Future of Pediatrics

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Brave New World:

Fever in the un/underimmunized child in the setting of falling immunization rates

Pediatric Health Network

Children's National

Objectives

- Understand historical success of immunizations and evolution of the evaluation of the febrile child
- Describe current trends in immunization and how that may affect prevalence of vaccine preventable illnesses
- Explain how reemergence of vaccine preventable illnesses may change clinical practice across multiple chief complaints
- Implement evidence-based strategies for addressing vaccine hesitancy in your specific practice setting

The Future of Pediatrics: Looking to the past

- Vaccines – A public health triumph

Fever and the success of immunization

38°C or higher measured rectally

An adaptive response to illness

How we evaluate fever…

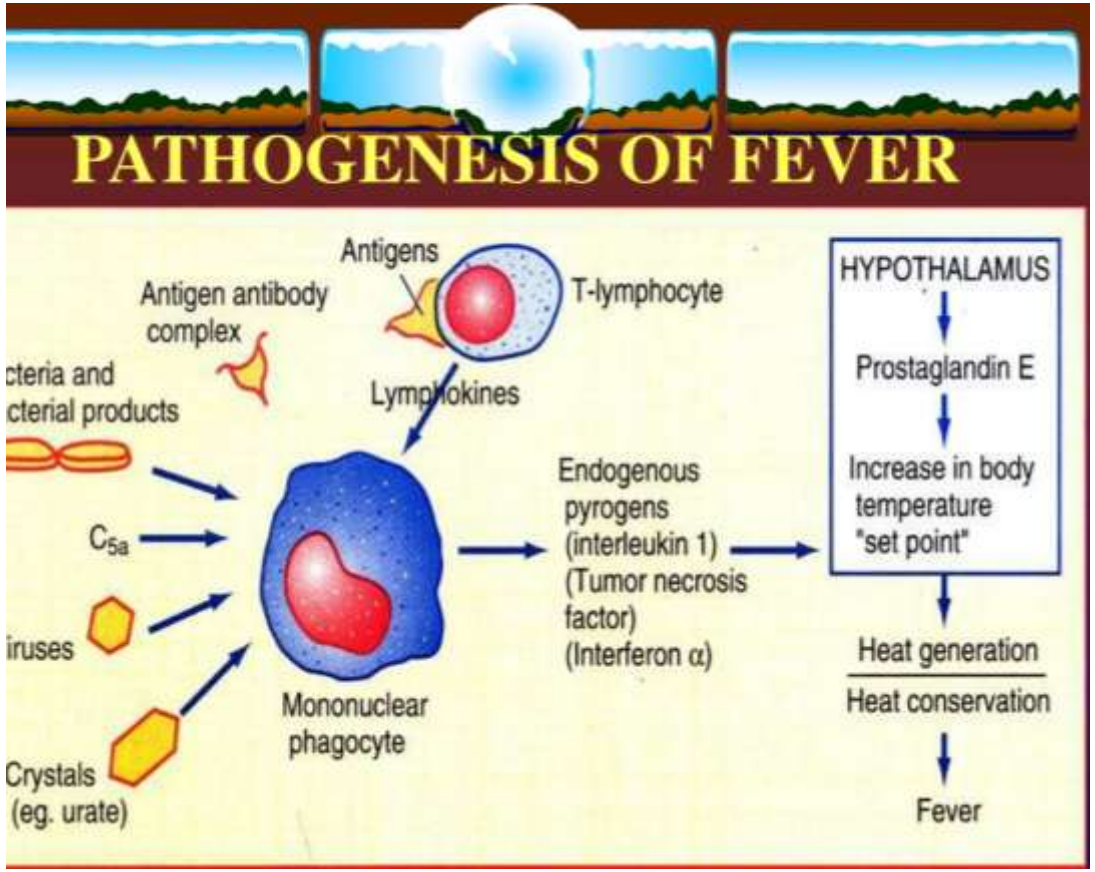
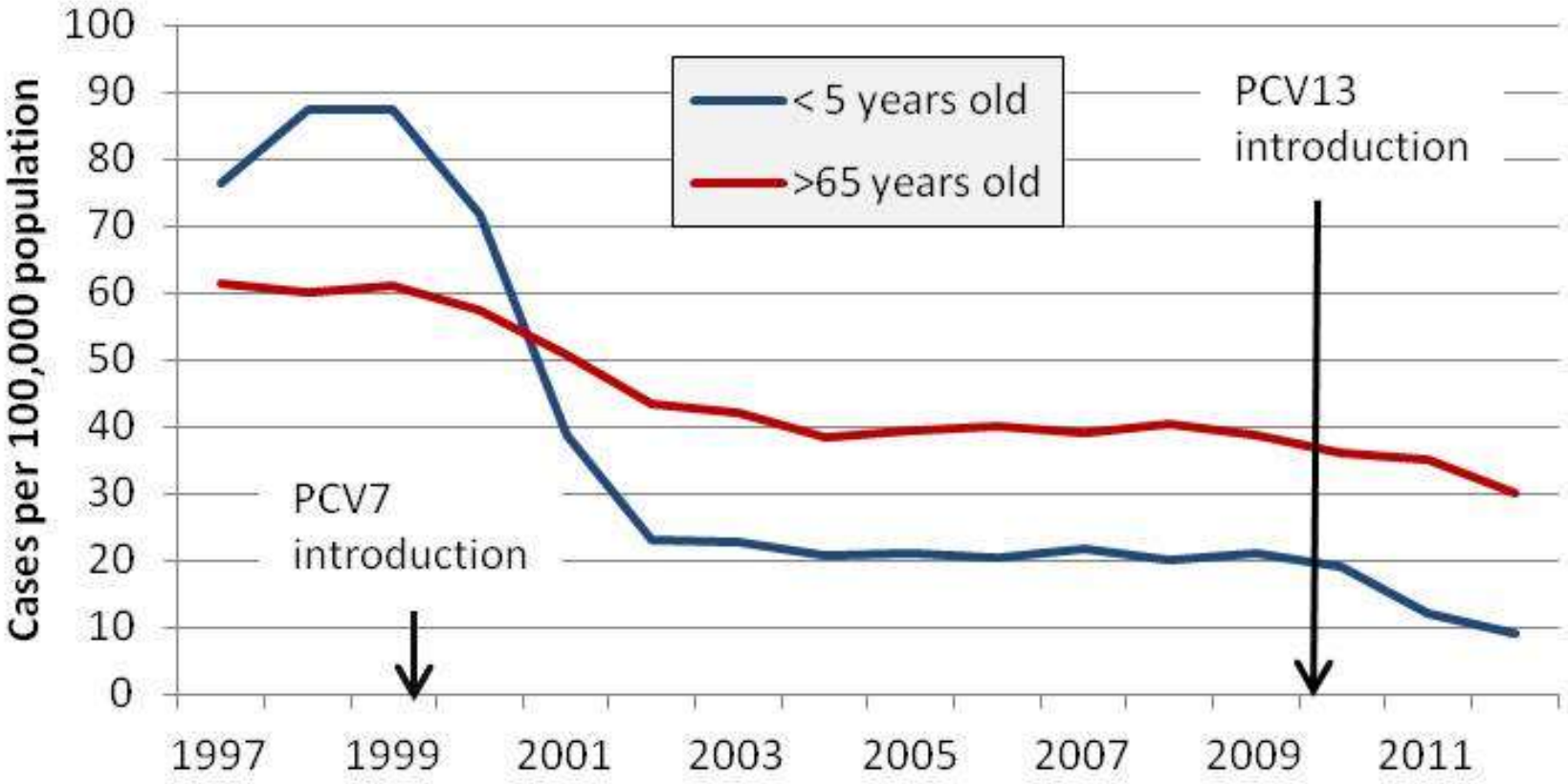


Image from NJAAP.org

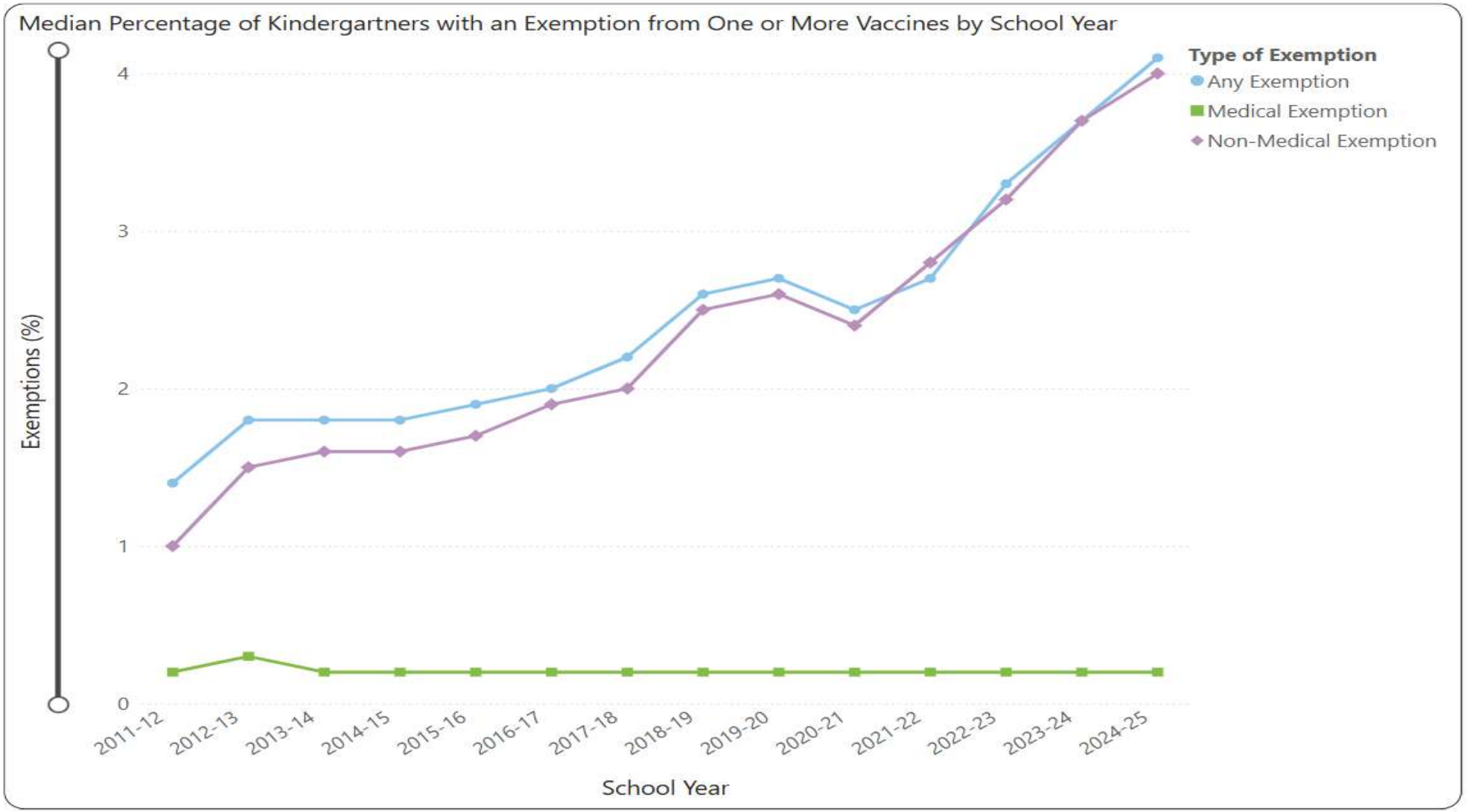
Prevalence of Invasive Pneumococcal Disease in U.S. Before and After PCV7 and PCV13 Vaccine Introductions



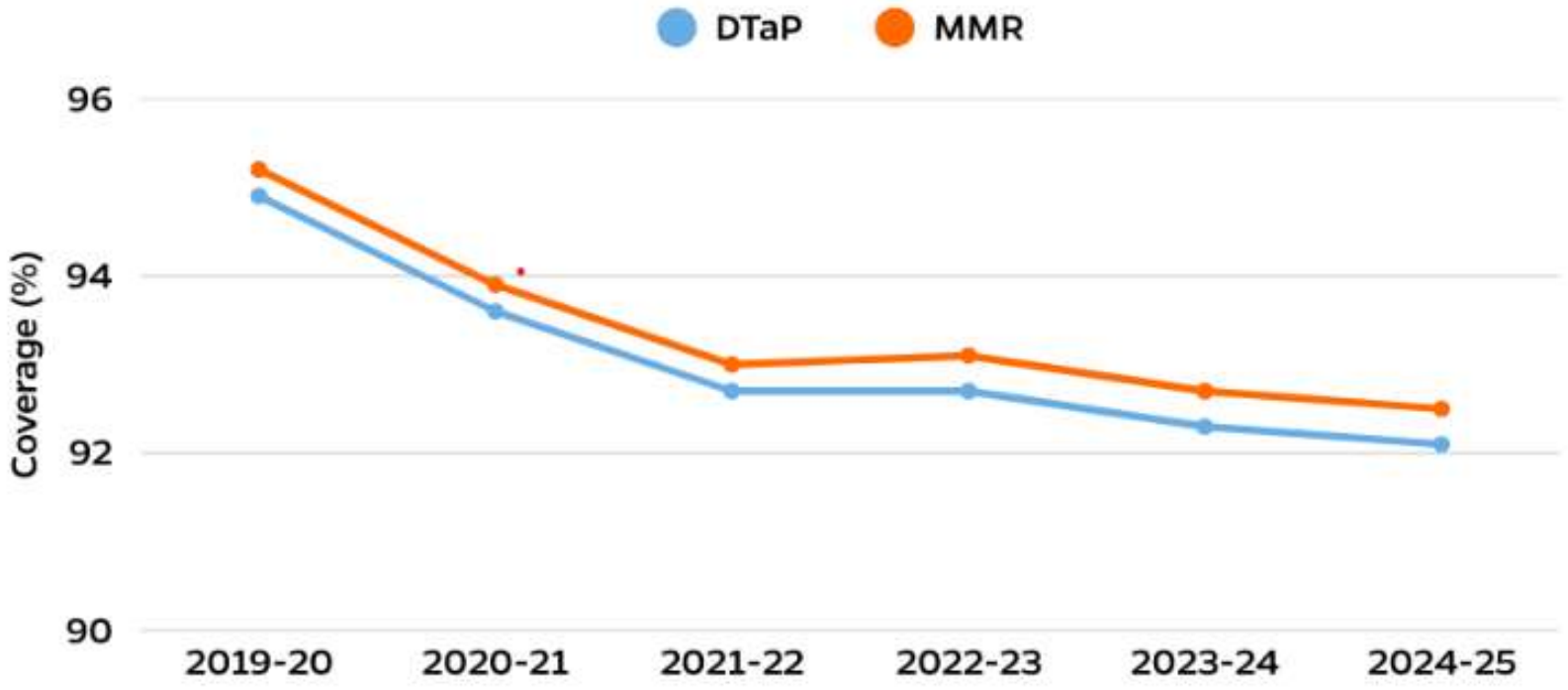
Vaccine hesitancy, briefly – Lights in the Marshes

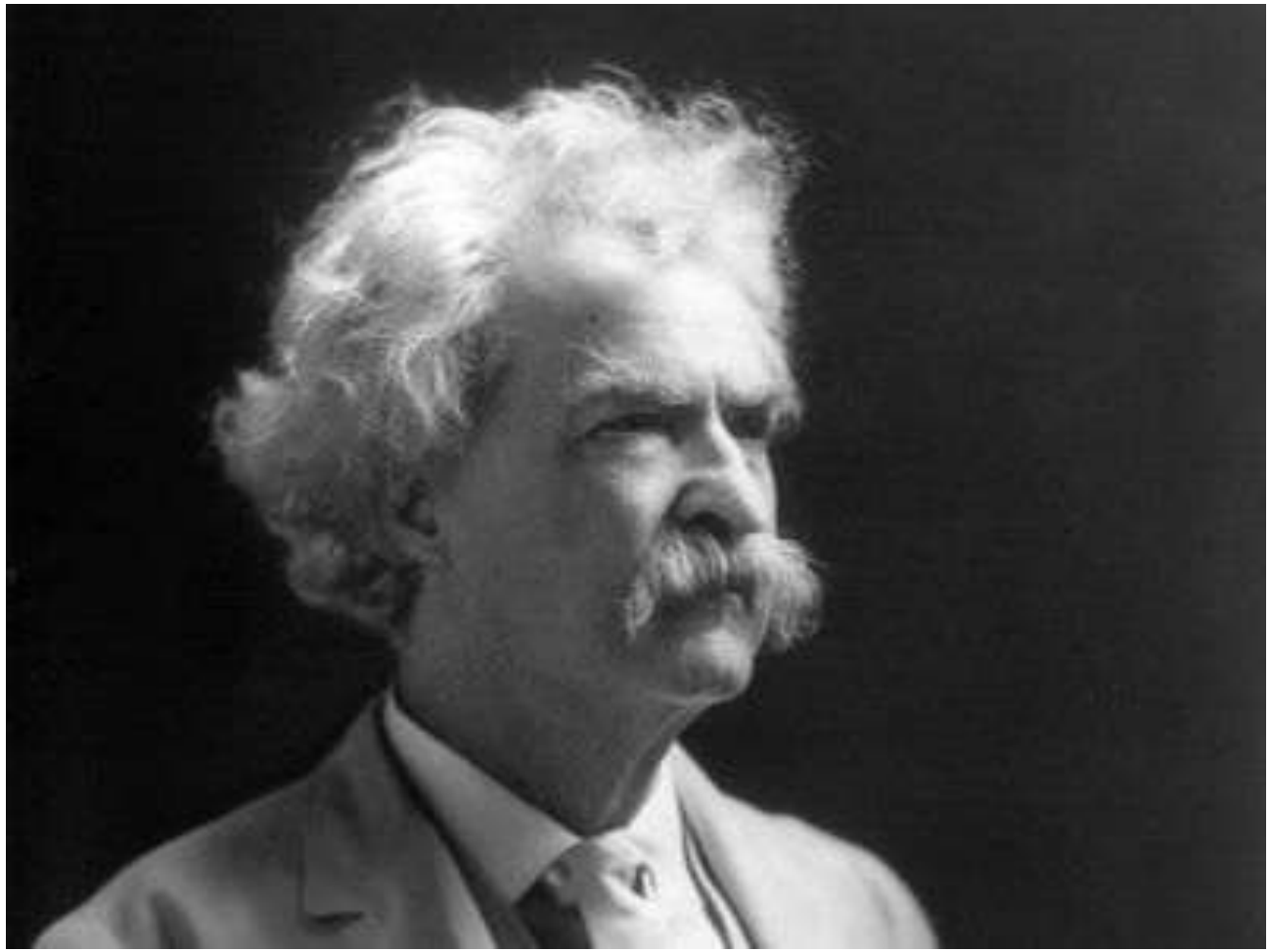
- Who are vaccine hesitant people?

- Cognitive biases and misinformation proliferation

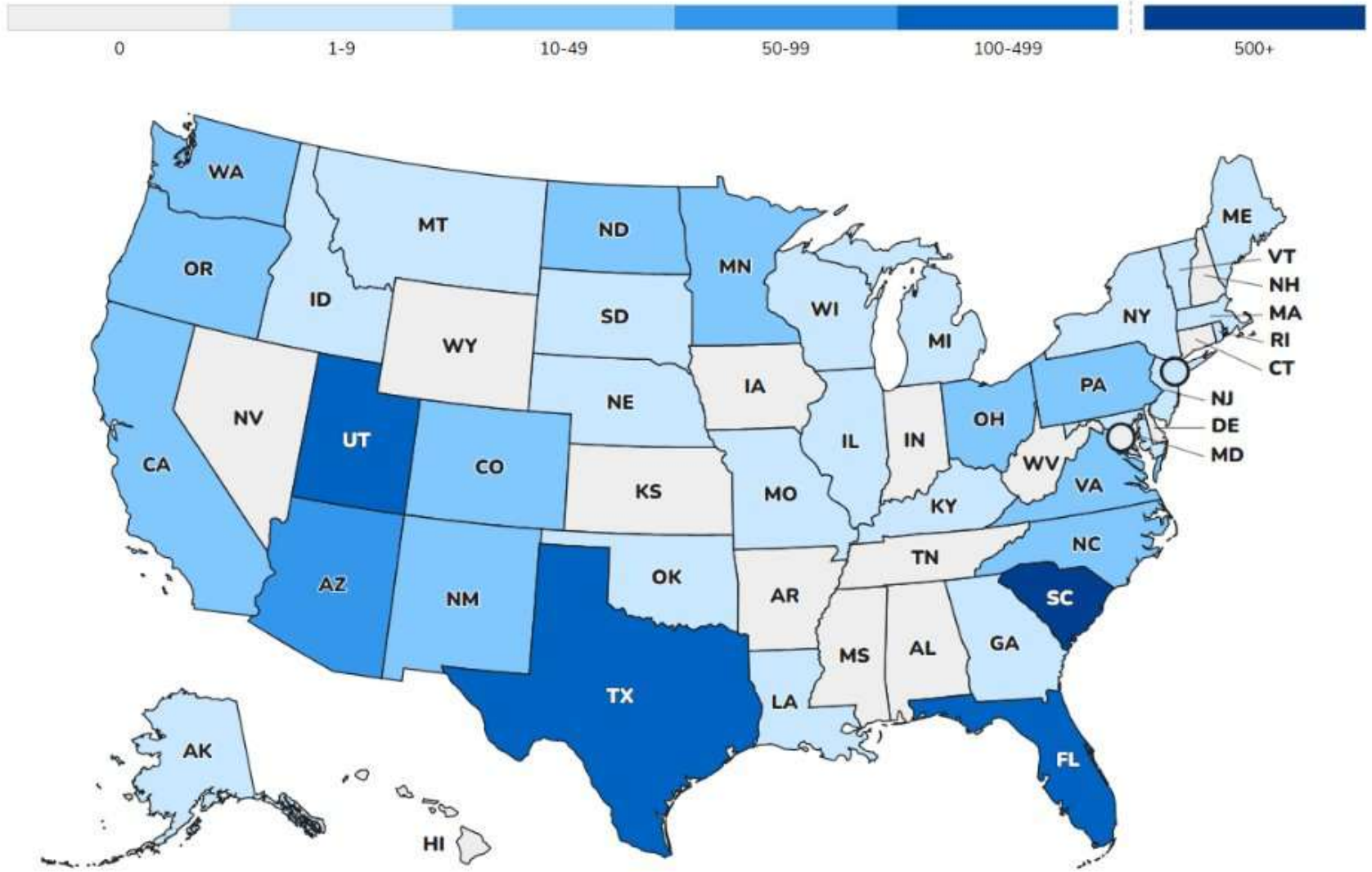

Median Percentage of Kindergartners with an Exemption from One or More Vaccines by School Year
Type of Exemption
Any Exemption
Medical Exemption
Non-Medical Exemption
Exemptions (%)
0
1
2
3
4
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
2022-23
2023-24
2024-25
School Year

Childhood Vaccine Coverage Trends





- “History doesn’t repeat itself, but it often rhymes” – Mark Twain


0
1-9
10-49
50-99
100-499
500+
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
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WI
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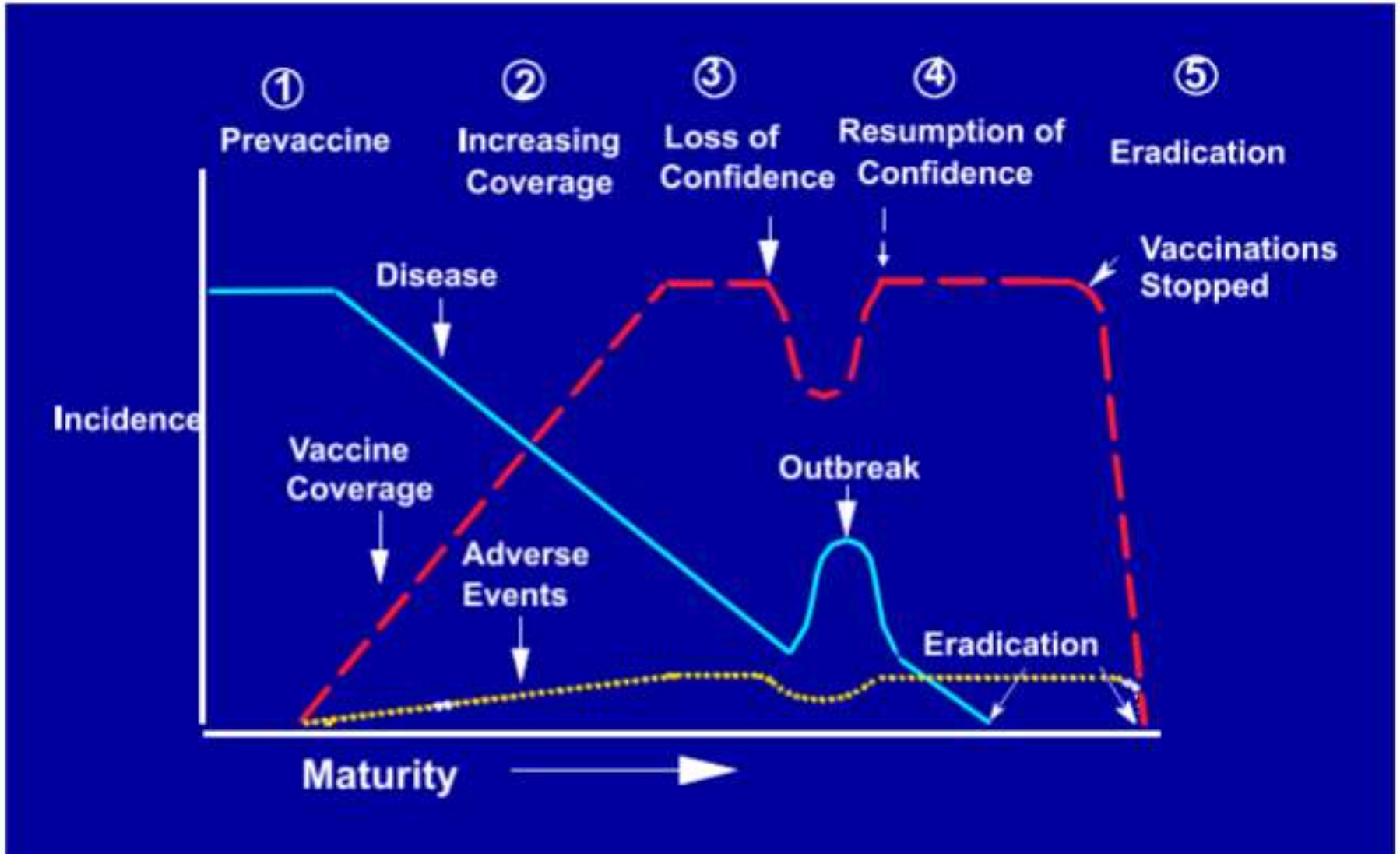

Image from Chen RT, Orenstein WA, Epidemiologic methods in immunization programs *Epidemiol Rev.*, 1996, 19(2):102

Modeling Reemergence of Vaccine Eliminated Illnesses

- 2025 JAMA article by Kiang, Bubar, Maldonado, Hoetz, and Lo
- Modeled how a 50% decrease in childhood immunizations would affect Measles, Polio, Rubella, and Diphtheria over 25 years

Workup for the well appearing immunized febrile child <36 months

- Target towards symptoms – but what if non-focal?
- UA and Culture?
- But what if this child is unimmunized?

Decreasing Immunization Rates and Changing Practice – Occult Bacteremia

- Isolation of a bacterial pathogen in blood culture of an otherwise well-appearing febrile child
  - Most commonly streptococcus pneumoniae
  - Prior to immunization, H. influenzae, type B and S. pneumoniae were most common causes
- Risk is less than 1% in a completely immunized child
- Prior to immunization, risk is 3-11%
- Risk by immunization status:
  - 2 conjugate vaccines are low risk and can be evaluated less aggressively
  - 1 conjugate vaccine places at higher risk
- Herd immunity presently provides some protection for un/underimmunized populations

Occult Bacteremia Workup

- Lab
- UA, Urine Culture
- CBC and Inflammatory Markers
- Blood culture if WBC >15k, ANC>10k, CRP>2.0 mg/dL, or Procal >0.5
- CXR if WBC > 20k
- Empiric Ceftriaxone if elevated inflammatory markers

Other Considerations

- Rash and Fever
- Croup
- Sore Throat

This is not inevitable!

- You can make a difference!
- Systemic trust may be low, but trust in you is high!

Evidence Based Strategies

- Emphasize the shared goal of wellness of the child
- Use non-judgmental language
- Inquire as to reasons to not immunize and what might change their mind
- Address concerns specifically
- Recommend strongly using positive language and full endorsement
- Social Media

Take Aways

- Wide prevalence and ready availability of misinformation and disinformation has caused a crisis in confidence in vaccines which may result in an increase in vaccine preventable diseases in the coming years
- Unvaccinated/undervaccinated children with a non-focal exam and no readily identifiable etiology of fever after history and exam require more extensive workup for occult bacteremia, even if well appearing
- If vaccine preventable diseases reemerge, we will have to adjust our clinical approach when addressing certain chief complaints
- This is not inevitable! As a pediatric provider, you can play a major role in increasing confidence in vaccines for your patients and the community at large.

Questions?

Current Trend Resources

- “Across the U.S., Childhood Vaccination Rates Continue to Decline.” *International Vaccine Access Center*, Johns Hopkins Bloomberg School of Public Health, 20 Aug. 2025, https://publichealth.jhu.edu/ivac/2025/across-the-us-childhood-vaccination-rates-continue-to-decline.
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Vaccine Hesitancy Resources

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