Vaccine Update 2023

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WNIM 2023

UW Medicine

Disclosures

No conflicts of interest or relationships to disclose

** But, as an infectious diseases provider, I AM PRO-VACCINE

Learning Goals & Objectives

- Identify issues leading to lower rates of uptake of the ACIP/AAP/AAFP recommended vaccines of childhood
- Review recent epidemiology of measles, mumps, rubella, chickenpox, and polio
- Review the current epidemiology of hepatitis A and hepatitis B
- Review vaccine recommendations

Our competition

Just 12 People Are Behind Most Vaccine Hoaxes On Social Media, Research Shows

Updated May 14, 2021 · 11:48 AM ET

Heard on All Things Considered

Shannon Bond

4-Minute Listen + PLAYLIST

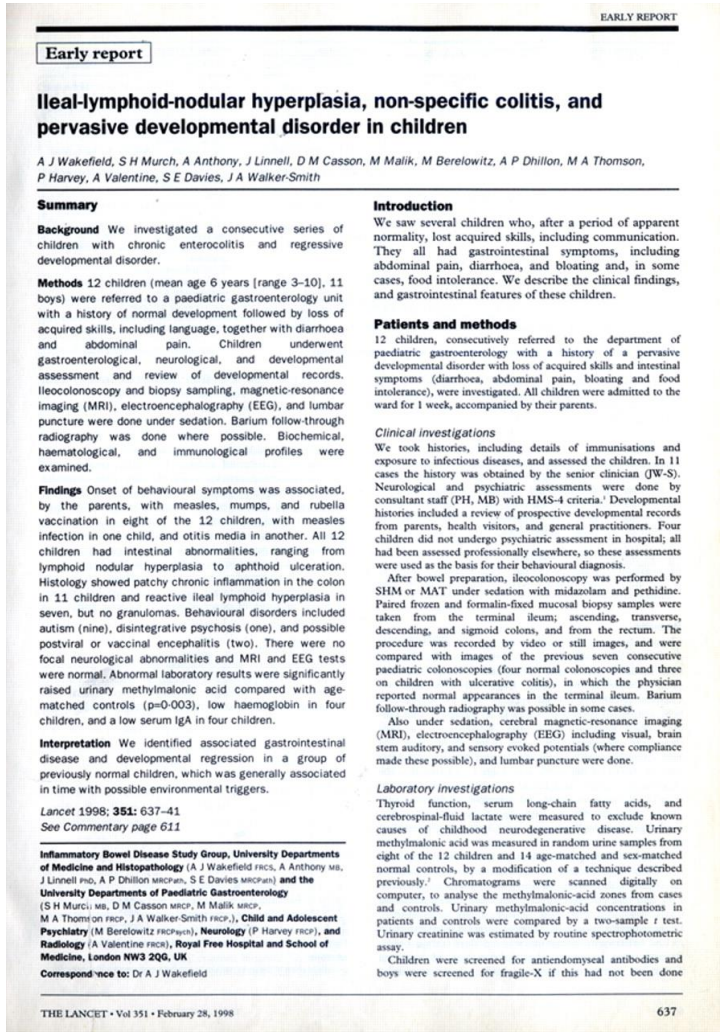
The majority of anti-vaccine claims on social media trace back to a small number of influential figures, according to researchers.

Resistance to Vaccination

Mom brings her 12-month old healthy child to clinic for routine visit. Mom does not want child vaccinated due to concern of possible link between MMR vaccine and autism. What do you advise?

Original Publication Linking MMR to Autism

- Small case series (eight children) with no controls published in 1998 reported on children who developed autism within one month of measles vaccine.
- Proposed that measles vaccine travels to intestine, damages intestine, and brain-damaging proteins enter bloodstream.
- Over ensuing decade, epidemiological studies consistently found no evidence of a link between MMR vaccine and autism. (Madsen et al., NEJM 2002; 347: 1477)
- Paper retracted 12 years later.



EARLY REPORT

Early report

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

A J Wakefield, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, A P Dhillon, M A Thomson, P Harvey, A Valentine, S E Davies, J A Walker-Smith

Summary

Background We investigated a consecutive series of children with chronic enterocolitis and regressive developmental disorder.

Methods 12 children (mean age 6 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic-resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Biochemical, haematological, and immunological profiles were examined.

Findings Onset of behavioural symptoms was associated, by the parents, with measles, mumps, and rubella vaccination in eight of the 12 children, with measles infection in one child, and otitis media in another. All 12 children had intestinal abnormalities, ranging from lymphoid nodular hyperplasia to aphthoid ulceration. Histology showed patchy chronic inflammation in the colon in 11 children and reactive ileal lymphoid hyperplasia in seven, but no granulomas. Behavioural disorders included autism (nine), disintegrative psychosis (one), and possible postviral or vaccinal encephalitis (two). There were no focal neurological abnormalities and MRI and EEG tests were normal. Abnormal laboratory results were significantly raised urinary methylmalonic acid compared with age-matched controls (p=0·003), low haemoglobin in four children, and a low serum IgA in four children.

Interpretation We identified associated gastrointestinal disease and developmental regression in a group of previously normal children, which was generally associated in time with possible environmental triggers.

Lancet 1998; **351:** 637–41
See Commentary page 611

Inflammatory Bowel Disease Study Group, University Departments of Medicine and Histopathology (A J Wakefield FRCS, A Anthony MB, J Linnell PhD, A P Dhillon MRCPath, S E Davies MRCPath) **and the University Departments of Paediatric Gastroenterology** (S H Murch MB, D M Casson MRCP, M Malik MRCP, M A Thomson FRCP, J A Walker-Smith FRCP,), **Child and Adolescent Psychiatry** (M Berelowitz FRCPsych), **Neurology** (P Harvey FRCP), **and Radiology** (A Valentine FRCR), **Royal Free Hospital and School of Medicine, London NW3 2QG, UK**

Correspondence to: Dr A J Wakefield

Introduction

We saw several children who, after a period of apparent normality, lost acquired skills, including communication. They all had gastrointestinal symptoms, including abdominal pain, diarrhoea, and bloating and, in some cases, food intolerance. We describe the clinical findings, and gastrointestinal features of these children.

Patients and methods

12 children, consecutively referred to the department of paediatric gastroenterology with a history of a pervasive developmental disorder with loss of acquired skills and intestinal symptoms (diarrhoea, abdominal pain, bloating and food intolerance), were investigated. All children were admitted to the ward for 1 week, accompanied by their parents.

Clinical investigations

We took histories, including details of immunisations and exposure to infectious diseases, and assessed the children. In 11 cases the history was obtained by the senior clinician (JW-S). Neurological and psychiatric assessments were done by consultant staff (PH, MB) with HMS-4 criteria.[1] Developmental histories included a review of prospective developmental records from parents, health visitors, and general practitioners. Four children did not undergo psychiatric assessment in hospital; all had been assessed professionally elsewhere, so these assessments were used as the basis for their behavioural diagnosis.

After bowel preparation, ileocolonoscopy was performed by SHM or MAT under sedation with midazolam and pethidine. Paired frozen and formalin-fixed mucosal biopsy samples were taken from the terminal ileum; ascending, transverse, descending, and sigmoid colons, and from the rectum. The procedure was recorded by video or still images, and were compared with images of the previous seven consecutive paediatric colonoscopies (four normal colonoscopies and three on children with ulcerative colitis), in which the physician reported normal appearances in the terminal ileum. Barium follow-through radiography was possible in some cases.

Also under sedation, cerebral magnetic-resonance imaging (MRI), electroencephalography (EEG) including visual, brain stem auditory, and sensory evoked potentials (where compliance made these possible), and lumbar puncture were done.

Laboratory investigations

Thyroid function, serum long-chain fatty acids, and cerebrospinal-fluid lactate were measured to exclude known causes of childhood neurodegenerative disease. Urinary methylmalonic acid was measured in random urine samples from eight of the 12 children and 14 age-matched and sex-matched normal controls, by a modification of a technique described previously.[2] Chromatograms were scanned digitally on computer, to analyse the methylmalonic-acid zones from cases and controls. Urinary methylmalonic-acid concentrations in patients and controls were compared by a two-sample *t* test. Urinary creatinine was estimated by routine spectrophotometric assay.

Children were screened for antiendomyseal antibodies and boys were screened for fragile-X if this had not been done

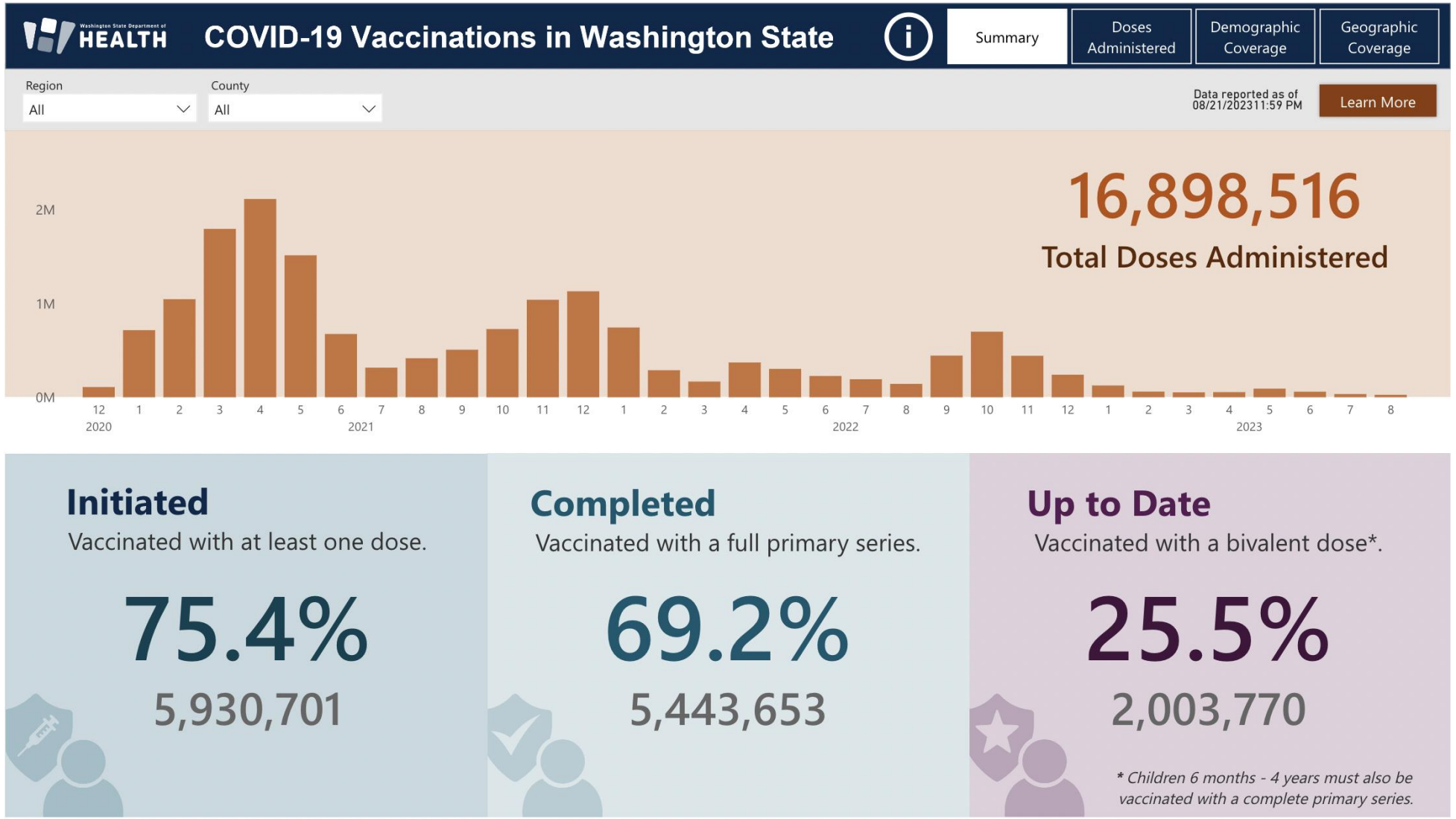
MMR and Autism

- Strong scientific evidence that MMR vaccine does not cause autism (Danish cohort study, > 2,000,000 person-years, Madsen et al., NEJM 2002; 347: 1477)
- Timing of vaccination in relation to timing of the occurrence of the event
- MMR: True vaccine risk — encephalitis or severe allergic reaction 1 in 1,000,000

Misconceptions About Vaccines

- Many reasons for fear or opposition to vaccination:
  - religious/philosophical objections
  - government interference
  - safety/efficacy concerns
  - not concerned about the disease itself
- As a practitioner, listen and try to understand concerns, fears, beliefs
- Provide accurate information to our patients and their parents
- www.cdc.gov/nip

COVID Vaccination and Decreased Uptake



MEASLES

"Vaccine preventable diseases have been virtually eliminated in the US, so there is no need for my child to be vaccinated."

- Worldwide 20 million cases annually
  - 440 deaths per day, 17 deaths per hour
- Declared eliminated from US in 2000
- Most cases now imported or linked in outbreaks
- ***More than 90% of people who are not immunized will get measles if they are exposed to the virus***

Measles: Impact of Vaccine

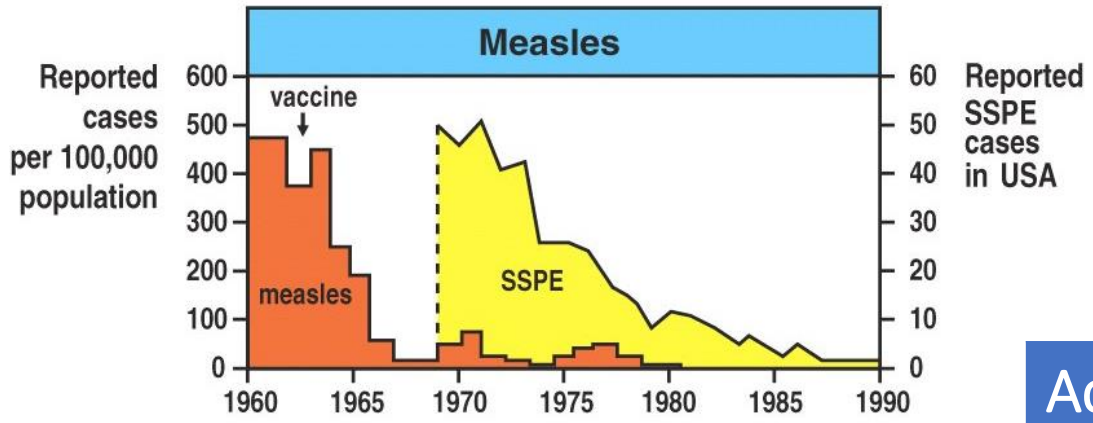


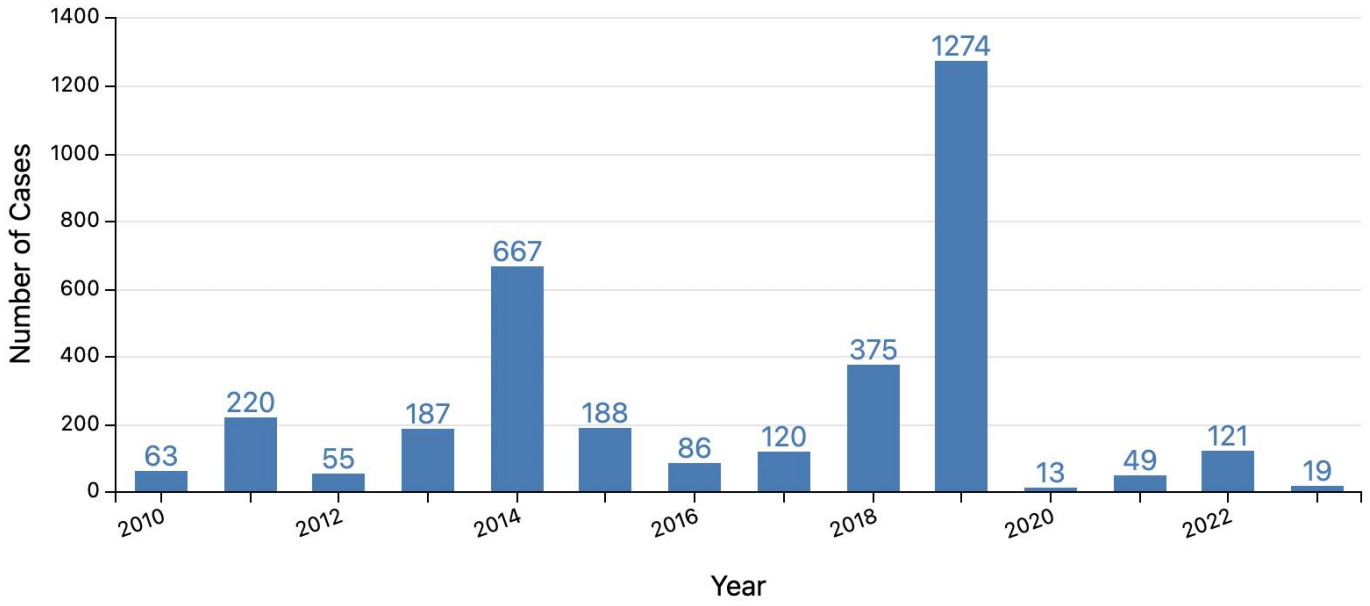
Figure 1-33 Immunobiology, 6/e. (© Garland Science 2005)

Adverse reaction	Natural infection per 100,000	Vaccine-related per 100,000
Encephalitis	50-400	0.1
Pneumonia	3,800-7,300	None
Convulsions	500-1,000	0.02-190
Death	10-10,000	0.02-0.3

Measles: Epidemiology and Recent Outbreaks

Number of measles cases reported by year

2010-2023* (as of June 8, 2023)



Top 10 Countries with Global Measles Outbreaks*

Rank	Country	Number of Cases
1	India**	57,550
2	Yemen	24,596
3	Pakistan	10,549
4	Indonesia	5,637
5	Ethiopia	4,836
6	Cameroon	4,745
7	Nigeria	4,385
8	Türkiye	2,901
9	Somalia	2,711
10	Democratic Republic of the Congo (DRC)***	2,511

Provisional data based on monthly data reported to WHO (Geneva) as of early August 2023. Data covers January 2023 – June 2023.

Case

52 year old man presents with acute onset headache, nausea, vomiting, fever and muscle pain. He develops LE weakness with absent reflexes. Sensory exam normal.

August 2022

Polio Has Been Detected in New York City Wastewater, Officials Say

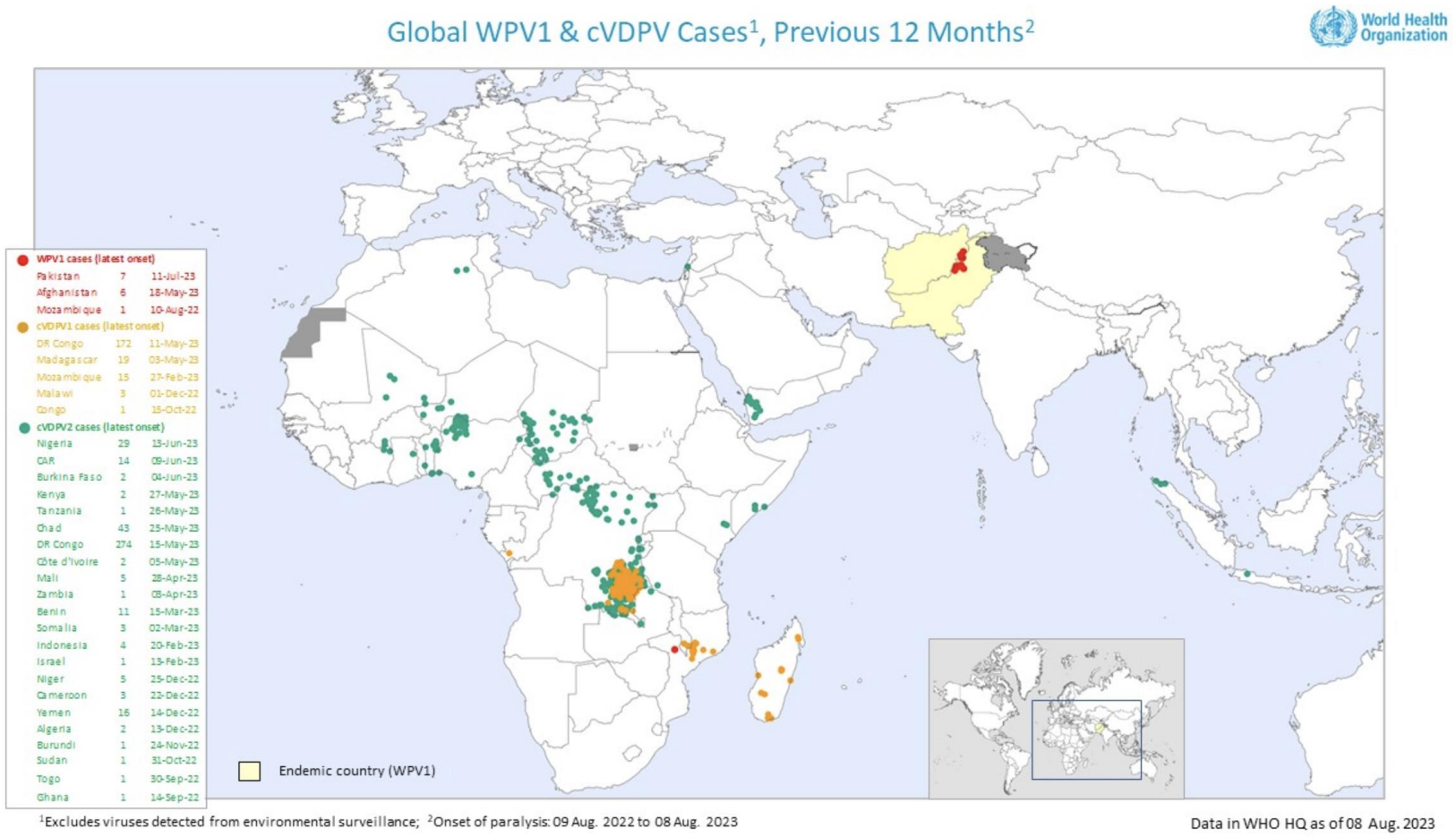
The detection of the virus in sewage suggests it is circulating in the city, Health Department officials said.

Give this article 358

Poliomyelitis

- Polio virus – human enterovirus caused RNA virus
- Disease of acute poliomyelitis can be caused by wild type virus or from oral polio vaccine virus

Poliomyelitis



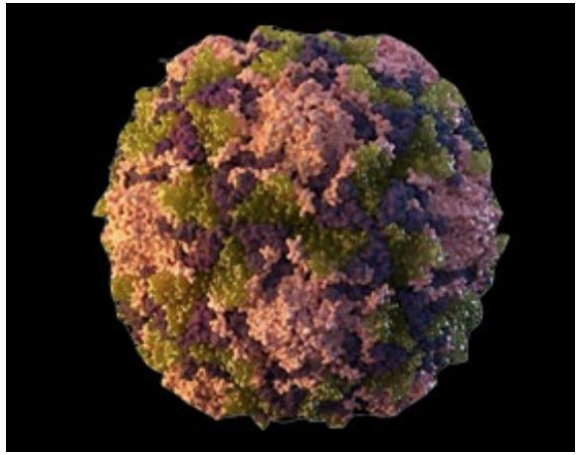
Poliomyelitis: Clinical Manifestations

- Most are asymptomatic and mildly symptomatic

Severe disease very rare

- Acute flaccid weakness due to anterior horn cell injury
- Can be associated with symptoms of meningitis
- Weakness can progress

Polio



The Fight Against Polio

The highly contagious virus was one of the most feared diseases until the 1950s, when the first vaccine was developed.

- **New York Case:** Officials in a New York suburb reported a case of polio in an unvaccinated adult man in July — the first U.S. case in nearly a decade.
- **A Multibillion-Dollar Effort:** A partnership of national governments and health organizations has a plan to rid the world of polio by 2026, which is now endemic in just two countries.
- **Major Obstacles:** Two of the three strains of polio have been eliminated from the Earth. But new barriers to full eradication keep cropping up.
- **Childhood Vaccinations Drop:** A sharp decline in childhood vaccinations around the world during the coronavirus pandemic — including those for polio — could threaten the lives of millions of children.

Herpes Zoster

- Estimated 1 million cases of herpes zoster per year in the US
- Incidence varies by age but higher in older age groups
- 10-18% with HZ develop post herpetic neuralgia

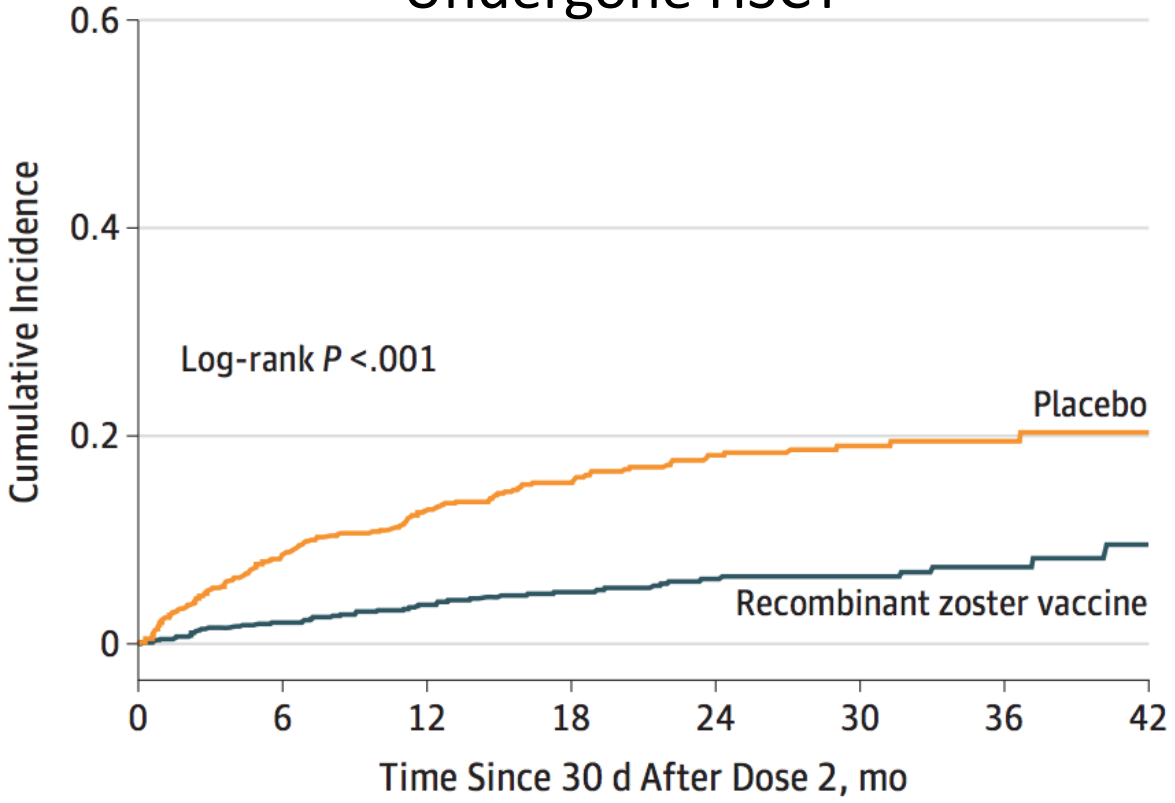
Zoster Vaccine Recommendations

- Healthy adults ≥ 50 years
  - Regardless of prior h/o HZ
  - No need to wait any specific period of time after HZ to give RZV (just not during acute episode)
- 2 doses, 2-6 months apart

Zoster Vaccine Recommendations in Immunocompromised Hosts

- RZV recommended for all IC adults age ≥ 18 years
- 2 doses 8 weeks apart

Efficacy of RZV in Preventing Incident Herpes Zoster in Patients Who Had Undergone HSCT



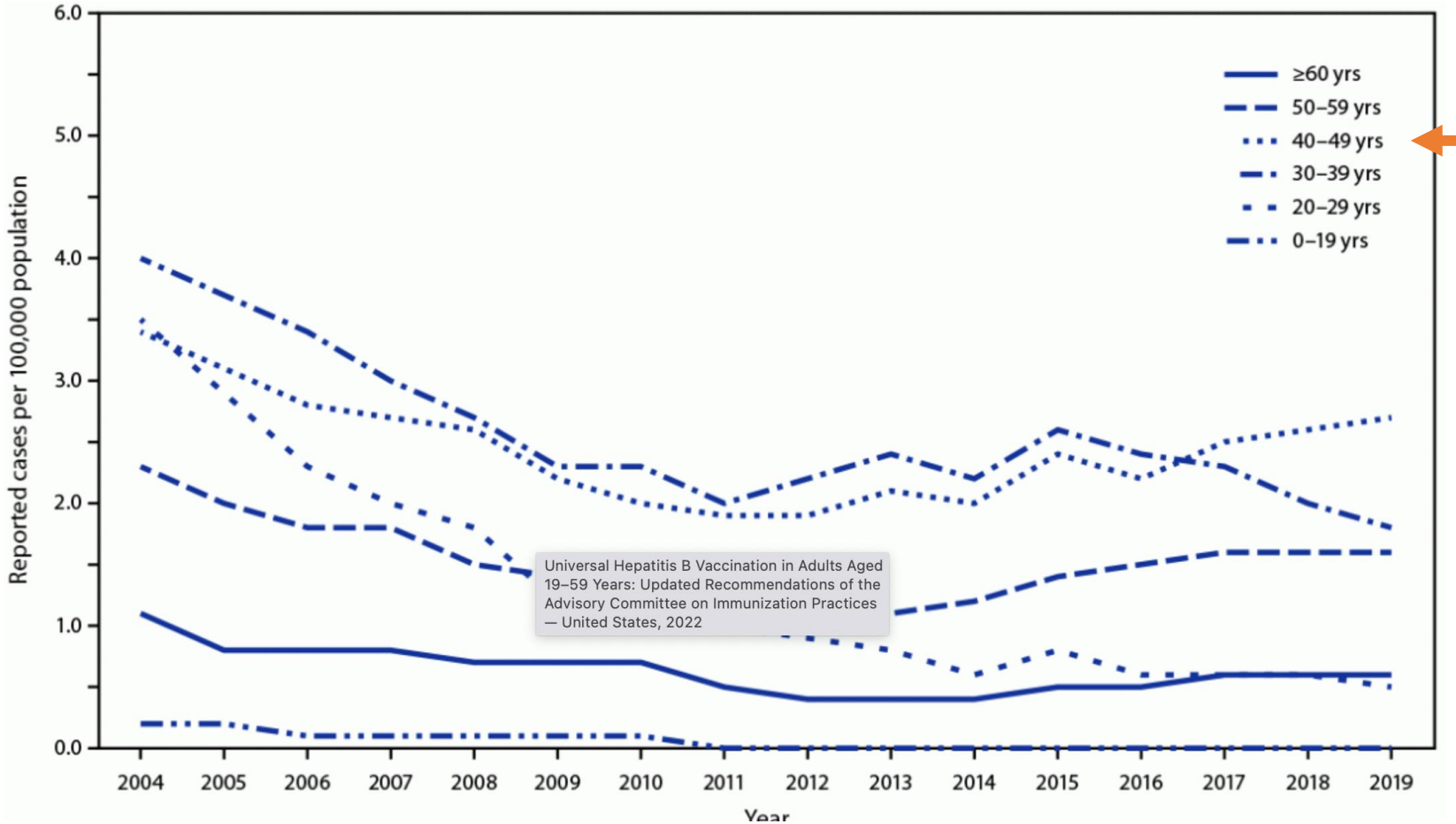
Question

A 40 year-old software engineer presents to establish care. She has no medical problems. She is in a mutually monogamous relationship with a cis-male partner. She denies any upcoming foreign travel. She reports she has not received Hep B vaccine in the past. Which of the following is most accurate regarding Hep B vaccination?

A. She should start the series today
B. She should only receive if she has risk factors for Hep B
C. Hep B vaccine is not recommended in individuals her age

Trends in Hepatitis B in the US

FIGURE. Rates of reported acute hepatitis B virus infection, by age group — United States, 2004–2019



Current Hepatitis B Vaccine Recommendations

- All infants
- All persons < 19 years
- All adults 19-59 years
- Adults ≥ 60 years with risk factors for Hep B
- Adults ≥ 60 without known risk factors may receive vaccine

Hepatitis B Vaccines

- 3 dose series of Engerix or Recombivax
- 2 dose series of Heplisav-B
- 3 dose series Twinrix (combination Hep A and Hep B vaccine)

	Immunocompetent adults	Immunocompromised adults*
Heplisav-B	0.5 mL/dose given as a 2-dose series at least 1 month apart	
Recombivax -HB	Recombivax 20mcg/mL: 1 mL/dose for 3 total doses administered at 0, 1, and 6 months.	Recombivax HB 40 mcg/mL: Administer 1 mL per dose at 0, 1, and 6 months
Engerix-B	Engerix 10mcg/mL: 1 mL/dose for 3 total doses administered at 0, 1, and 6 months.	Engerix-B 20 mcg/mL: Administer 2 mL per dose at 0, 1, 2, and 6 months

Heplisav-B

- Recombinant, adjuvanted
- Only approved for adults 18 and older
- Vaccine contains Hep B sAg + adjuvant that targets TLR-9 to enhance immune response
- 3 phase III clinical trials leading to FDA approval showed non inferiority

				Seroprotection rates (SPR)		
Study	**Age range**	**Time points**	**Sample size**	**Heplisav-B (95% CI)**	**Engerix-B (95% CI)**	**Difference in SPRs (95% CI)**
Study 1	18 to 55	Week 12 (Heplisav-B) Week 28 (Engerix-B)	Heplisav-B (N=1511) Engerix-B (N=521)	95% (93.9, 96.1)	81.3% (77.8, 84.6)	13.7% (104, 17.5)
Study 2	40 to 70	Week 12 (Heplisav-B) Week 32 (Engerix-B)	Heplisav-B (N=1121) Engerix-B (N=353)	90.1% (88.2, 91.8)	70.5% (65.6, 75.2)	19.6% (14.7, 24.8)
Study 3	18 to 70	Week 28 (Heplisav-B) Week 28 (Engerix-B)	Heplisav-B (N=5592) Engerix-B (N=2782)	90.0% (87.4, 92.2)	65.1% (59.6, 70.3)	24.9% (19.3, 30.7)

*Antibody concentrations ≥10 mIU/mL against HBsAg are recognized as conferring protection against hepatitis B virus infection

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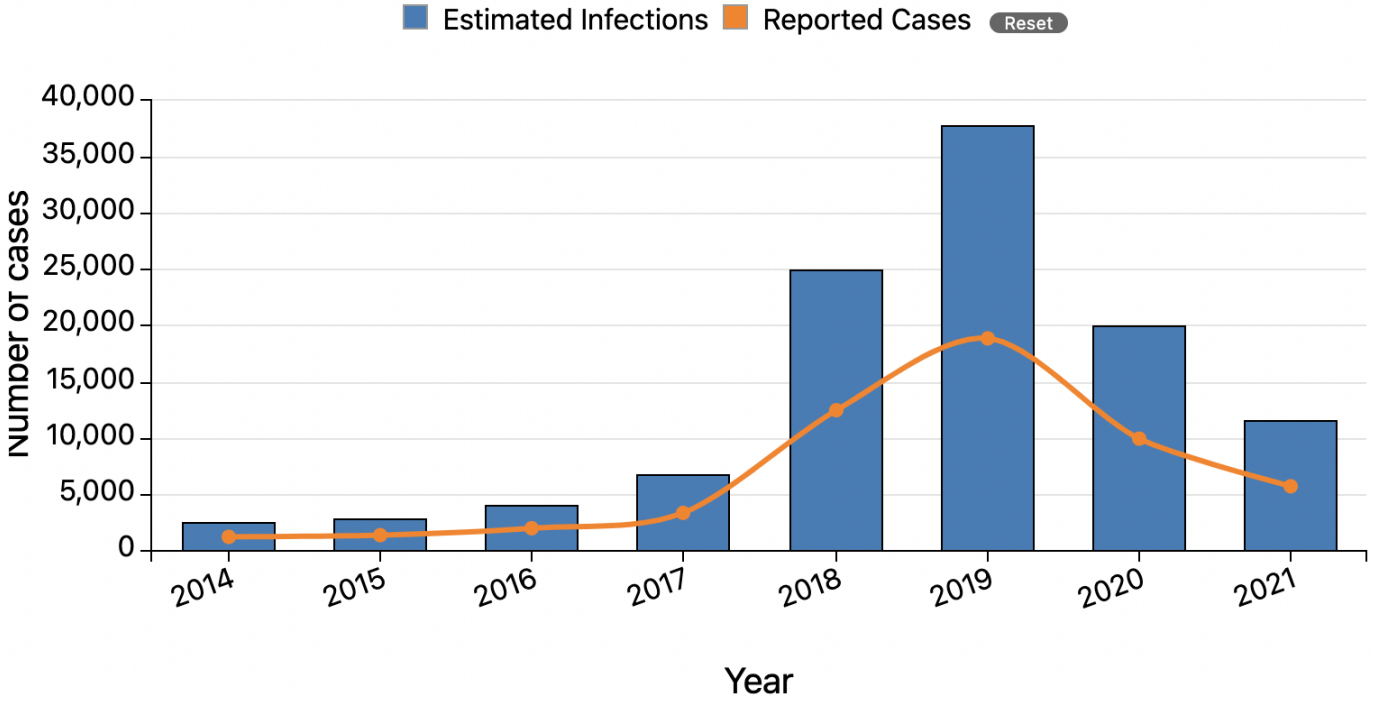
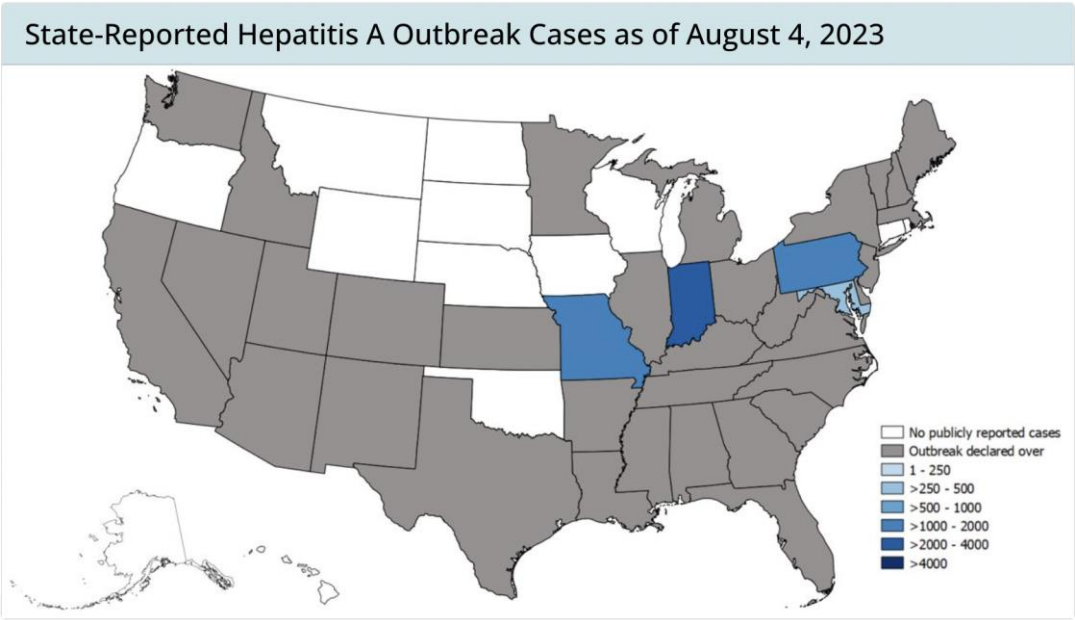
Question

A 50 year old man living homeless is notified by public health that 2 people living in his tent community were diagnosed with hepatitis A in the last week. He does not know if he has been vaccinated but he is not in routine medical care. He denies any symptoms. Which of the following is most appropriate:

A. He does not need vaccine as he is asymptomatic
B. He should receive Hep A vaccine as soon as possible
C. He should receive combination Hep A and Hep B vaccine as he is likely non-immune to both

Hepatitis A: Epidemiology





Hepatitis A Vaccines

- Universal vaccination for children since 2006 (between 12-23 months)
- 3 formulations of vaccine available – Havrix, Vaqta, and Twinrix
  - 2 doses vs 3 doses (with hepatitis B vaccine)
- Duration of protection is unknown but felt to be lifelong
  - No need to check antibody titers after vaccination, except in immunocompromised individuals and those with HIV
  - No correlate of immunity

Hepatitis A Vaccination in Adults

- Travelers
- Men who have sex with men
- Persons who use illicit drugs
- Persons who work with non human primates
- Persons who anticipate close contact with an international adoptee from an endemic area
- Persons with chronic liver disease
- Post-exposure prophylaxis for healthy persons
- **Persons living homeless**

Hepatitis A: Post-Exposure Prophylaxis

- No PEP needed if healthy and previously vaccinated
- PEP should be given immediately (within 14 days of exposure)
- No data available for combination HepA/HepB vaccine for PEP in HAV outbreak setting (contains only half the Hep A antigen compared to HAV vaccine – so not recommended after exposure)
- If non-immune, should complete 2-dose vaccine series (2nd dose at least 6 months after 1st dose)
- Immune globulin + vaccine (at separate sites) for immunocompromised and those with chronic liver disease
- For infants < 12 months, immune globulin only ASAP (within 2 weeks)

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Question

3 college students living in the same dorm are diagnosed with meningococcal meningitis, serotype B. The resident advisor who lives on the same floor and had been in close contact with one of the students presents for care to the student health clinic. She is asymptomatic and was already treated with rifampin for chemoprophylaxis when the first case was diagnosed. Public health has recommended vaccine to control the outbreak. She notes the received quadrivalent meningococcal vaccine 2 years ago. Which of the following is most appropriate?

A. Start meningococcal B vaccine series today
B. Give a booster dose of quadrivalent vaccine today
C. No additional doses of vaccine needed

Meningococcal Vaccines

Quadrivalent: Serogroups A, C, Y, W-135

- ~~*Menactra* (MenACWY-D)~~
  ~~- Conjugate vaccine~~
  ~~- Approved for ages 9 months to 55 years~~

- *Menveo* (MenACWY-CRM)
  - Conjugate vaccine
  - Approved for ages 2 to 55 years

- *MenQuadFi* (MenACWY-TT)
  - Polysaccharide tetanus toxoid conjugate vaccine
  - Approved for ages 2 to 55 years

Meningococcal Vaccines

Monovalent B Vaccines

- MenB-4C (*Bexsero*)
  - Recombinant vaccine
  - For ages 10 to 25 years
  - 2 dose series ≥1 month apart

- MenB-FHbp (*Trumenba*)
  - Recombinant vaccine
  - For ages 10 to 25 years
  - Healthy adolescents and young adults: 2 doses at 0, 6 months
  - Adults at risk for meningococcal disease: 3 doses at 0, 1-2, 6 months
  - Vaccinated during serogroup B meningococcal disease outbreaks: 3 doses at 0, 1-2, 6 months

Meningococcal Group B Vaccine Indications

Recommended for people 16-23 years of age at increased risk, preferred age 16-18:

- Meningococcal B outbreak
- Asplenia
- Complement deficiency
- On eculizumab (Soliris)
- Microbiologist with potential exposure to *Neisseria meningitidis*

Same vaccine should be used for all doses

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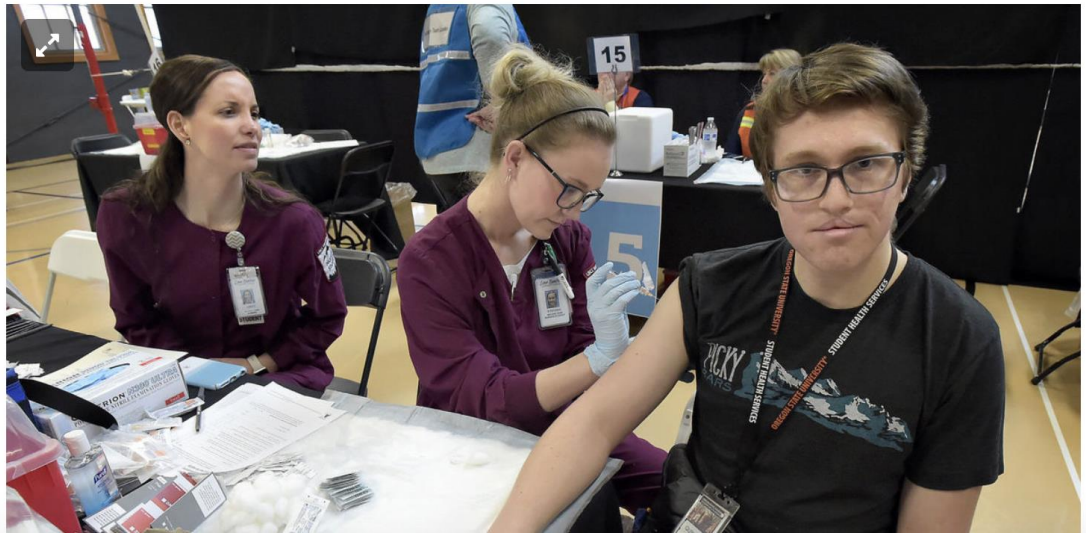
BREAKING TOP STORY

Meningococcus returns to OSU: Student being treated for disease

BENNETT HALL Corvallis Gazette-Times Oct 27, 2017 0



Meningococcal Pentavalent Vaccine

Stay tuned …

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Case

A 37 year-old cis-male presents to establish care. He smokes 0.5 ppd of cigarettes for the past 20 years. He denies any other medical issues. He notes that he received all of his childhood immunizations and has been vaccinated yearly for influenza and is up to date for COVID-19 vaccine. He has not received pneumococcal vaccination. Which of the following is most accurate?

A. He does not need pneumococcal vaccination as he is under 65
B. He needs a PCV20 alone
C. He needs a PCV20 followed 1 year later by a PPSV23
D. He needs a PCV15 followed by PPSV23 1 year later and again in 5 years

Pneumococcal Disease Mortality

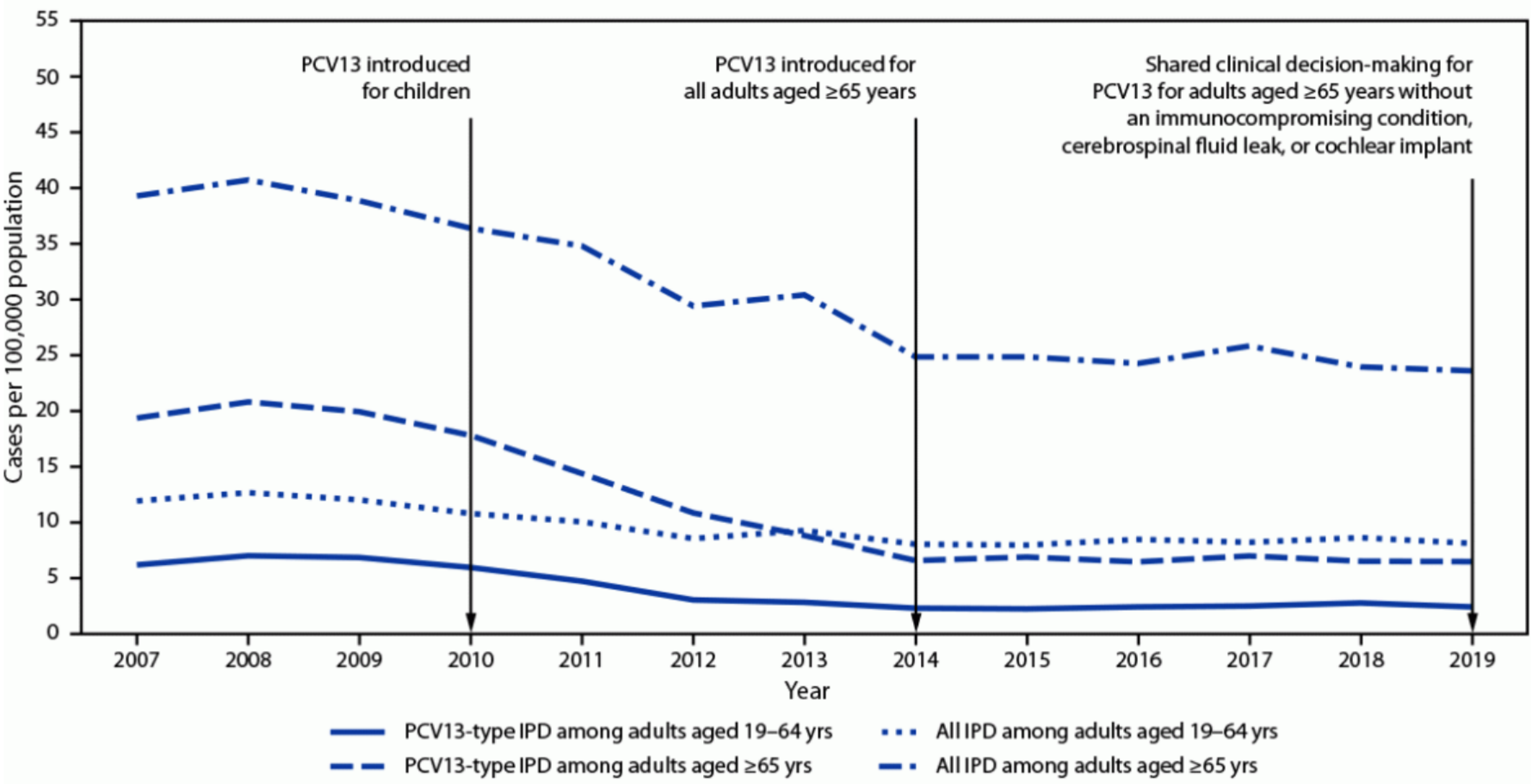
Age (years)	Disease Incidence Cases/100,000 (number of cases)	Death Rate Deaths/100,000 (number of deaths)
<1	17.7 (702)	0.20 (8)
1	12.6 (500)	0.20 (8)
2–4	5.07 (606)	0.13 (16)
5–17	1.23. (659)	0.00 (0)
18–34	2.33 (1,757)	0.08 (60)
35–49	6.48 (3,982)	0.46 (284)
50–64	14.8 (9,326)	1.47 (932)
65–74	18.0 (4,952)	2.17 (597)
75–84	29.0 (4,042)	4.53 (631)
≥85	45.4 (2,856)	11.4 (718)
Total	9.14 (29,382)	1.01 (3,254)

Pneumococcal Vaccine in Adults:
Who Needs It?

- Persons ≥ 65 years of age

- Persons age 19-64 with:
  - Chronic lung disease (asthma or COPD)
  - Chronic heart disease (except HTN)
  - Chronic liver disease
  - CSF leak
  - Smokers
  - Diabetes
  - Alcoholism
  - Functional or anatomic asplenia
  - Immunocompromising conditions

FIGURE. Incidence of all invasive pneumococcal disease and 13-valent pneumococcal conjugate vaccine-type* invasive pneumococcal disease among adults aged ≥19 years, by invasive pneumococcal disease type and age group — United States, 2007–2019†



New Recommendations: Pneumococcal Vaccine

Adults 19–64 years old with specified immunocompromising conditions
Complete pneumococcal vaccine schedules

Prior vaccines	Option A	Option B
None*	**PCV20**	**PCV15** → ≥8 weeks → **PPSV23**
PPSV23 only	≥1 year → **PCV20**	≥1 year → **PCV15**
PCV13 only	≥1 year → **PCV20**	≥8 weeks → **PPSV23** → ≥5 years → **PPSV23** Review pneumococcal vaccine recommendations again when your patient turns 65 years old.
PCV13 and **1 dose of PPSV23**	≥5 years → **PCV20**	≥5 years† → **PPSV23** Review pneumococcal vaccine recommendations again when your patient turns 65 years old.
PCV13 and **2 doses of PPSV23**	≥5 years → **PCV20**	**No vaccines** recommended at this time. Review pneumococcal vaccine recommendations again when your patient turns 65 years old.

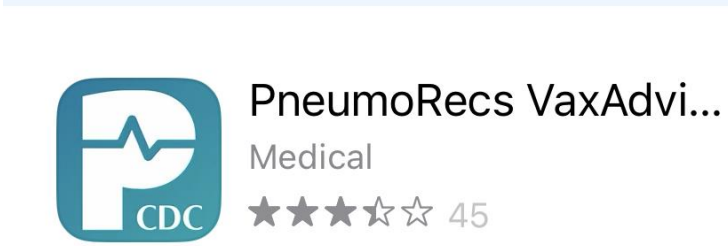
New Recommendations: Pneumococcal Vaccine

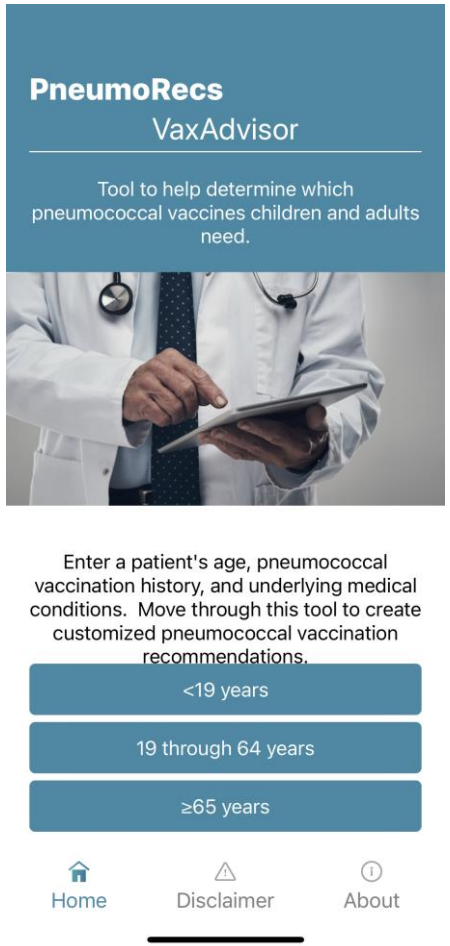
Adults ≥65 years old
Complete pneumococcal vaccine schedules

Prior vaccines	Option A	Option B
None*	**PCV20**	**PCV15** → ≥1 year† → **PPSV23**
PPSV23 only at any age	≥1 year → **PCV20**	≥1 year → **PCV15**
PCV13 only at any age	≥1 year → **PCV20**	≥1 year† → **PPSV23**
PCV13 at any age & **PPSV23** at <65 yrs	≥5 years → **PCV20**	≥5 years§ → **PPSV23**

Pneumococcal Vaccine: Resources

- https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html#adults-over-65





Respiratory Syncytial Virus (RSV)

- One of the most common causes of illness
- Most common cause of hospitalization in infants
- Adults typically have mild or no symptoms but people 60+ at higher risk for lower respiratory disease
- RSV season starts in the fall and peaks in the winter typically

RSV Risk Factors for Severe Disease

Chronic underlying medical conditions associated with increased risk

- Lung disease (such as chronic obstructive pulmonary disease and asthma)
- Cardiovascular diseases (such as congestive heart failure and coronary artery disease)
- Moderate or severe immune compromise*
- Diabetes mellitus
- Neurologic or neuromuscular conditions
- Kidney disorders
- Liver disorders
- Hematologic disorders
- Other underlying conditions that a health care provider determines might increase the risk for severe respiratory disease

Other factors associated with increased risk

- Frailty†
- Advanced age§
- Residence in a nursing home or other long-term care facility
- Other underlying factors that a health care provider determines might increase the risk for severe respiratory disease

RSV Vaccines

Morbidity and Mortality Weekly Report (*MMWR*)

Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

Weekly / July 21, 2023 / 72(29);793–801

- 2 FDA approved vaccines
  - RSVPreF3 (Arexvy, GSK)
  - RSVPreF (Abrysvo, Pfizer)

RSV Vaccines

TABLE 1. Efficacy of 1 dose of GSK respiratory syncytial virus RSVpreF3 vaccine against respiratory syncytial virus–associated disease among adults aged ≥60 years — multiple countries, 2021–2023

Return

Efficacy evaluation period	Vaccine efficacy against outcome*	
	RSV-associated LRTD†	RSV-associated medically attended LRTD§
Season 1¶	82.6 (57.9–94.1)**	87.5 (58.9–97.6)††
Season 2§§	56.1 (28.2–74.4)††	—¶¶
Combined seasons 1 and 2 (interim)***	74.5 (60.0–84.5)†††	77.5 (57.9–89.0)††

TABLE 3. Efficacy of 1 dose of Pfizer respiratory syncytial virus RSVpreF vaccine against respiratory syncytial virus–associated disease among adults aged ≥60 years — multiple countries, 2021–2023

Return

Efficacy evaluation period	Vaccine efficacy against outcome, % (95% CI)*	
	RSV-associated LRTD†	RSV-associated medically attended LRTD§
Season 1¶	88.9 (53.6–98.7)	84.6 (32.0–98.3)
Season 2 (interim)**	78.6 (23.2–96.1)	—††
Combined seasons 1 and 2 (interim)§§	84.4 (59.6–95.2)	81.0 (43.5–95.2)

RSV Vaccines

TABLE 2. Safety* of 1 dose of GSK respiratory syncytial virus RSVPreF3 vaccine in adults aged ≥60 years — multiple countries, 2021–2023

Return

Safety event	Risk for event		
	RSVPreF3 recipients no./No. (%)†	Placebo recipients no./No. (%)§	Relative risk (95% CI)¶
Serious AE**	549/12,570 (4.4)	540/12,604 (4.3)	1.02 (0.91–1.15)
Severe reactogenicity events††	37/979 (3.8)	9/976 (0.9)	4.10 (1.99–8.45)
Inflammatory neurologic events§§	3 events in trials without placebo recipients¶¶	—¶¶	—¶¶

TABLE 4. Safety* of 1 dose of Pfizer respiratory syncytial virus RSVpreF vaccine in adults aged ≥60 years — multiple countries, 2021–2023

Return

Safety event	Risk for event		
	RSVpreF recipients no./No. (%)†	Placebo recipients no./No. (%)§	Relative risk (95% CI)¶
Serious AE**	792/18619 (4.3%)	749/18334 (4.1%)	1.04 (0.94–1.15)
Severe reactogenicity events††	36/3673 (1.0%)	24/3491 (0.7%)	1.43 (0.85–2.39)
Inflammatory neurologic events§§	3/18622 (—)¶¶	0/18335 (—)	—¶¶

RSV Vaccine Recommendation 2023-2024

- Adults age ≥ 60 years MAY receive a single dose of RSV vaccine using shared decision-making

- If given, vaccinate before onset of RSV season ideally
- Ok to give with other vaccines (no data however)

Summary Points

- Counsel patients regarding importance of vaccination
  - Provide evidence and discuss protection of others in community
- Infectious disease outbreaks of vaccine preventable diseases still occurring (ie measles, hepatitis A)
- Some vaccines may be used in outbreak or exposure situations (ie hepatitis A, meningococcal)
- To be able to do shared decision making with patients, you must know about the risks of disease and the potential benefits of vaccine