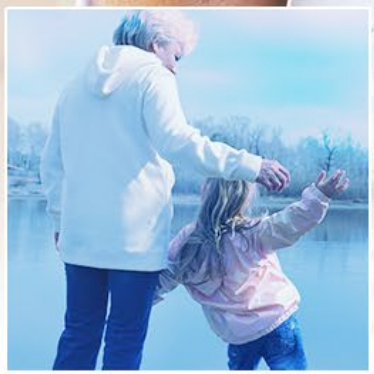
PNEUMOCOCCAL DISEASE PREVENTION IN AT-RISK ADULTS

What's the Latest?



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Jointly provided by Center for Independent Healthcare Education and Vemco MedEd

Activity Description

Target Audience

This activity is designed as a comprehensive approach to address the practice needs of primary care providers, including primary care physicians, osteopathic physicians, physician assistants, nurse practitioners, and allied healthcare professionals, who are at the forefront of caring for patients eligible for immunizations and/or at risk for vaccine-preventable diseases.

Learning Objectives

At the conclusion of this educational activity, the learner should be able to:

- Assess how pneumococcal vaccine development can address the impact and burden of serotype switching
- Explain the latest ACIP guideline recommendations for the prevention of pneumococcal disease in at-risk adults
- Select an appropriate vaccine or vaccine series based on patient type to provide optimal protection against pneumococcal disease

Faculty and Disclosure

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Dr. Rachel Caskey does not have any relevant financial relationships with ineligible companies to disclose. *Dr. Caskey does not discuss any off-label use.*

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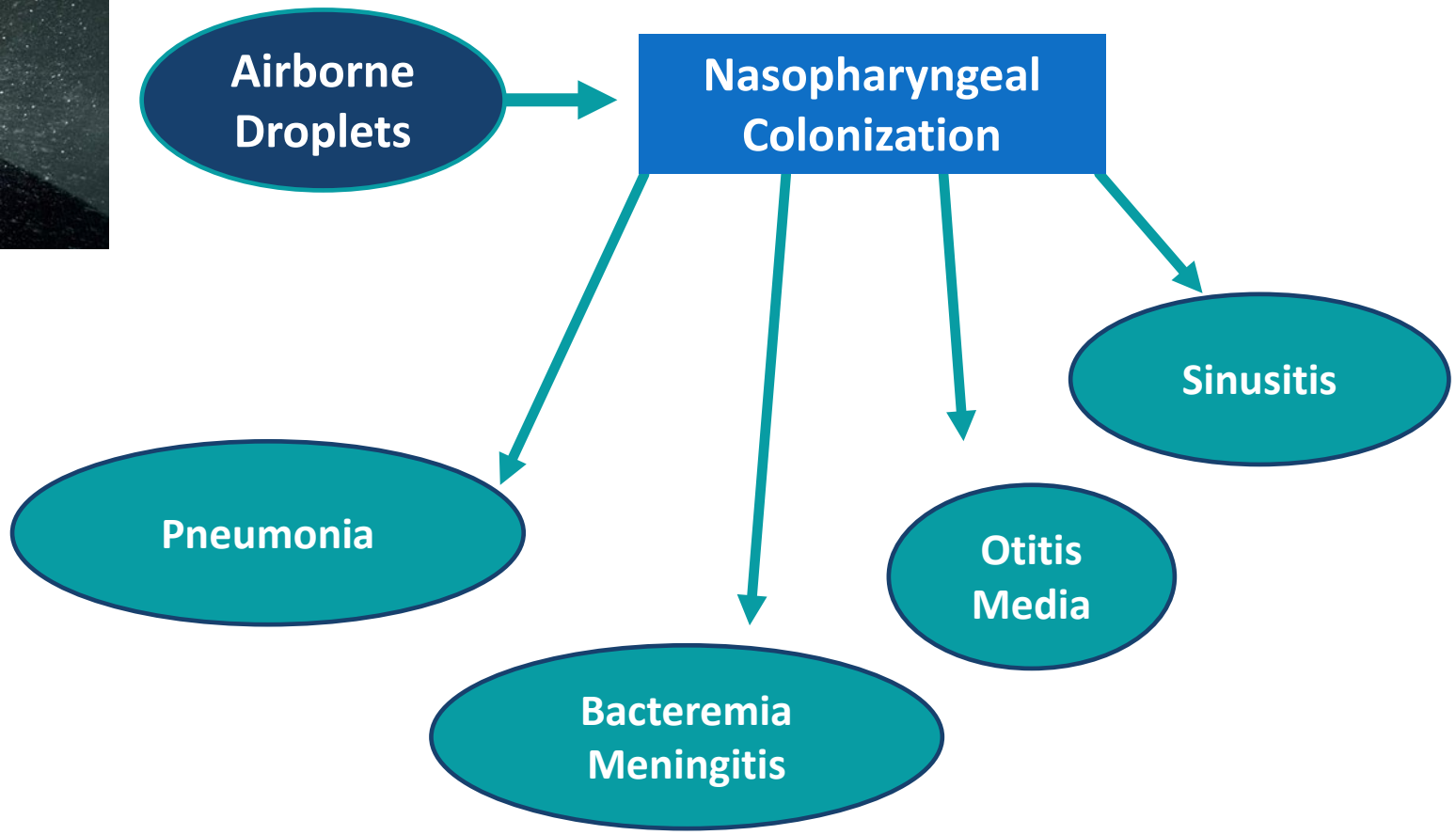
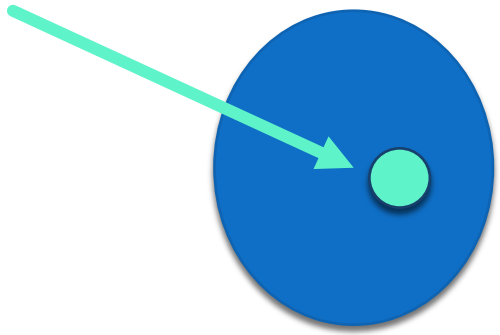
Types of Pneumococcal Disease



Pneumococcal Disease: Scope of the Problem

Pneumococcal Disease

- Sinusitis
- Otitis media
- Pneumonia
- Invasive Pneumococcal Disease



CDC. Manual for the surveillance of vaccine-preventable diseases. http://www.cdc.gov/vaccines/pubs/surv-manual/chpt11-pneumo.html#t1.

Pneumococcal Disease: Scope of the Problem

Pneumococcal Disease

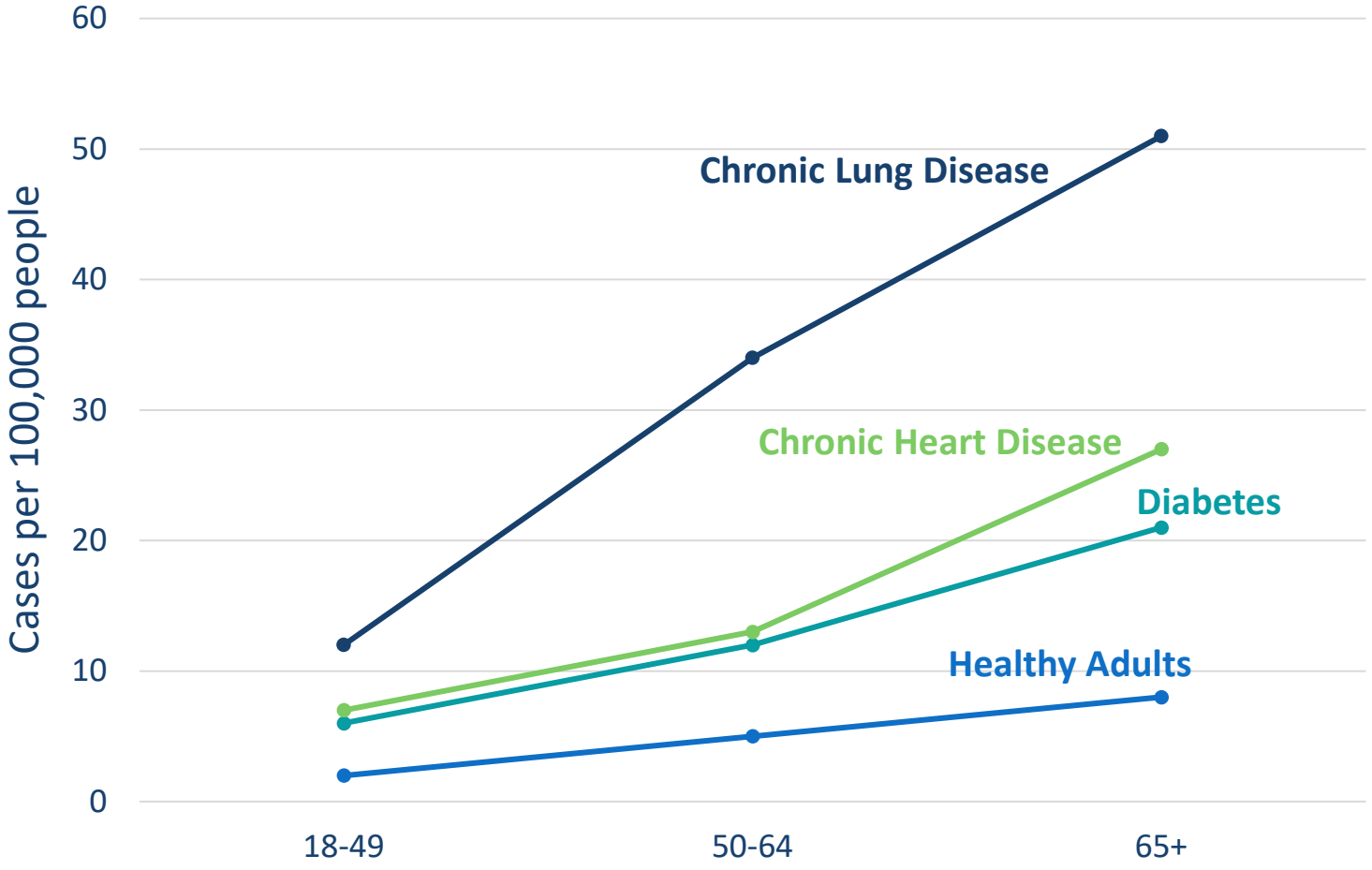
- Sinusitis
- Otitis media
- Pneumonia
- Invasive Pneumococcal Disease

Invasive Pneumococcal Disease

- Bacteremia
- Meningitis
- Sepsis

CDC. Manual for the surveillance of vaccine-preventable diseases. http://www.cdc.gov/vaccines/pubs/surv-manual/chpt11-pneumo.html#t1.

Incidence of Disease Increases With Age and Chronic Conditions



Compared to Healthy Adults

Diabetes mellitus

3X the risk of IPD

Chronic heart disease

4X the risk of IPD

Chronic lung disease

6X the risk of IPD

Adapted from Shea KM, et al. *Open Forum Infect Dis*. 2014;1(1):ofu024.

Pneumococcal Disease

Adults 19–64 yo

Pneumococcal Pneumonia requiring hospitalization

- 126–422 per 100,000

Invasive Pneumococcal Disease

- **8 per 100,000**
- **Serotypes unique to**
  - PCV13 → 30% of cases
  - PCV15 → 13% of cases
  - PCV20 → 28% of cases
  - PPSV23 → 43% of cases

Adults 65+ yo

Pneumococcal Pneumonia requiring hospitalization

- 847–3365 per 100,000

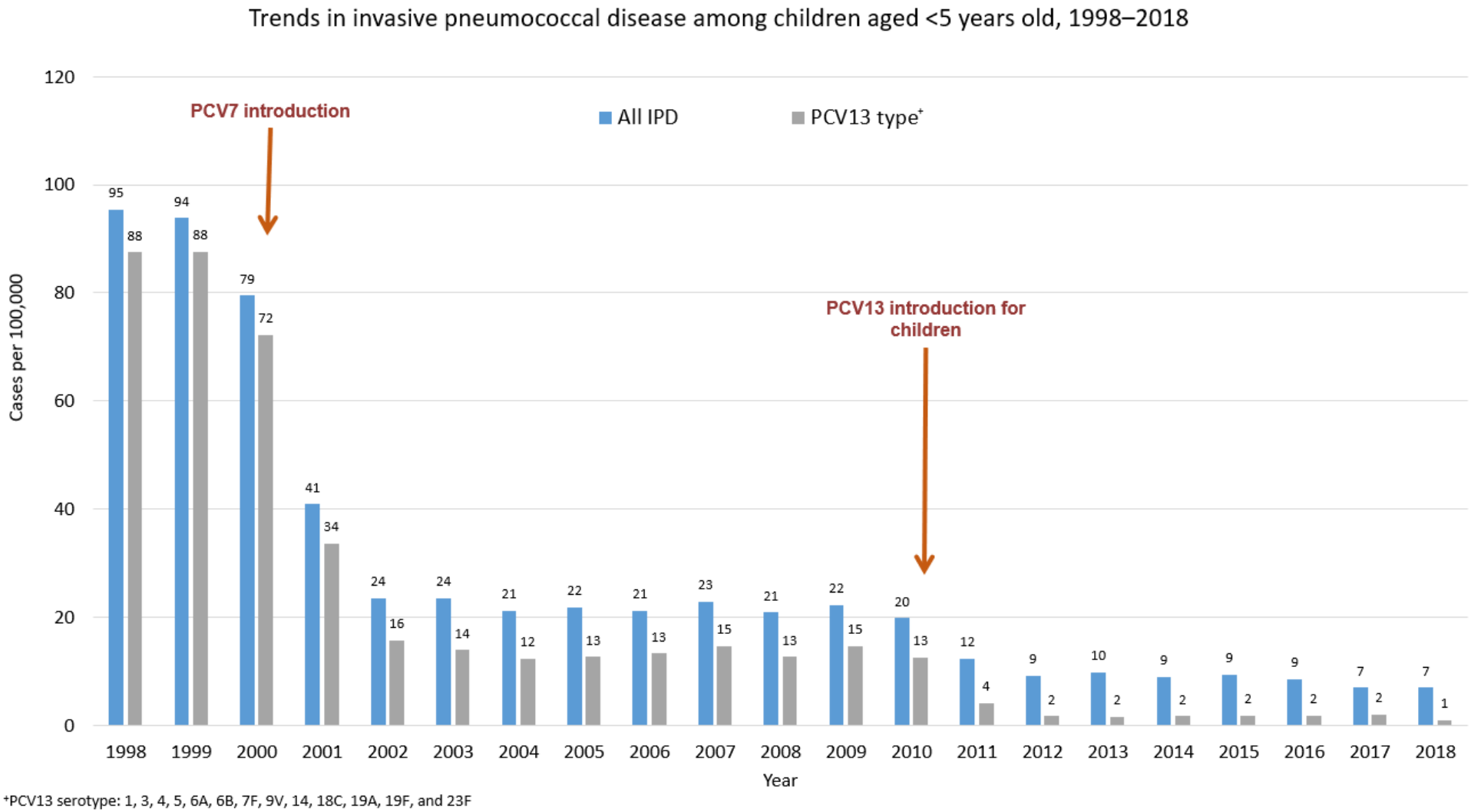
Invasive Pneumococcal Disease

- **24 per 100,000**
- **Serotypes unique to**
  - PCV13 → 27% of cases
  - PCV15 → 15% of cases
  - PCV20 → 27% of cases
  - PPSV23 → 35% of cases

yo, year old; PCV, Pneumococcal conjugate vaccine; PPSV, Pneumococcal polysaccharide vaccine.

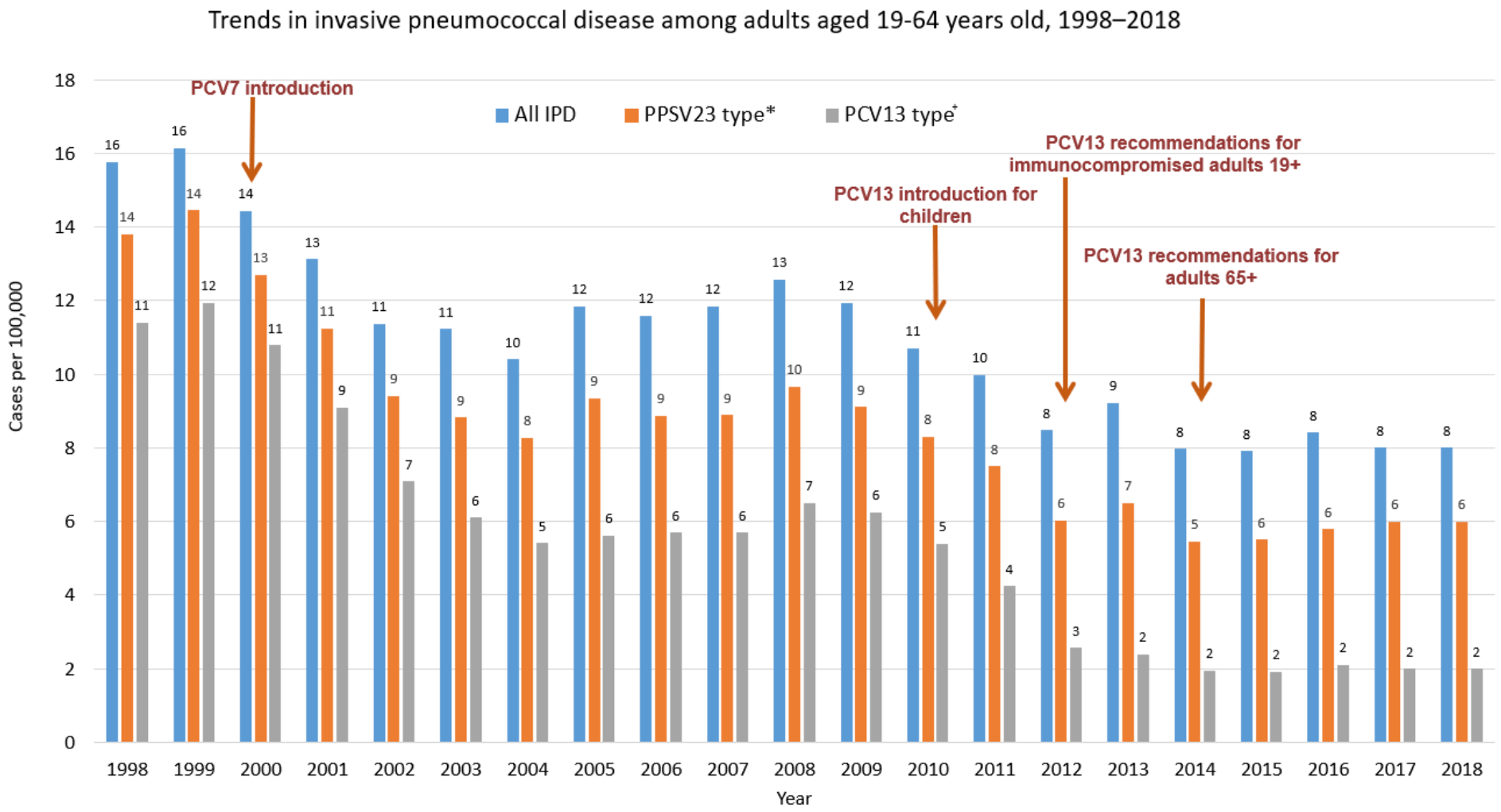
Kobayashi M, et al. *MMWR Morb Mortal Wkly Rep.* 2022;71:109–117. DOI: http://dx.doi.org/10.15585/mmwr.mm7104a1.

Invasive Pneumococcal Disease: Children



CDC. Surveillance and reporting. https://www.cdc.gov/pneumococcal/surveillance.html. Accessed Feb, 2022.

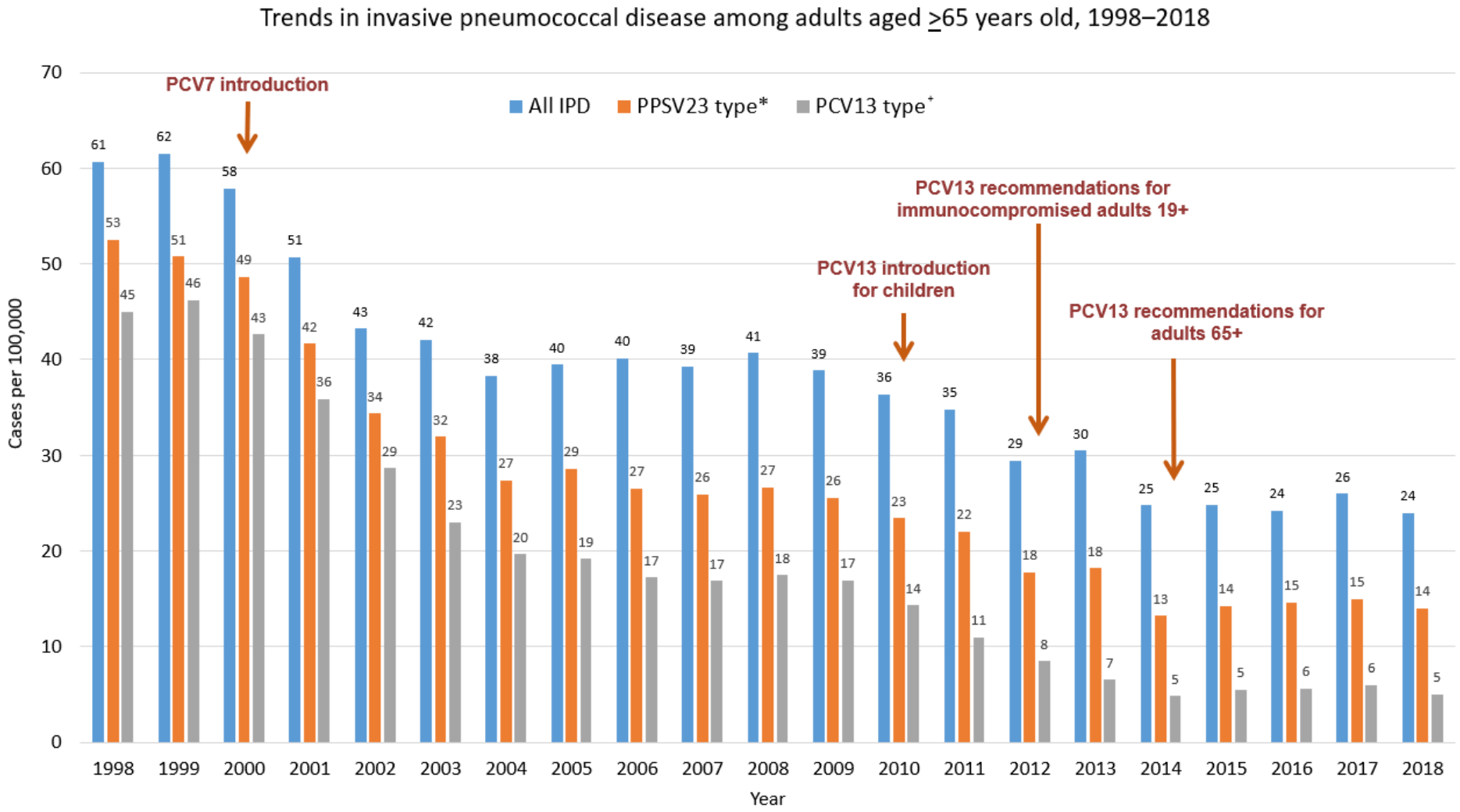
Invasive Pneumococcal Disease: 19–64 years



*PPSV23 serotypes: 1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F, and 33F
†PCV13 serotype: 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, and 23F

CDC. Surveillance and reporting. https://www.cdc.gov/pneumococcal/surveillance.html. Accessed Feb, 2022.

Invasive Pneumococcal Disease: 65+ years



*PPSV23 serotypes: 1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F, and 33F
†PCV13 serotype: 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, and 23F

CDC. Surveillance and reporting. https://www.cdc.gov/pneumococcal/surveillance.html. Accessed Feb, 2022.

Highest-Risk Patients: Immunocompromised

- **Immunocompromised patients are at greatest risk of IPD**
  - **Rates of IPD are 10-100x greater than healthy adults**
  - **Cancer, transplant, HIV, ESRD, immune modulated medications**
- **Inactivated vaccines cannot cause infection**

ESRD, end-stage renal disease.

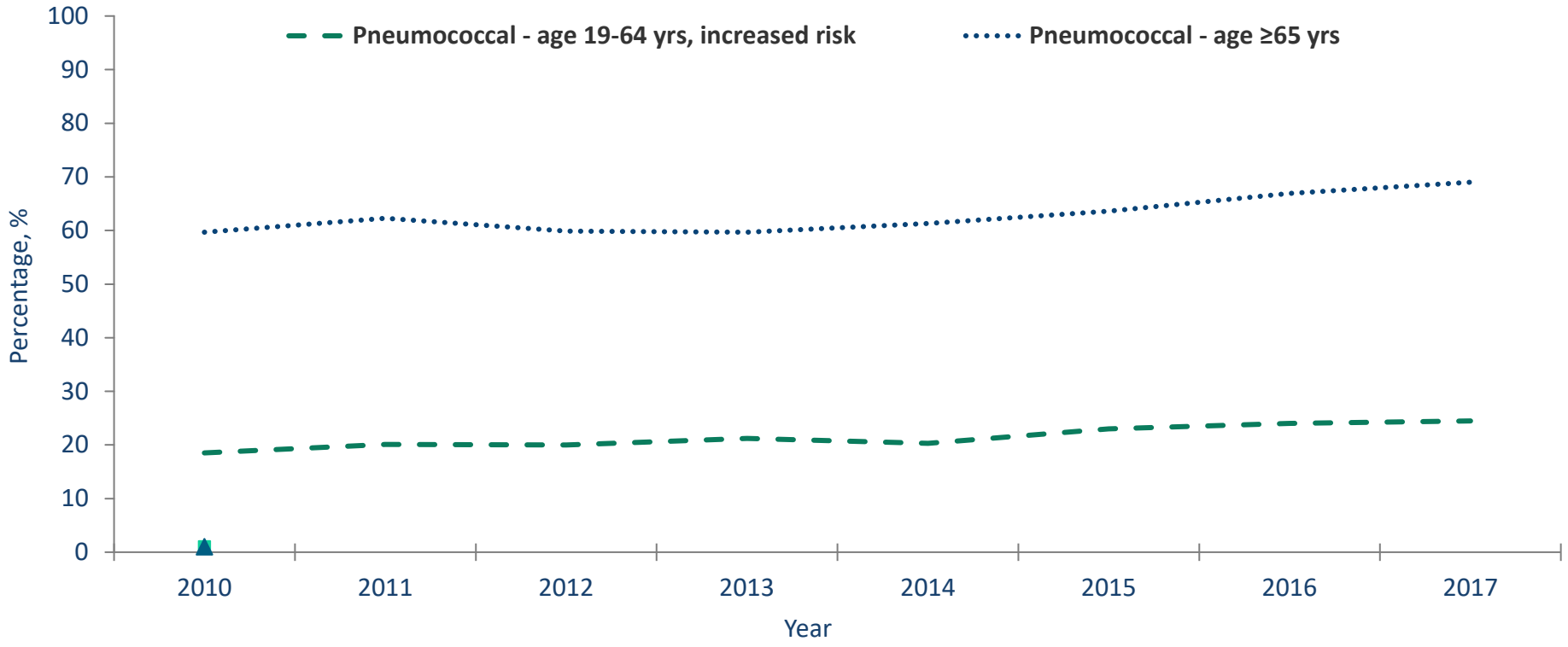
Backhaus E, et al. *BMC Infect Dis*. 2016;16:367; van Aalst M, et al. *Travel Med Infect Dis*. 2018;24:89-100.

Invasive Pneumococcal Disease

- **IPD has declined in children and adults since 2000**
  - Much of the decline is in types shared by PCV13 and PPSV23
- **PPSV23 has shown to be effective against IPD, but less effective against pneumococcal pneumonia among adults**
  - 21–46% effectiveness against PPSV23-type pneumococcal pneumonia
- **Older adults and adults with chronic medical conditions accounted for >90% of adult IPD cases in 2019**

Loo J, et al. *Open Forum Infect Dis*. 2021;8(1):S134-S135.
Childs L, et al. *Open Forum Infect Dis*. 2021;8(1):S130-S131.
Tomczyk S, et al. *MMWR Morb Mortal Wkly Rep*. 2014;63(37):822-825.
Kim JH, et al. *Vaccine*. 2019;37(21):2797-2804.

Adult Vaccination Rates Remain Low



An opportunity for improvement!

yrs, years

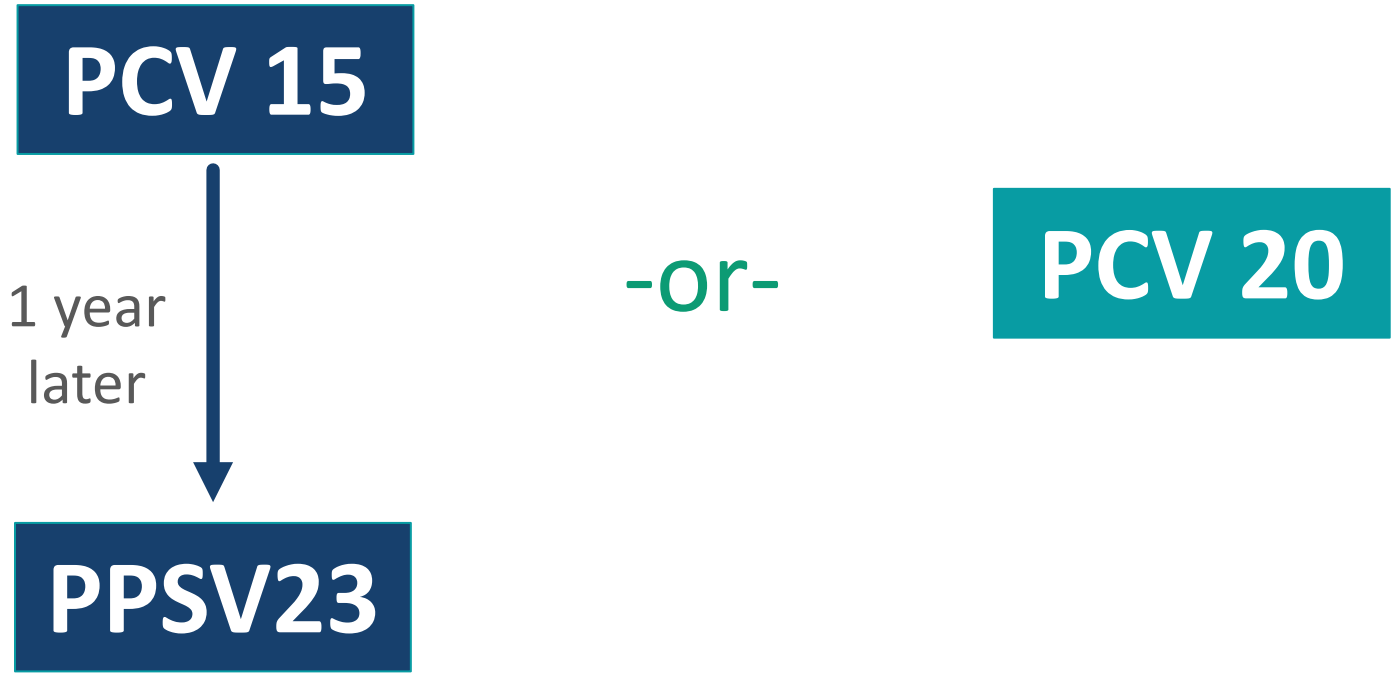
Vaccination Coverage among Adults in the United States, National Health Interview Survey, 2017: CDC https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/pubs-resources/NHIS-2017.html.

A New Day for Pneumococcal Prevention

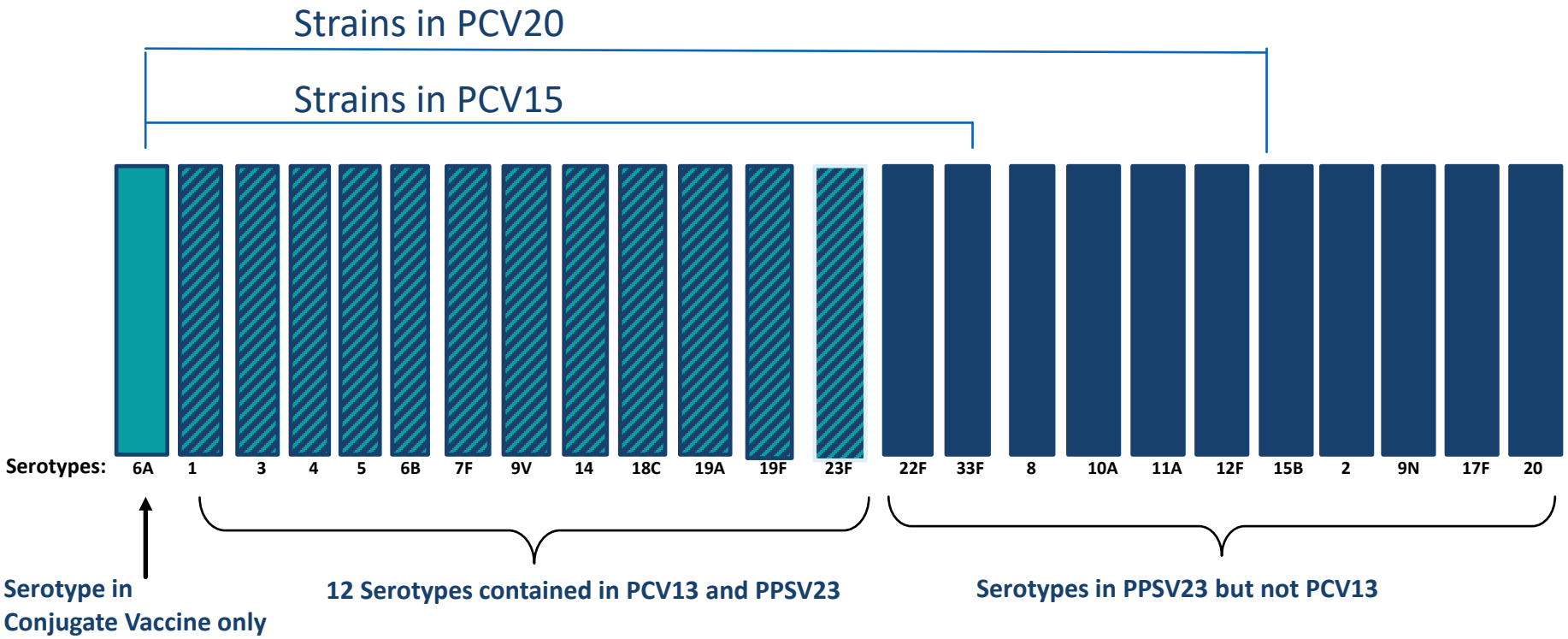
- New pneumococcal vaccines
- Simplified vaccine recommendations
- An opportunity to recharge vaccine efforts

Pneumococcal Vaccination 2022

New Pneumococcal Vaccination Recommendations: Adults



Pneumococcal Serotypes in PPSV23 and PCV13



Pneumococcal Vaccination: Adults

- **Pneumococcal infections result in significant morbidity and mortality**
  - Disease rates declining in children more than adults since conjugate vaccines developed
  - Introduction of conjugate vaccine in adults with lesser population impact
- **New simplified adult immunization recommendations**
  - Prior guidelines still in place for previously vaccinated <65 yo with chronic disease
- **Development of new conjugate vaccines**
  - Conjugate vaccines result in more potent immune response
  - Expanded serotypes in new vaccine
  - Opportunity to simplify recommendations
  - Impact on disease rates will need to be monitored

Adult Pneumococcal Vaccine: Risk Groups And Recommendations 2022

Adults 19-64 years
WITHOUT risk conditions

DO NOT need Pneumococcal vaccination until they develop one or more risk medical condition or age ≥ 65 years

Pneumococcal vaccination NOT indicated *UNTIL/UNLESS develops*
RISK condition and/or age 65+ years

Adults 19-64 years
INCREASED RISK MEDICAL conditions

-Alcoholism -Cigarette Smokers
-DM -Liver Disease
-HD [CAD, CHF; NOT Isolated HTN]
-Lung Disease [Asthma, COPD]

Adults 19 years and older
HIGHEST RISK MEDICAL conditions

IMMUNE COMPROMISE:
-Meds (Prednisone ≥20/d, Biologics, ...)
-Cancer Treatment
-Transplants [Organ, BMT, Stem Cell]
-Inherited/Acquired Immune Deficiency
-Sickle Cell, Splenectomy
-Renal failure, Nephrotic Syndrome
ANATOMIC RISKS: CSF Leaks, Cochlear Implants

Adults 65+ years
AT HIGH RISK due to AGE

Applies to ALL 65 years and older!
(Regardless of Medical Condition)

Lifetime Maximum # Adult Doses of Pneumococcal Vaccines:

PCV 13, 15 or 20	1
PPSV23	1

PCV15 Conjugate Vaccine

OR

PCV20 Conjugate Vaccine

PPSV23 Vaccine Polysaccharide

No additional Pneumococcal vaccination indicated after above doses are completed

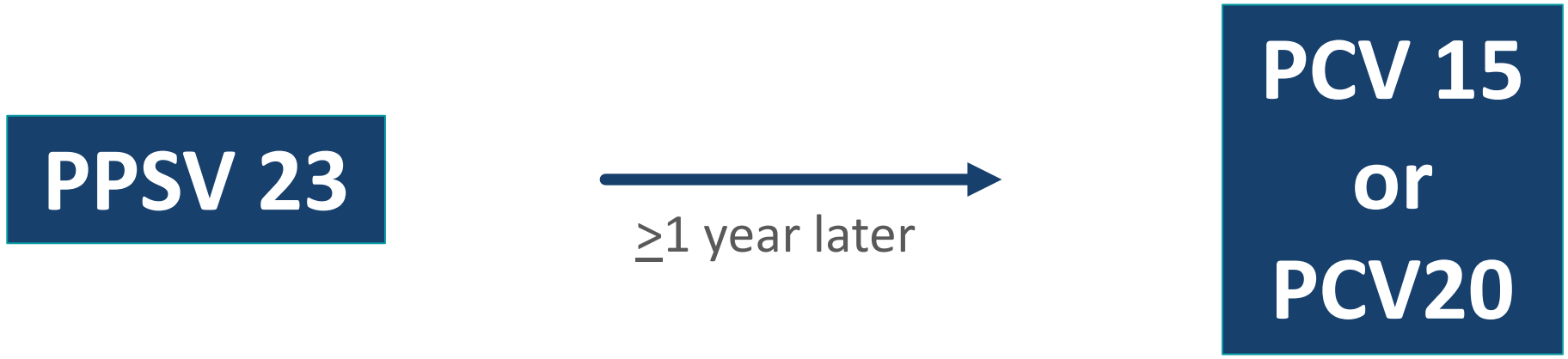
CAD, coronary artery disease; CHF, congestive heart failure; HTN, hypertension; BMT, bone marrow transplant; CSF, cerebral spinal fluid

Kobayashi M, et al. *MMWR Morb Mortal Wkly Rep*. 2022;71(4):109-117.

R. Hopkins, MD. UAMS COM. Revised 2/2/2022
Developed for educational purposes- Please cite!

Previous Pneumococcal Vaccination

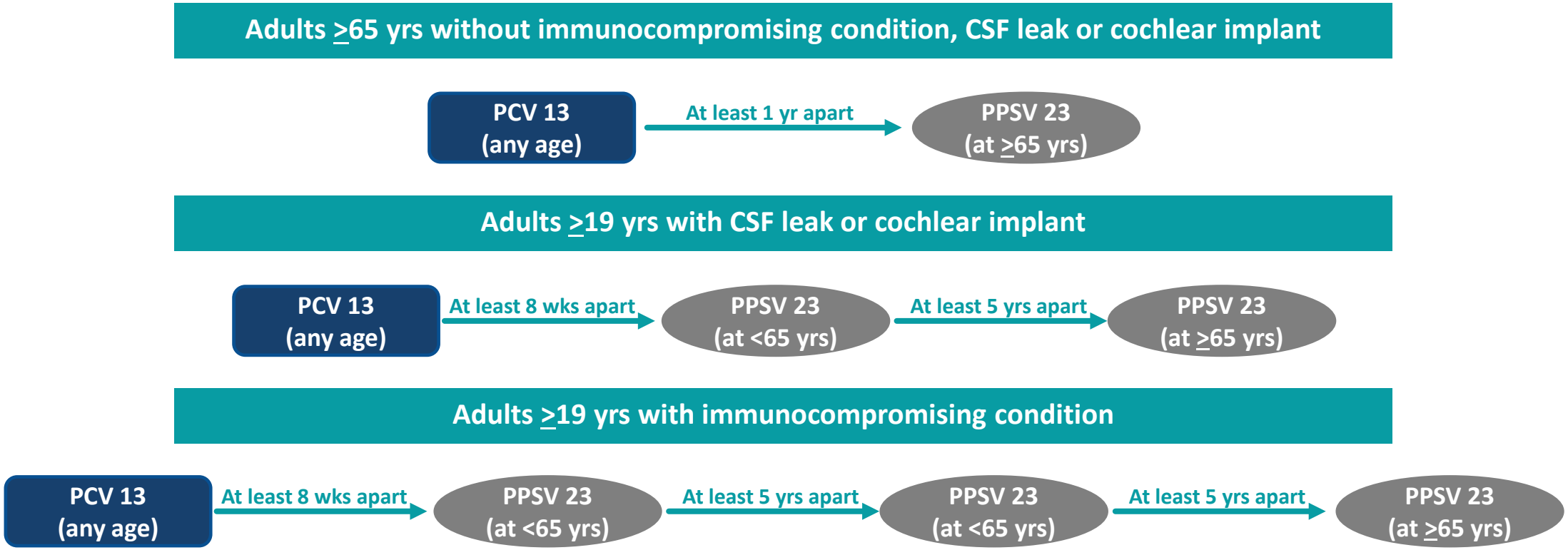
- **Received PPSV23 → May give PCV15 or PCV20 at least 1 year after last PPSV23**
  - Do not need additional PPSV23



CDC Pneumococcal Vaccine Timing; Accessed: Feb 2022 - https://www.cdc.gov/vaccines/vpd/pneumo/downloads/pneumo-vaccine-timing.pdf.

Previous Pneumococcal Vaccination

Received PCV13 ± PPSV23 → Complete PPSV23 per previous recommendations (or 1 dose of PCV20 at least 1 year after PCV13 dose*)



*Updated ACIP recommendation (October 2022). Available at: https://www.cdc.gov/vaccines/acip/recommendations.html.
CDC Pneumococcal Vaccine Timing; Accessed: Feb 2022 - https://www.cdc.gov/vaccines/vpd/pneumo/downloads/pneumo-vaccine-timing.pdf.

Rick, 66 yo

- No current health concerns
- Here for Initial Medicare Wellness visit
- PMH: No medical issues, takes no medications
- Immunizations: **No previous pneumococcal vaccine**

What are your pneumococcal vaccine recommendations for Rick?

PCV20 today

OR

PCV15 today and PPSV23 in 1 year

Barb, 52 yo

- Has HTN but here for preop consult prior to left mastectomy for breast cancer
- Recent diagnostic mammography, core biopsy + invasive ductal carcinoma
- Will start chemotherapy soon
- Immunizations: **No previous pneumococcal vaccines**

What are your pneumococcal vaccine recommendations for Barb?

PCV20 today

OR

PCV15 today and PPSV23 in 1 year

Pneumococcal Immunization: Patients with Immune Suppression

- **Patient Populations**
  - Congenital or Acquired Asplenia
  - Sickle Cell Disease (and other Hemoglobinopathies)
  - Congenital or Acquired Immunodeficiency
  - Generalized Malignancy
  - HIV Infection
  - Hodgkin Disease
  - Iatrogenic immunosuppression
  - Leukemia
  - Lymphoma
  - Multiple Myeloma
  - Chronic Renal Failure
  - Nephrotic Syndrome
  - Solid Organ Transplant

Immune Suppression and Prior Pneumococcal Immunization

- **Includes splenectomy, sickle cell**

Prior Adult Vaccine [If unknown, assume none]	Next Pneumococcal Vaccination*	Additional Pneumococcal Vaccine Doses
None	PCV15 **-OR-** PCV20	PPSV23 in 1 year ONLY IF initial vaccine was PCV15
PCV13	PPSV23 **-OR-** PCV20**	PPSV23 in 5 years if not yet >60 years, final PPSV23 after age 65 years and at least 5 years after 2nd dose PPSV23 If PCV20 given, no additional dose needed
PPSV23	PCV15 **-OR-** PCV20	**NONE**
PCV13 + PPSV23	PPSV23 **-OR-** PCV20** **IF** last PPSV23 >5 years ago	PPSV23 at least 5 years later and after age 65 years only if last dose was given before age 65 years If PCV20 given, no additional dose needed
PCV13 + PPSV23 + PPSV23	PPSV23 **-OR-** PCV20 **IF** last dose given 5+ years ago was before age 65 and now 65+ years**	
PCV15	PPSV23	**NONE**
PCV20	None	**NONE**

*At least 1 year after prior Pneumococcal vaccine dose

**Based on updated ACIP recommendations (October 2022). Available at: https://www.cdc.gov/vaccines/acip/recommendations.html.

Kobayashi M, et al. *MMWR Morb Mortal Wkly Rep*. 2022;71(4):109-117.

Laura: 26 yo

- Here for annual checkup, follow up of Sickle Cell Disease
- Immunizations: **up to date**

Vaccine	Date
Influenza	11/14/2019, 10/13/2021
Pneumococcal	PCV13 8/1/2019 PPSV23 11/12/2019
Meningococcal	MCV4 8/1/2019 MenB 8/1/2019
HiB	[Childhood series]

MCV, meningococcal conjugate vaccine; MenB, meningococcal B vaccine; HiB, Haemophilus influenzae type b

What pneumococcal immunization is recommended for Laura today?

Vaccine	Date
Influenza	11/14/2019, 10/13/2021
Pneumococcal	PCV13 8/1/2019 PPSV23 11/12/2019
Meningococcal	MCV4 8/1/2019 MenB 8/1/2019
HiB	[Childhood series]

PPSV23 is recommended in 2024 and final dose after age 65 years

OR

One dose of PCV20 in 2024 to complete her regimen*

*Based on updated ACIP recommendations (October 2022). Available at: https://www.cdc.gov/vaccines/acip/recommendations.html.

Immune Suppression and Prior Pneumococcal Immunization

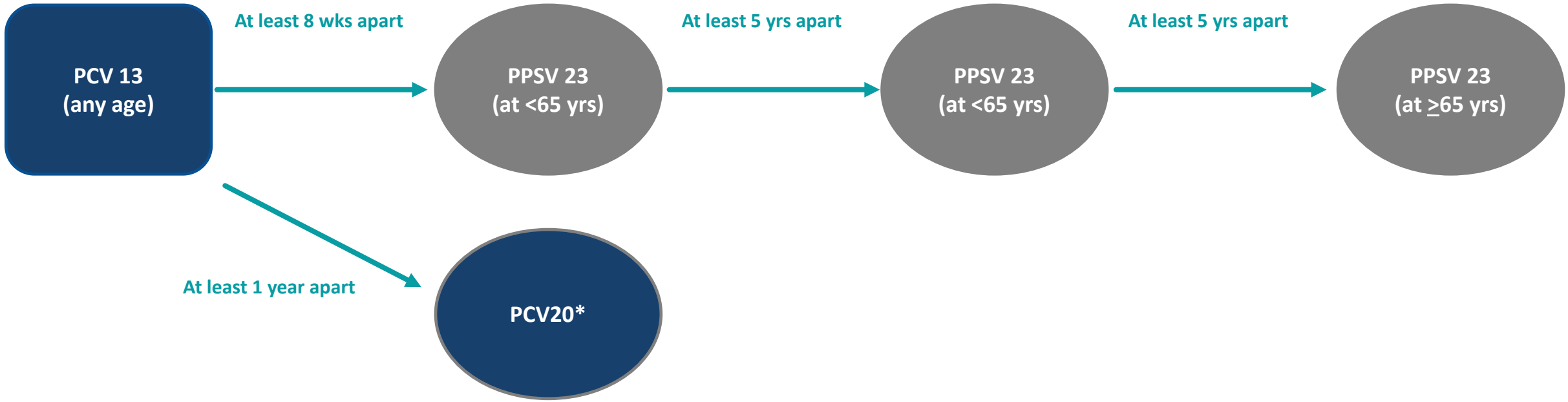
Prior Adult Vaccine [If unknown, assume none]	Next Pneumococcal Vaccination*	Additional Pneumococcal Vaccine Doses
None	PCV15 **-OR-** PCV20	PPSV23 in 1 year ONLY IF initial vaccine was PCV15
PCV13	PPSV23 **-OR-** PCV20**	PPSV23 in 5 years if not yet >60 years, final PPSV23 after age 65 years and at least 5 years after 2nd dose PPSV23 If PCV20 given, no additional dose needed
PPSV23	PCV15 **-OR-** PCV20	**NONE**
PCV13 + PPSV23	PPSV23 **-OR-** PCV20** **IF** last PPSV23 >5 years ago	PPSV23 at least 5 years later and after age 65 years only if last dose was given before age 65 years If PCV20 given, no additional dose needed
PCV13 + PPSV23 + PPSV23	PPSV23 **-OR-** PCV20 **IF** last dose given 5+ years ago was before age 65 and now 65+ years**	
PCV15	PPSV23	**NONE**
PCV20	None	**NONE**

*At least 1 year after prior Pneumococcal vaccine dose

**Based on updated ACIP recommendations (October 2022). Available at: https://www.cdc.gov/vaccines/acip/recommendations.html.

Kobayashi M, et al. *MMWR Morb Mortal Wkly Rep*. 2022;71(4):109-117.

Immunizations: Adults ≥19 yrs with Immunocompromising Condition



*Based on updated ACIP recommendations (October 2022). Available at: https://www.cdc.gov/vaccines/acip/recommendations.html.
CDC Pneumococcal Vaccine Timing; Accessed: Feb 2022 - https://www.cdc.gov/vaccines/vpd/pneumo/downloads/pneumo-vaccine-timing.pdf.

Immunization in Sickle Cell, Splenectomy

- **Splenic dysfunction/splenectomy = lifelong increased risk for invasive infection with encapsulated bacteria**
  - *Streptococcus pneumoniae*
  - *Hemophilus influenzae*
  - *Neisseria meningitidis*
- **Immunization against these pathogens is important to reduce risk**
- **Best case**
  - Complete childhood immunization
  - Initial immunization prior to Splenectomy
    - Pneumococcal conjugate vaccine
    - Pneumococcal polysaccharide vaccine [if conjugate vaccine was not PCV20]

Lee GM. *Hematology Am Soc Hematol Educ Program.* 2020;1:328–335.

Sudhir, 70 yo

- Here for follow up of diabetes and hypertension
- Immunizations:

Vaccine	Date
Pneumococcal [PPSV23]	2/22/2017

What could you consider for Sudhir?

Vaccine	Date
Pneumococcal [PPSV23]	2/22/2017

PCV20 today

Or

PCV15 today

Pneumococcal Immunization in Older Adults

- **Older adults [65+ years] are at increased risk for Pneumococcal infection regardless of other medical conditions**
  - Immunization can help mitigate this risk
- **New recommendations**
  - Recognize prior vaccination
  - Assure ongoing protection for those with prior vaccines and those without

Pneumococcal Immunization for Adults 65+

- **How do I 'problem solve' patients with prior Pneumococcal Vaccination?**

Prior Adult Vaccine [If unknown, assume none]	Next Pneumococcal Vaccination*	Additional Pneumococcal Vaccine Doses
None	PCV15 ***-OR-*** PCV20	PPSV23 in 1 year ONLY IF initial vaccine was PCV15
PCV13	PPSV23	Option of PCV20 at least 5 years after PPSV23 dose (with shared clinical decision-making)**
PPSV23	PCV15 ***-OR-*** PCV20	**None**
PCV13 + PPSV23	PPSV23 ***-OR-*** PCV20** **IF** last PPSV23 >5 years ago + before 65	**None**
PCV13 + PPSV23 + PPSV23	PPSV23 ***-OR-*** PCV20** **IF** last PPSV23 >5 years ago + before 65	
PCV15	PPSV23	**None**
PCV20	None	**None**

*At least 1 year after prior Pneumococcal vaccine dose

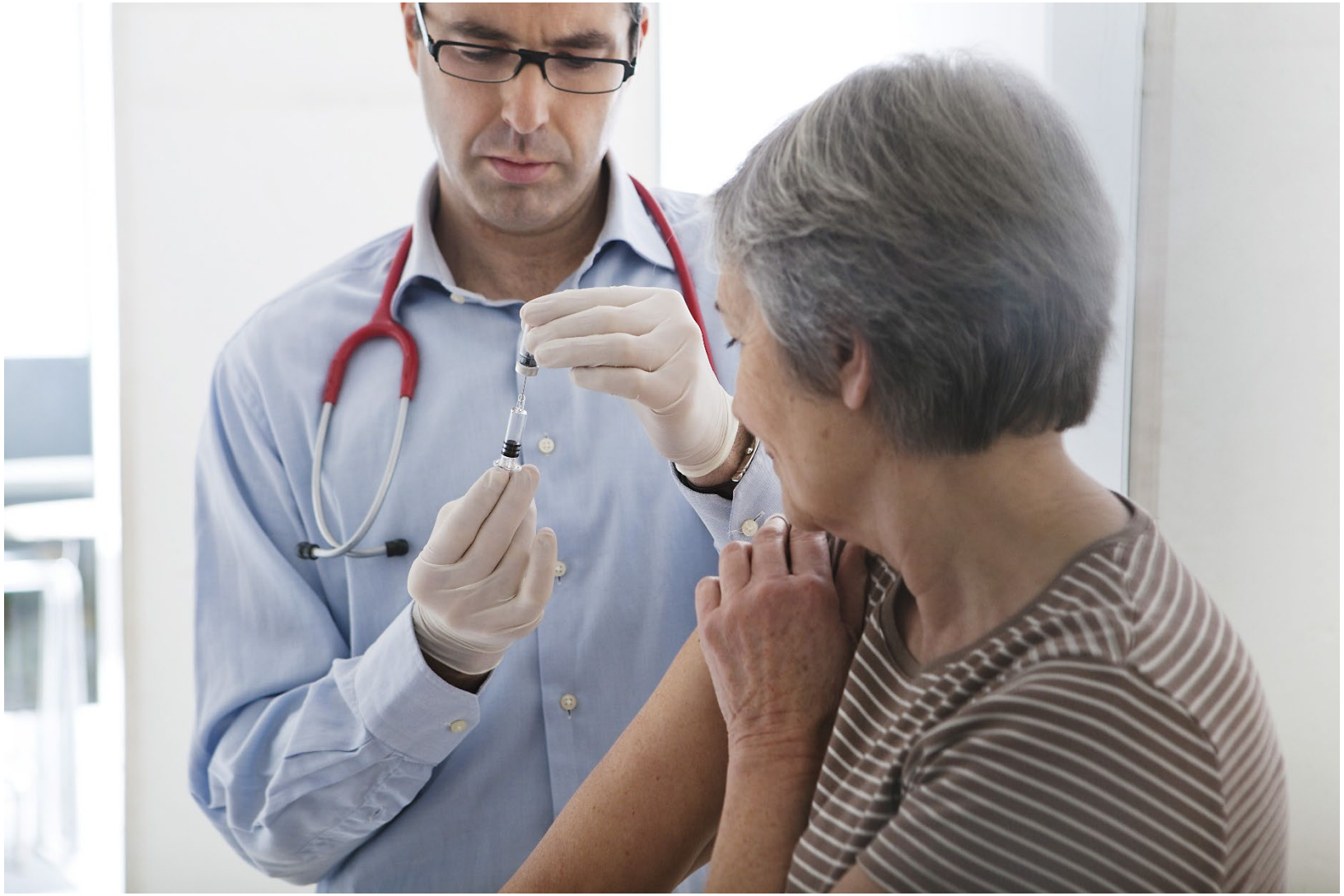
**Based on updated ACIP recommendations (October 2022). Available at: https://www.cdc.gov/vaccines/acip/recommendations.html.

Kobayashi M, et al. *MMWR Morb Mortal Wkly Rep*. 2022;71(4):109-117.

Operational Considerations: Pneumococcal

- **Education:**
  - Team update: all on same page for pneumococcal vaccine use
  - Patients: understand benefits of prevention and health value. Vaccines are a medical recommendation
- **Formulary:**
  - Choose a Conjugate Vaccine product [PCV15 or PCV20]
  - *At least in the short term* will need some PPSV23
- **Vaccines, administration fees should be covered by all insurers**
  - Include public [MCARE, MCD] and private plans [ACA]
- **Collaborate:**
  - Community Immunizers, Pharmacies

Vaccine Safety



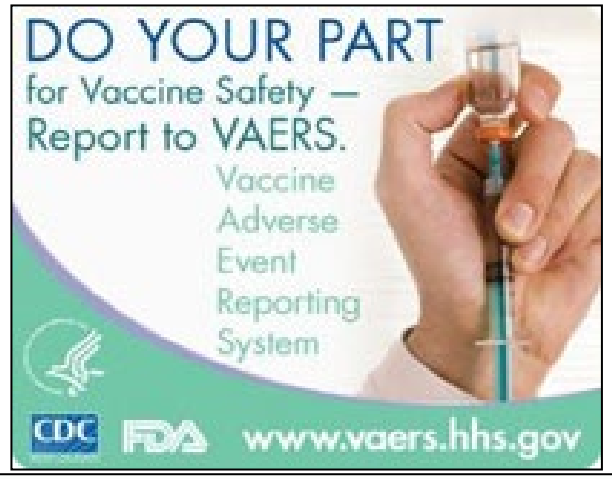
Vaccine Safety

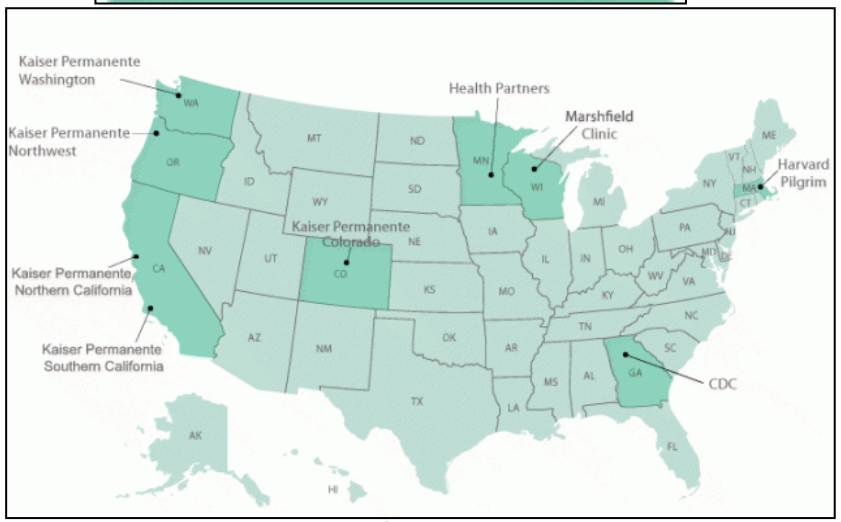
- **No vaccine is 100% safe…nothing is**
  - Vaccines can cause pain at the injection site, sore arm, redness, fever
  - Nearly all vaccine side-effects are **very mild**
- **The risk of serious adverse event from disease is *far* greater than from vaccination**
- **We are at far greater risk of an adverse outcome from riding in a car, crossing the street, choking on food…than from a vaccine**

Vaccine Safety Monitoring

- **Extensive safety monitoring**
  - Post-licensure manufacturer monitoring
  - Vaccine Adverse Event Reporting System (VAERS) and FDA
  - Vaccine Safety Datalink by CDC

- **The system works…**
  - Vaccines found to be extremely safe
  - Most safety issues are of limited clinical significance





Vaccine Safety Datalink Sites

Tau N, et al. *Ann Intern Med*. 2020;173(6):445-449.

Things That Provoke Doubt in Patients

- **Follow invalid contraindications to immunization**
  - Low-grade fevers
  - Mild illness
- **Providing reading material rather than recommending**
- **Clinical team providing different recommendations**
- **Not giving a strong and clear recommendation**

American Academy of Pediatrics: Countering Vaccine Hesitancy. Accessed at: https://publications.aap.org/pediatrics/article/138/3/e20162146/52702/Countering-Vaccine-Hesitancy.

Reminder, for the Majority of People

Start with a strong, consistent **presumptive** recommendation:

“I recommend the pneumococcal vaccine."

Rather than the participatory approach:

“Do you want to get a pneumococcal vaccine?”

Opel DJ, et al. *Pediatrics*. 2013;132(6):1037-1046.

Summary

- *Vaccine recommendation fatigue* is felt by both clinicians and patients
- Do not take it personally!
- Keep the conversation going