based vaccination for age 60+** (chronic liver disease, HIV, Sexual exposure risk, IDU, bloodborne risk, incarcerated, travel to high or mid endemic areas)
- ▶ **May vaccinate 60+** if interested in vaccine (for patients may be hesitant to disclose risks).

# Pneumococcal Disease



- ▶ *Streptococcus pneumoniae* (pneumococcus) is a common cause of pneumonia, blood stream infections, and meningitis among other infections (+ in children, a common cause of ear infections).
- ▶ ~185,000 hospitalizations/yr for pneumococcal pneumonia alone (CDC).
- ▶ In 2019, pneumococcal bacteremia and meningitis caused at least 3250 deaths (CDC).
- ▶ People age 65+ and those with various conditions (i.e., asplenia, CSF leak, alcoholism, chronic liver, lung, or heart disease, smoking, HIV, malignancies, etc.) are at increased risk.
- ▶ Resistance is of concern – resistance to  $\geq 1$  antibiotics seen in ~30%+ of isolates (varies by locality). (2021 study, *V. Gupta, et al* – 48% macrolide resistance in mid-Atlantic region)
- ▶ The surface (capsule) is made up of various polysaccharides – these relate to pathogenicity and antigenicity. Serotypes are defined by these. At least 100 serotypes exist. Vaccines target various serotypes.



# Pneumococcal Vaccine Recs Have Varied Widely Over Time

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- ▶ Pneumococcal vaccines vary by the serotypes they cover (PPSV23, PCV13, etc.)
- ▶ Recommendations on vaccines have changed over time
- ▶ Pneumococcal vaccine (PPSV23, Pneumovax) has been recommended for adults 65+ yo and for those with risk factors since 1980s. Routinely recommended for children (PCV13, Prevnar 13) since 2010.
- ▶ Recommended series including PCV 13 and PPSV23 vaccination for adults with risk factors in 2012, expanded to include all 65+ in 2014. PCV 13 moved back to “shared clinical decision making” for 65+ without other risk factors in 2019 based on review of the evidence.
- ▶ Recommendations on pneumococcal vaccines and intervals vary widely by age and condition making it confusing.

# Effectiveness and Limitations of Pneumococcal Vaccines

- ▶ PCV13 (Prevnar 13) is effective against invasive pneumococcal disease (IPD) and pneumococcal pneumonia (PP) in adults. However, it covers a limited number of serotypes.
- ▶ PPSV23 (Pneumovax) effective against IPD; data on pneumococcal pneumonia less clear (21-40% effective)
- ▶ Now have two new pneumococcal vaccines available
  - ▶ **PCV15 (Vaxneuvance) and**
  - ▶ **PCV20 (Prevnar 20)**

# PCV15 and PCV20 Studies

- ▶ Studies showed better immunogenicity with PCV15 + PPSV23 vs PCV13 + PPSV23; vaccine safety similar.
- ▶ In comparison with PPSV23, PCV20 showed stronger immune responses to most of the shared serotypes not found in PCV13 with an equivalent safety profile.
- ▶ Timing studies of intervals to use with a PCV + PPSV23 series favored longer intervals among immunocompetent adults.
- ▶ Cost effectiveness examined as well.
- ▶ Summary: Use of either **PCV20** or use of **PCV15 followed by PPSV23** in adults is expected to **decrease disease incidence, reduce cost, simplify recommendations, and maintain safety.**

# 2022 Pneumococcal Recommendations

For never vaccinated adults (or history unknown)

Medical Indication	Specific Conditions	Age Group	
		19-64 yo	65+
None	NA	None	1 dose PCV20 or PCV15 + PPSV23 $\geq$ 1 yr later
Underlying Conditions or Risk Factors	Alcoholism, Chronic heart, liver or lung disease; Cigarette smoking; Diabetes;  Immunocompromised (incl chronic renal failure)*, cochlear implants,* CSF leak*	1 dose PCV20 or PCV15 + PPSV23 $\geq$ 1 yr later*	1 dose PCV20 or PCV15 + PPSV23 $\geq$ 1 yr later*  Reminder: No additional doses indicated over 65 if PCV15 or PCV20 were administered when younger.

\*For persons who are immunocompromised, have cochlear implants or a CSF leak, can consider a minimum interval of 8 weeks to reduce risk of invasive pneumococcal disease (IPD) earlier.

# 2022 Pneumococcal Recommendations

For previously / partially vaccinated adults

Vaccine Status	What	When / Why
PPSV23 only	1 dose PCV20 or PCV15	At least 1 year after last PPSV23 dose
PCV13 or PCV13 + PPSV23	Complete previously recommended PPSV23 vaccine series <sup>**</sup> , <sup>^</sup>	Benefit of adding PCV15 or PCV20 not yet evaluated / known

<sup>\*\*</sup>See [Pneumococcal Vaccine Timing for Adults](#) (CDC). Last dose of PPSV23 should be given after age 65 and at least 5 yrs following any prior doses of PPSV23 given (e.g., if PPSV23 was given at <65 yo due to high-risk condition).

<sup>^</sup>May use PCV20 if PPSV23 is not available

# HPV Vaccine = Cancer Prevention

- ▶ Every year, an estimated 19,000 cases of preventable Human Papilloma Virus (HPV)-associated cancer among females and 13,100 cases of HPV-associated cancer among males occur. (250 cancers/year in WV) (cancers of the cervix, anus, throat, vagina, vulva, etc.)
- ▶ Human papillomavirus is the most common sexually transmitted infection in the United States, affecting about 85% of people in their lifetime. About 13 million people, including adolescents, become newly infected each year.
- ▶ HPV-associated diseases cost the United States an estimated \$8 billion (2010 dollars) in annual direct medical costs for prevention and treatment of all HPV types.

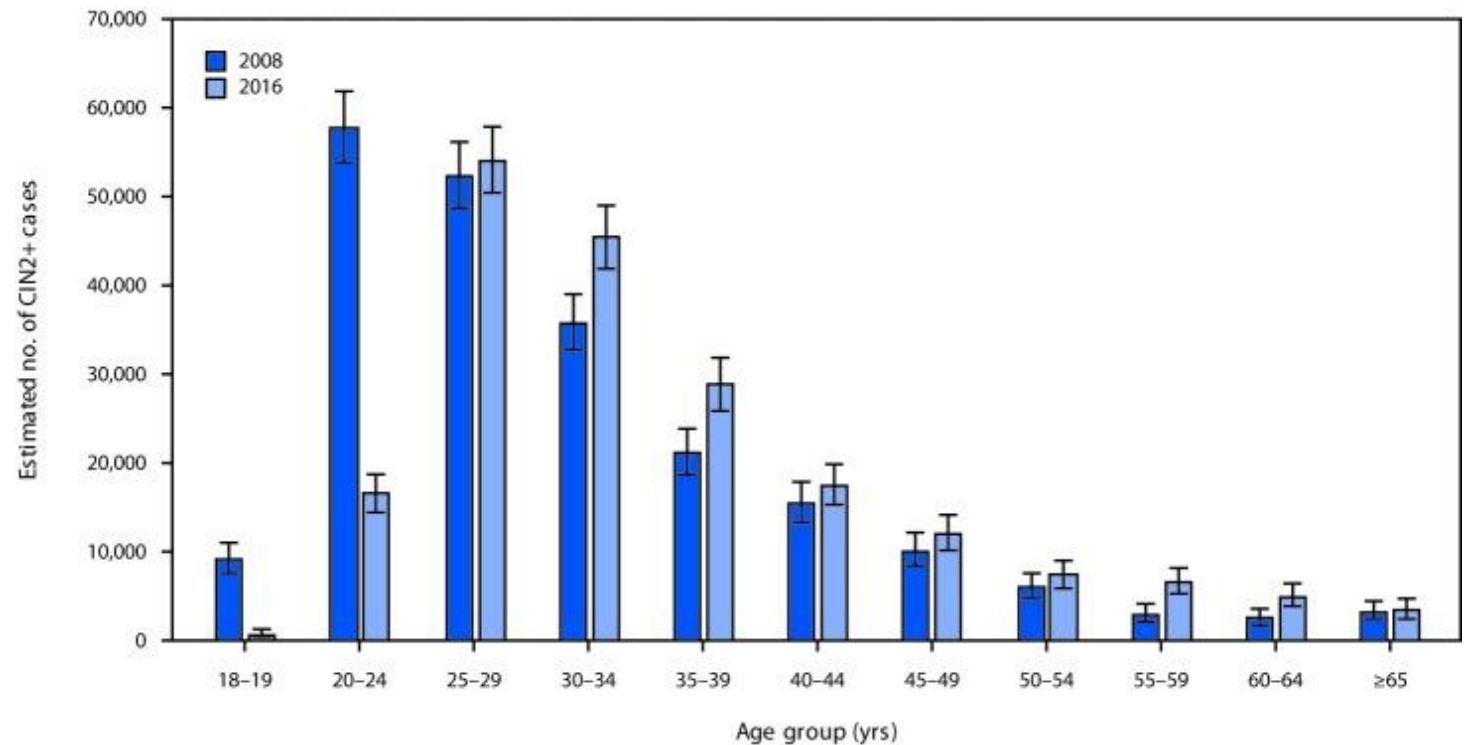
# HPV Vaccine is Highly Effective

Within 12 years of vaccine introduction, infections with the four HPV types prevented by Gardasil decreased in the US by

- 88% among 14–19-year-old females, and
- 81% among 20–24-year-old females

Source: <https://pubmed.ncbi.nlm.nih.gov/30998672/>

Estimated number of CIN2+ cases by age group, US, 2008 vs 2016



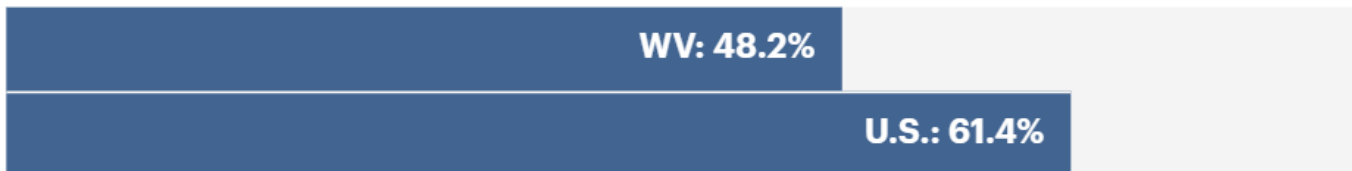
# HPV Vaccine Rates (Teens, WV, US)

By Year, 2013-2020

## HPV Vaccination Rate, 2020, WV vs US

### GENDER

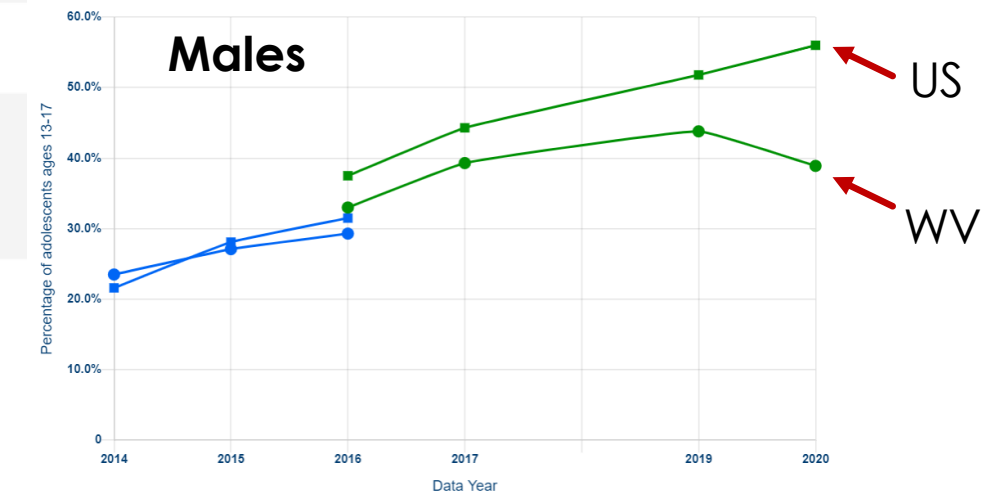
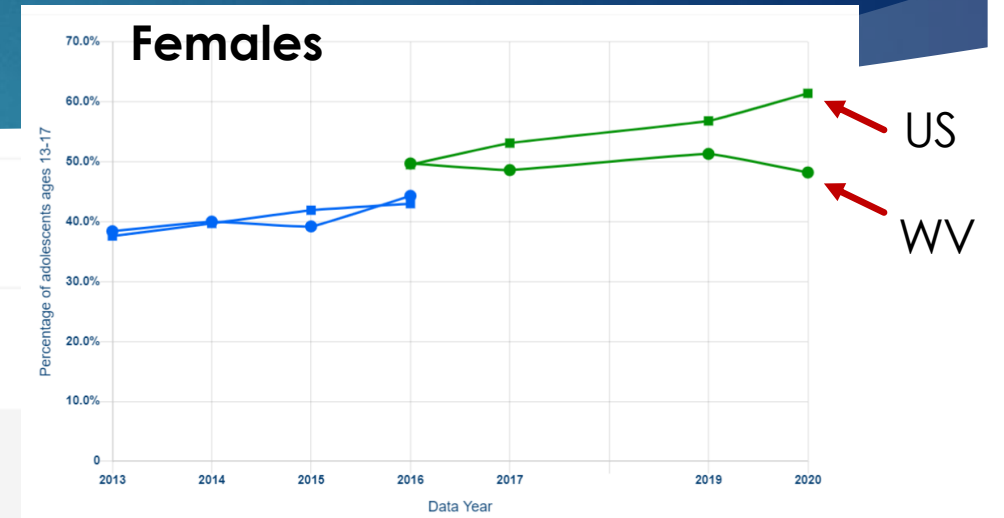
#### HPV Immunization - Females



#### HPV Immunization - Males



Percentage of adolescents ages 13-17



Source: CDC National Immunization Survey, Teen



# HPV Vaccine Recommendations

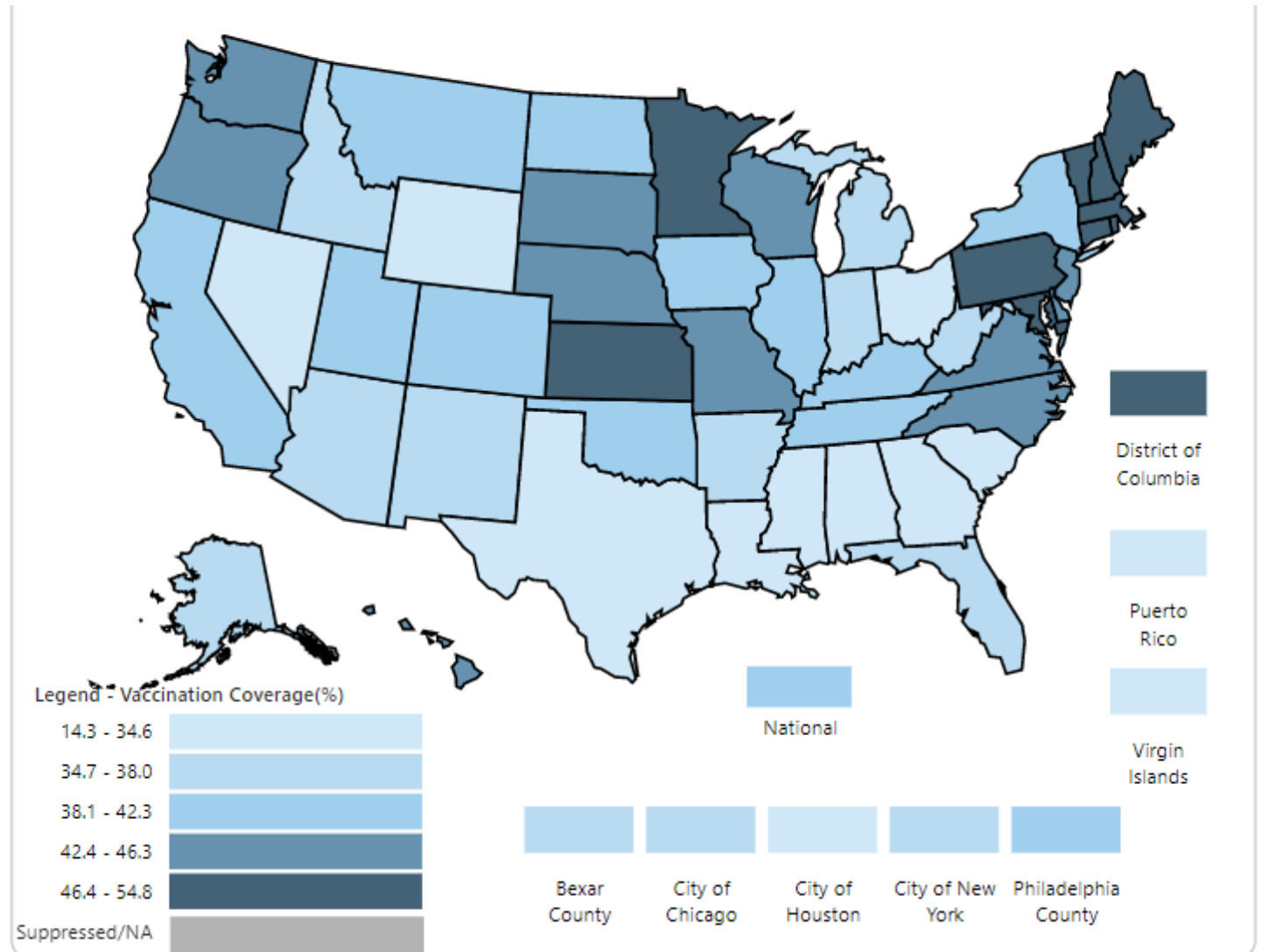
- ▶ Vaccine works best when given early – before exposure.
- ▶ Some benefit still if given later - Reduces infection rate for other HPV viral types.
- ▶ Recommended use:
  - ▶ All adolescents age 11 – 12 yrs (2 dose series)
  - ▶ **All persons through age 26 not vaccinated in adolescence (3 doses if 15+ yo)**
  - ▶ **Shared clinical decision making for age 27 – 45 years (3 dose series)**
- ▶ Not recommended in pregnancy:
  - ▶ no evidence for concern, but there is little data;
  - ▶ no need to do pregnancy testing prior to vaccination

# Influenza Tips

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- ▶ All available flu vaccines are now quadrivalent
- ▶ COVID and Flu vaccines can be given at the same time. (combined vaccines in development)
- ▶ High dose and adjuvanted flu vaccines available for those over 65 yos, but do not delay vaccination if not available. Recombinant flu vaccine also appears more immunogenic in elderly.
- ▶ Vaccine timing:
  - ▶ Children: typically fine to vaccinate as soon as available – July /August
  - ▶ 65+: avoid vaccinating too early as immunity may wane (better Sept / Oct)
  - ▶ Pregnant women – may want to vaccinate early for those in 3<sup>rd</sup> trimester of pregnancy to provide infant protection during season.

## 2021 Flu Vaccine Coverage by State, as of 12/31/21



### Adult Flu Vaccine Coverage Levels by 12/31/2021

For Adults 18+:  
 WV = 35.9%  
 US = 40.2%

For 65+:  
 WV = 63.8%  
 US = 65.0%

# Other 2022 Schedule Changes

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- ▶ Schedule now includes a page giving contraindications and precautions for all vaccines on the schedule
- ▶ **Zoster vaccine** (recombinant, RZV – Shingrix - 2 doses), is now recommended for all persons **19-49 years of age who have immunocompromising conditions (including HIV)**
- ▶ RZV vaccination of those with most other chronic diseases (and those who are healthy) remains at 50+yrs.



# Immunization Resources

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# CDC: [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines)

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## Vaccines & Immunizations



**Table 1** Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 3).

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	11-12 yrs	13-15 yrs	16 yrs	17-18 yrs
Rotavirus (RV) (2-dose series) RV3 (3-dose series)															
Diphtheria, tetanus, acellular pertussis (DTaP) (7 yrs)															
Adenovirus influenza types 4/20s															
Pneumococcal conjugate (PCV13)															
Inactivated poliovirus (IPV) (3 yrs)															
Influenza (IVN)															
Influenza (LAIV)															

### 2022 Immunization Schedules

**Table 1** Recommended Adult Immunization Schedule by Age Group, United States, 2022

Vaccine	19-26 years	27-49 years	50-64 years	≥65 years
Influenza inactivated (IVN) or influenza recombinant (IVN)		1 dose annually		
Influenza live, attenuated (LAIV)		1 dose annually		
Tetanus, diphtheria, pertussis (Td or Td)		1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound m		
Meningitis, mumps, rubella (MMR)		1 dose Tdap, then Td or Tdap booster every		
Measles, mumps, rubella (MMR)		1 or 2 doses depending on indication (if born in 1957 or later)		
Varicella (VAR)		2 doses (if born in 1980 or later)		
Zoster recombinant (RZV)		2 doses for immunocompromising conditions (see notes)		
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or completion	2 through 45 years		
Pneumococcal polysaccharide (PPSV23)		1 dose PPSV23 followed by PPSV23 or		
PPSV23 (see notes)		1 dose PPSV23 (see notes)		
Hepatitis A (HepA)		2 or 3 doses depending on exposure		
Hepatitis B (HepB)		3, 1, and 6 doses depending on exposure or si		

## COVID-19 Vaccination

Download "CDC Vaccine Schedules" free for iOS and Android c



### Product Specs

Version: 7.0.1

**Requirements:** Requires iOS 9.0 or later and A optimized for tablets and useful on smartpho

**Updates:** Changes in the app are released thro

# Vaccine Schedules App

# WV Immunization Network (WIN):

<https://wvruralhealth.org/programs/win/>



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## West Virginia Immunization Network



A Program of:  
**The Center for Rural Health Development**

75 Chase Drive  
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-  **LEARN.**
-  **UNDERSTAND.**
-  **DECIDE.**

What's new in  
COVID 19  
Immunization ?

# COVID Vaccine in Pregnancy



- ▶ Pregnant women with COVID-19 are at increased risk for more severe disease and for complications including pre-term labor and still birth
- ▶ COVID-19 vaccination is recommended for people who are pregnant, breastfeeding, trying to get pregnant, or might become pregnant in the future.
- ▶ People who are pregnant should receive a COVID-19 vaccine booster shot
- ▶ **NEW!** Feb 2022 Study (MMWR, CDC\*): **COVID 19 vaccination in pregnancy not only protects the mother but also the newborn infant (61% reduction in hospitalization).**
- ▶ **NEW!** Feb 2022 Study (JAMA<sup>^</sup>) **Immunization during pregnancy results in infant antibody levels higher than maternal COVID infection during pregnancy.**

\* <https://www.cdc.gov/mmwr/volumes/71/wr/mm7107e3.htm>

<sup>^</sup>JAMA. Published online February 07, 2022. doi:10.1001/jama.2022.1206

# Other COVID Vaccine Changes



- ▶ **New! Feb 2022!** Increase mRNA dose Intervals to 8 weeks, esp. in young males (12-39 yrs). Decreases small risk of myocarditis vs earlier immunity. **Consider in others too, except those at high risk of COVID.**

# COVID Vaccines on the Horizon.



## ► Recombinant-subunit-adjuvanted protein vaccine

- Older, traditional vaccine methodology (same as Flublok, Hep B, etc.)
- Can use existing vaccine infrastructure for manufacturing
- Cold chain requirements less stringent (refrigeration up to 6 mos.)
- Feb 2022 – Vidprevtyn (Sanofi/GSK ) results showed protection against symptomatic disease ~60%; severe disease / death – 100%. Strong effect as booster to many vaccines. Now under review by European authorities.
- **NEW! June 2022** – (Novavax) VRBPAC recommended approval to FDA. 2 doses, 3 wks apart. 90% efficacy against symptomatic infection (alpha variant). Delays have been due to previous manufacturing issues now resolved. Being used in several other countries.

# Vaccine for Children 6 mos - 4 yrs

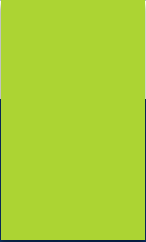
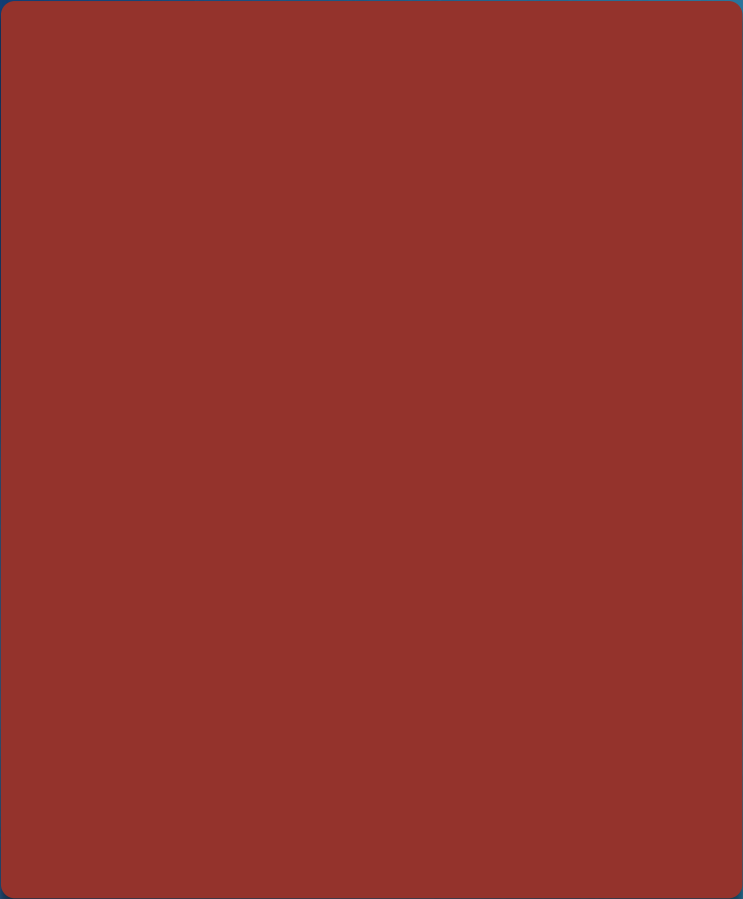


- ▶ As of June – approx. 1250 deaths in pediatric pops due to COVID; ~440 in <5 yo
- ▶ COVID in children is generally less frequent and less severe than in adults.
- ▶ COVID Vaccine is currently licensed for age 5+ yrs
- ▶ **NEW! US poised for EUA use of mRNA vaccines in children age 6 mos – 5 years.**
  - ▶ In Feb, FDA delayed making a decision on vaccine for <5 yo age group to await additional data on the effectiveness of a 3<sup>rd</sup> dose.
  - ▶ New data on use in 6 mos to < 5 yrs now submitted to FDA by Moderna and Pfizer.
  - ▶ Pfizer vaccine is 1/10<sup>th</sup> adult dose (3 ug) & a 3 dose series (Wk 0,3,11?); Moderna is 1/4 adult dose (25 ug) & a 2 dose series (Wk 0,4). Pfizer series showing greater efficacy at present.
  - ▶ VRBPAC meets June 14-15 to review. If approved by FDA, CDC ACIP would meet and use could begin by ~end of June.
  - ▶ If approved, may be a permissive recommendation.
- ▶ Infants of mothers vaccinated in pregnancy will likely still require vaccine at 6 mos.

# Other Topics on the Horizon.



- ▶ **Variant Specific Vaccines? 2022-23 Vaccine composition:**  
FDA mtg June 28.
- ▶ **Combination vaccines:** Flu-COVID and Flu-COVID-RSV in development
- ▶ **Other Vaccine Technologies being explored:**
  - ▶ Intranasal or enteral COVID vaccines;
  - ▶ Microarray patch vaccines (measles)



Think Systems to  
have the biggest  
impact.....

# Other Opportunities in Practice

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- ▶ Look for missed opportunities
- ▶ Check your data – esp. series completion for multi-dose vaccines.
- ▶ Staff engagement and education
- ▶ Find an office champion / be a champion
- ▶ Standing Orders
- ▶ Remember that decision making is about more than data
- ▶ Learn Motivational Interviewing Skills
- ▶ Look for creative ways to reach / meet high-risk populations



# Beyond the Clinic Walls: Immunization Advocacy & Partnerships

- ▶ Meet with your legislators
  - ▶ Outside of the legislative session is best.
  - ▶ Consider giving them a tour of your clinic/office/health department or meet with you one-on-one.
  - ▶ Form a friendly, professional relationship with them.
  - ▶ Be a source of public health/healthcare expertise for them to reach out to.
- ▶ Remember your county commissioners, CBOs, FBOs, behavioral health, occ health offices, barbers / beauticians, etc.
- ▶ Who reaches who you need to give opportunity to???



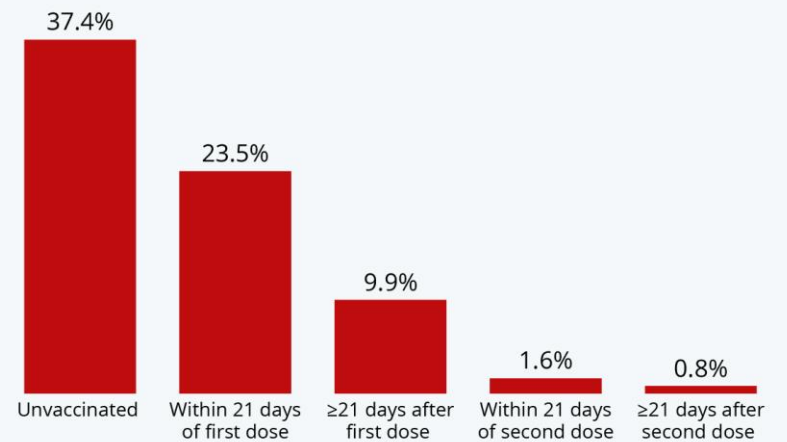
# Vaccines Work.....

Vaccine	Before (Year)	After (Year)
Diphtheria	175,885 (1922)	1 (1998)
Hib	20,000 (1982)	54 (1998)
Measles	503,282 (1962)	89 (1998)
Mumps	152,209 (1968)	606 (1998)
Pertussis	147,271 (1925)	6,279 (1998)
Rubella	47,745 (1968)	345 (1998)
Smallpox	48,164 (1904)	0 (1998)

*(annual cases in U.S.)*

## The Effect of Vaccination on Covid-19 Deaths

Share of all deaths involving Covid-19 in England, by vaccination status (2 January - 2 July 2021)



Source: Office for National Statistics



statista

...if supported by those we trust, easily available, and used!!

.....How can you make a difference?

## ACROSS THE LIFESPAN



# Thank You!



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