

Roll up your sleeve for the vaccine

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Objectives

By the end of this lecture, the student should be able to...

- Understand the latest trends in vaccine hesitancy
- Explore the impact of political and social changes in vaccine hesitancy and uptake
- Identify concerns associated with a delayed vaccination schedule
- Utilize effective communication strategies in discussing vaccines with patients and families
- Recognize the role of healthcare providers in advocacy and public trust

“In an hour,
she was
unconscious.
In twelve hours
she was dead.”
- Roald Dahl,
1988





Vaccines
prevent disease
and save lives!





Vaccine Hesitancy



Who rejects
vaccines?



Vaccine hesitancy



Vaccine refusal



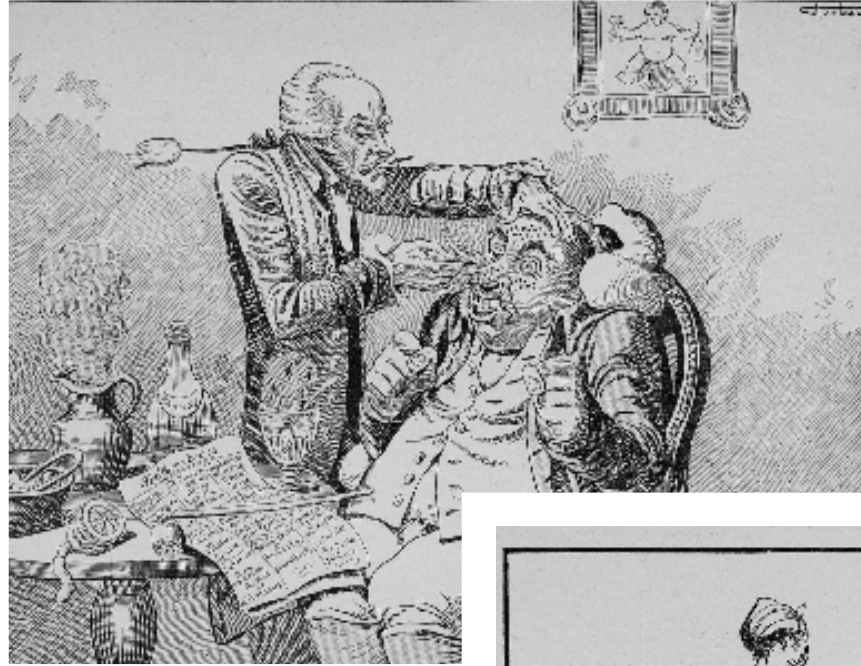
Vaccine Hesitancy in US Parents

Example Archetypes	
Immunization supporter	Parents recognize the importance of vaccines and vaccinate their children. Parents generally have a strong relationship with their health care provider or have strong trust in health care systems.
Go along to get along	Parents do not question vaccines and generally vaccinate their children but may lack a detailed knowledge of vaccines.
Cautious acceptor	Parents may have minor concerns about vaccines but ultimately vaccinate their children.
Fence-sitter	Parents have significant concerns about vaccines. Parents may be knowledgeable about or have spent time thinking about vaccines. Parents may vaccinate their child with some or all vaccines or may refuse or delay vaccines. Parents may not demonstrate trust in their health care provider regarding vaccine information.
Refuser	Parents refuse all vaccines for their child. Their reasons for refusal may include distrust in the medical system, safety concerns, and religious or other personal beliefs.





Vaccine hesitancy is not new





Mistrust of the medical system





The Modern Anti-Vax Movement

Post-COVID amplification

Previously disparate groups
came together under a
broader umbrella of distrust

Focus shifted from primarily
pediatric vaccine concerns to
adult vaccines (COVID-19) →
further eroded trust in routine
childhood immunizations

Politicization of vaccines





Increase in vaccine exemptions



Rise of AI-generated misinformation



Growing distrust in public health institutions post-pandemic



Social media amplification

Current Trends in Vaccine hesitancy

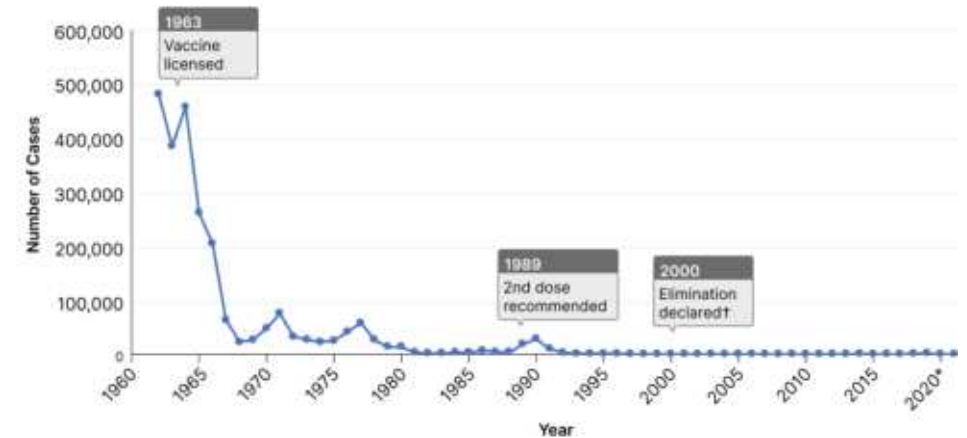
Current Trends in Vaccine Uptake

- Global vaccine coverage dropped from 86% in 2019 to 83% in 2020
- Declining rates of timely administration of early childhood vaccines
 - 68% in 2017 (75% in 2013)
- Increasing number of children receiving fewer than recommended number of vaccines at each visit
- Small but rising percentage of children receiving no vaccines in first 2 years of life
 - 0.35% in 20014, 1.28% in 2017, 1.2% in 2021
- Increase in vaccine exemptions for kindergarteners
 - 2.5% in 2019 to 3.3% in 2023 (highest ever seen)
- Disparities exist
 - Lower vaccine coverage among Black, Hispanic, and AI/AN children, those insured by Medicaid, uninsured, children in rural areas, and children in families with incomes below the federal poverty level

Measles Outbreak

- More cases of measles reported in first 3 months of 2025 than in all of 2024
 - 75% were pediatric patients
 - 1 confirmed death (child), 1 death under investigation
- Need 95% Measles vaccination rate for herd immunity
- Current rate among kindergartners = 92% (even lower in some communities)

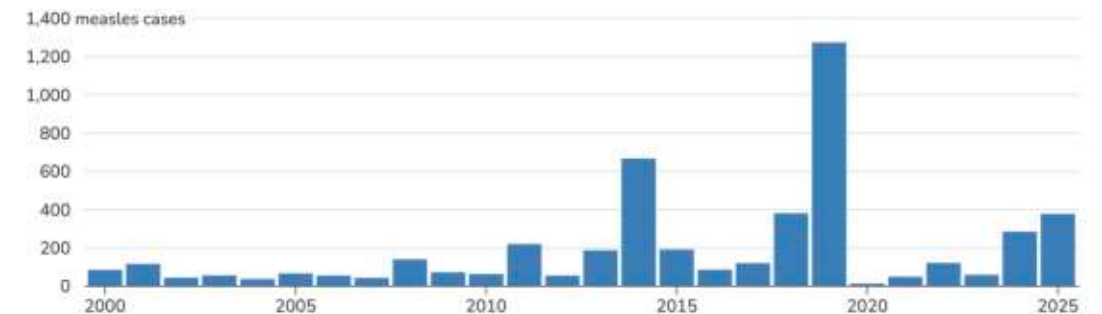
Reported Measles Cases in the United States from 1962 – 2023*



Yearly measles cases

as of March 20, 2025

2000–Present* 1985–Present*



Vaccine acceptance

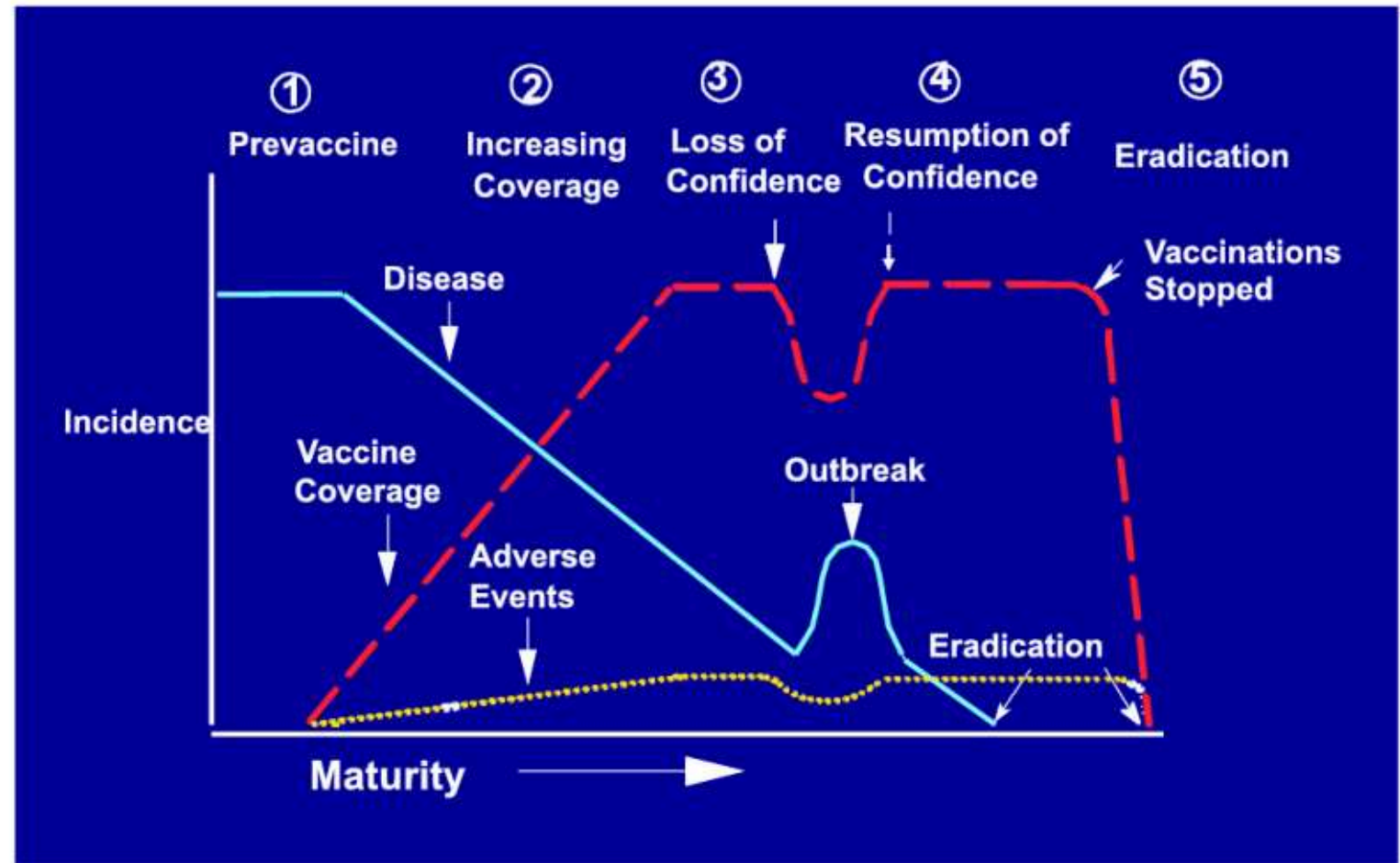


FIGURE 2

Evolution of a vaccine program. Reproduced with permission. Chen RT, Orenstein WA. Epidemiologic methods in immunization programs. *Epidemiol Rev.* 1996;18(2):102. Copyright © 1996 by the Oxford University Press.



Counseling on vaccines

Who rejects vaccines?

Fully unvaccinated

- White
- Higher income
- More educated
- Often have full access but refuse them

Under-vaccinated

- Public insurance or uninsured
- African American
- Lower income
- Less educated
- Miss vaccines due to system issues (poor access to services, direct/indirect costs, low health literacy, complex social situations)

Are you
allowed to
refuse
vaccines?

Some countries outside of the US have...

- Mandated vaccines
- Offered financial incentives to complete vaccine schedules

US

- Required in case of medical emergencies
- Generally allowed to refuse vaccines for medical or non-medical reasons



Are you allowed to refuse vaccines?

Medical exemptions

- Allowed by all states
- Ex: Severe allergy to vaccine component

Non-medical exemptions

- 3 states (California, Mississippi, and West Virginia) do not allow for NME
- Northwestern states have highest rates of NMEs
- Religious or philosophical

SC: only allows medical and religious exemption

Common vaccine concerns

- Most common reasons given:
 - Safety
 - Fear of association with Autism Spectrum Disorder
 - Vaccine ingredients (thimerosal, aluminum)
 - Quantity of vaccines at one time
 - Pain for the child
 - Effectiveness
- Newer concerns
 - Politicized hesitancy
 - Misinformation

Vaccine Safety

Held to higher standard because they are given to healthy people to prevent disease

Extensive process to become recommended as routine

Constant, ongoing monitoring

Your child needs vaccines as they grow! 2025 Recommended Immunizations for Birth Through 6 Years Old

Want to learn more?
Scan this QR code to find out which vaccines your child might need. Or visit www2.cdc.gov/vaccines/childquiz/



VACCINE OR PREVENTIVE ANTIBODY	BIRTH	1 MONTH	2 MONTHS	4 MONTHS	6 MONTHS	7 MONTHS	8 MONTHS	12 MONTHS	15 MONTHS	18 MONTHS	19 MONTHS	20–23 MONTHS	2–3 YEARS	4–6 YEARS
RSV antibody	Depends on mother's RSV vaccine status							Depends on child's health status						
Hepatitis B	Dose 1	Dose 2			Dose 3									
Rotavirus			Dose 1	Dose 2	Dose 3									
DTaP			Dose 1	Dose 2	Dose 3				Dose 4					Dose 5
Hib			Dose 1	Dose 2	Dose 3			Dose 4						
Pneumococcal			Dose 1	Dose 2	Dose 3			Dose 4						
Polio			Dose 1	Dose 2	Dose 3									Dose 4
COVID-19					At least 1 dose of the current COVID-19 vaccine									
Influenza/Flu					Every year. Two doses for some children									
MMR								Dose 1					Dose 2	
Chickenpox								Dose 1					Dose 2	
Hepatitis A								2 doses separated by 6 months						

KEY

- ALL children should be immunized at this age
- SOME children should get this dose of vaccine or preventive antibody at this age

Talk to your child's health care provider for more guidance if:

- Your child has any medical condition that puts them at higher risk for infection.
- Your child is traveling outside the United States. Visit wwwnc.cdc.gov/travel for more information.
- Your child misses a vaccine recommended for their age.

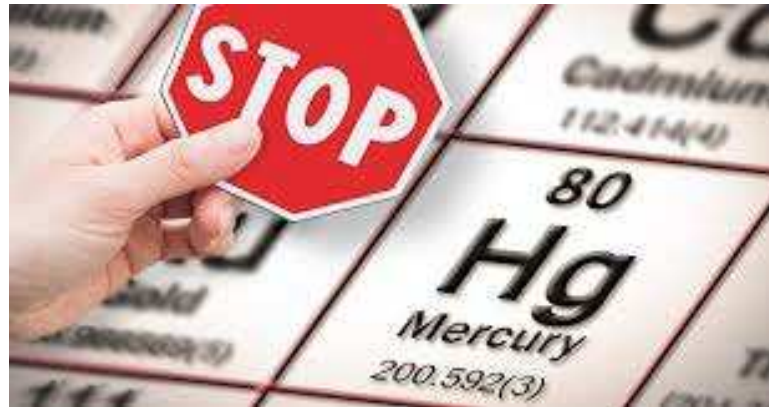


“Vaccines cause Autism”

- Initially due to Dr. Andrew Wakefield’s case study published in *The Lancet* in 1998
- Has since been debunked and redacted from the journal
- Multiple studies have proven this to be untrue

“Vaccines are toxic”: thimerosal

- Mercury based preservative used to prevent growth of bacteria
 - Chemically different than the mercury we typically think of
- Worry = potential neurologic effects (i.e. autism)
- Has been removed by the FDA from all single-dose vaccines
 - Still used in multi-dose flu vaccines
 - Also used in DTaP and DTaP-Hib
 - Used in processing but later removed, so may contain trace amounts
- No data that it causes adverse effects



“Vaccines are toxic”: Adjuvants

Adjuvant = ingredient sometimes used to help create a stronger immune response

Help the vaccine work better

Aluminum

Common adjuvant used

Also found in air, food, and water

Amount found in vaccines is comparable to amount infants are exposed to through breastmilk and formula

*possible link with asthma





“Too many vaccines will overwhelm my child’s immune system”

Giving multiple at one time is better for child and parent

Giving multiple vaccines at one time is safe

Children are exposed to hundreds- thousands of antigens in the first few years of life



“Vaccines cause infection”

- Except live attenuated vaccines, only part of bacteria or virus are in vaccine products
- Most common side effects from vaccines are from immune response, not from infection

“I don’t want my child hurt”

Children are resilient and will not have long-term damage from vaccines

Children are at higher risk for harm if they contract one of these vaccine preventable diseases

Ways to mitigate pain

- Vaccines given in combination, give them quickly

- Tactile stimulation (i.e vibration)

- Distraction

- Breastfeeding or sweet-tasting liquids

- Topical anesthetics



“Vaccines
aren’t
effective”

DISEASE	PRE-VACCINE ERA ESTIMATED ANNUAL MORBIDITY ¹	MOST RECENT REPORTS OR ESTIMATES OF U.S. CASES	PERCENT DECREASE
Diphtheria	21,053	2 ²	>99%
<i>H. influenzae</i> (invasive, <5 years of age)	20,000	14 ^{2,3}	>99%
Hepatitis A	117,333	(est) 24,900 ⁴	79%
Hepatitis B (acute)	66,232	(est) 21,600 ⁴	67%
Measles	530,217	1,287 ²	>99%
Meningococcal disease (all serotypes)	2,886 ⁵	329 ²	89%
Mumps	162,344	3,509 ²	98%
Pertussis	200,752	15,662 ²	92%
Pneumococcal disease (invasive, <5 years of age)	16,069	1,700 ⁷	93%
Polio (paralytic)	16,316	0 ²	100%
Rotavirus (hospitalizations, <3 years of age)	62,500 ⁸	30,625 ⁹	51%
Rubella	47,745	4 ²	>99%
Congenital Rubella Syndrome	152	0 ²	100%
Smallpox	29,005	0 ²	100%
Tetanus	580	19 ²	96%
Varicella	4,085,120	102,128 ¹⁰	>98%



Religious Concerns

- Often based on the thought that some vaccines contain cells derived from human fetuses
- Can be tricky to discuss
- Encourage them to talk to their religious leaders or look at statements put out by their denomination

Political hesitancy

Acknowledge	Acknowledge the environment... “There’s so much conflicting information out there, especially online and in the news. It can be hard to know what to believe.”
Refocus	Refocus on shared goal/common ground of the health and safety of the child
Avoid	Avoid direct challenges to political identity and focus on the child’s specific risks and the benefits of the vaccine for them
Reinforce	Reinforce yourself as the trusted messenger even if their trust in the larger institution is decreased

Counter Sophisticated Misinformation

If presented with “facts” from family, gently ask about the sources or studies. Ask to read them

Reinforce/encourage high-quality evidence (CDC, AAP, large-scale studies)

Try to avoid directly debunking every piece of misinformation in detail





Motivational interviewing for vaccine counseling



OPEN-ENDED
QUESTION



AFFIRMATIONS



REFLECTIONS



ASK PERMISSION
TO SHARE



AUTONOMY
SUPPORT



AAP recommends having parents sign a "Refusal to Vaccinate" Form each visit

Refusal to Vaccinate

Title _____ Child's ID# _____

Guardian's Name _____

doctor/nurse, _____
 (state that my child (named above) should receive the
 vaccines:

ended	Declined
titis B vaccine	<input type="checkbox"/>
theria, tetanus, acellular pertussis (DTaP) vaccine	<input type="checkbox"/>
theria tetanus (DT or Td) vaccine	<input type="checkbox"/>
ogavirus influenza type b (Hib) vaccine	<input type="checkbox"/>
ococcal conjugate or polysaccharide vaccine	<input type="checkbox"/>
ated poliovirus (IPV) vaccine	<input type="checkbox"/>
les-mumps-nubella (MMR) vaccine	<input type="checkbox"/>
ella (chickenpox) vaccine	<input type="checkbox"/>
ruza (flu) vaccine	<input type="checkbox"/>
ngococcal conjugate or polysaccharide vaccine	<input type="checkbox"/>
titis A vaccine	<input type="checkbox"/>
inus vaccine	<input type="checkbox"/>
yn papillomavirus (HPV) vaccine	<input type="checkbox"/>
r _____	<input type="checkbox"/>

provided with and given the opportunity to read each
 information Statement from the Centers for Disease Control
 explaining the vaccine(s) and the disease(s) it pre-
 vents of the vaccine(s) checked as recommended and which
 not, as indicated above. I have had the opportunity to
 recommendation and my refusal with my child's doctor
 has answered all of my questions about the recom-
 mendation(s). A list of reasons for vaccinating, possible health
 effects of non-vaccination, and possible side effects of each
 vaccine are available at www.cdc.gov/vaccines/pubs/vis/default.htm.
 I understand the following:

purpose of and the need for the recommended vaccine(s).
 risks and benefits of the recommended vaccine(s).

Guardian Signature: _____ Date: _____

_____ Date: _____

I do not wish to discuss my decision not to vaccinate my child and still decline the recommended immunizations.

Title: _____ Date: _____ Parent's Initials: _____ Date: _____

■ That some vaccine-preventable diseases are common in other
 countries and that my unvaccinated child could easily get one
 of these diseases while traveling or from a traveler.

■ If my child does not receive the vaccine(s) according to the
 medically accepted schedule, the consequences may include
 - Contracting the illness the vaccine is designed to prevent
 (the outcomes of these illnesses may include one or more
 of the following: certain types of cancer, pneumonia, illness
 requiring hospitalization, death, brain damage, paralysis,
 meningitis, seizures, and deafness; other severe and
 permanent effects from these vaccine-preventable
 diseases are possible as well).
 - Transmitting the disease to others (including those too
 young to be vaccinated or those with immune problems),
 possibly requiring my child to stay out of child care or school
 and requiring someone to miss work to stay home with my
 child during disease outbreaks.

■ My child's doctor and the American Academy of Pediatrics,
 the American Academy of Family Physicians, and the Centers
 for Disease Control and Prevention all strongly recommend
 that the vaccine(s) be given according to recommendations.

Nevertheless, I have decided at this time to decline or defer the
 vaccine(s) recommended for my child, as indicated above, by check-
 ing the appropriate box under the column titled "Declined." I know
 that failure to follow the recommendations about vaccination may
 endanger the health or life of my child and others with whom my
 child might come into contact. I therefore agree to tell all health care
 professionals in all settings what vaccines my child has not received
 because he or she may need to be isolated or may require immediate
 medical evaluation and tests that might not be necessary if my child
 had been vaccinated.

I know that I may address this issue with my child's doctor or
 nurse at any time and that I may change my mind and accept
 vaccination for my child any time in the future.

I acknowledge that I have read this document in its entirety and
 fully understand it.

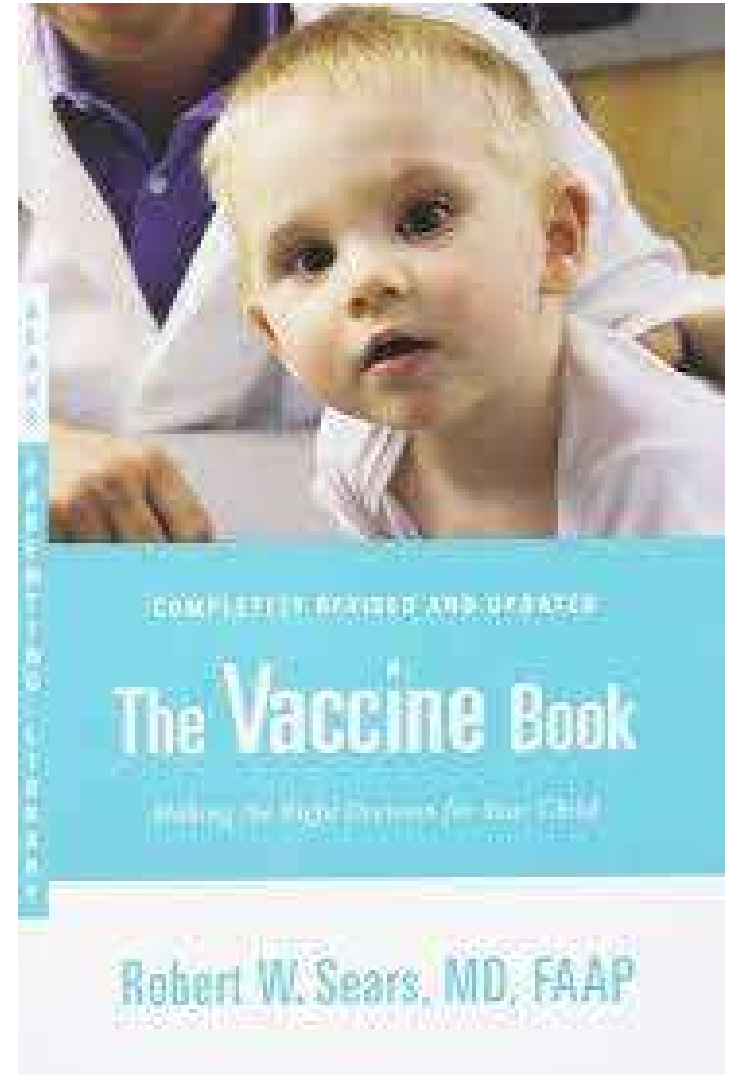
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What about alternative schedules?

- Not evidence-based
- Creates more fear
- Prolongs time a child is under-vaccinated during a time in which they are incredibly susceptible to significant illness
- Only consider as a latch-ditch effort





Helpful ways to approach vaccine talks and potentially prevent hesitancy

- Establish a rapport with the family
- Use prescriptive/presumptive language
- Discuss a real patient case
- Be an example
- Give Vaccine Information Sheets BEFORE the visit

Sources

- Immunize.org
- CDC
- WHO
- "Immunizations: Vaccinations in General" *Pediatrics in Review*
- "Countering Vaccine Hesitancy" *Pediatrics*
- "Vaccine Hesitancy and Refusal" *Pediatrics in Review*
- "The Problem with Dr. Bob's Alternative Vaccine Schedule" *Pediatrics*
- <https://www.aap.org/en/patient-care/immunizations/communicating-with-families-and-promoting-vaccine-confidence/communicating-about-vaccinations-evidence-based-recommendations-to-shift-the-narrative/>



Practice Questions

A parent tells their pediatrician, "I just don't trust the CDC or the government anymore after everything with COVID. All this information seems politically motivated, and I don't want those vaccines for my child." Which of the following would be the best approach for the pediatrician?

- A) Directly challenge the parent's political views and provide data contradicting their sources.
- B) Acknowledge the confusing environment, then refocus the conversation on the specific child's health and safety as a shared goal.
- C) Refuse to discuss vaccines further if the parent expresses strong distrust in public health institutions.
- D) Recommend transferring care to a provider who shares the parent's political beliefs.
- E) Primarily emphasize the state's mandatory vaccination laws for school entry.

ANSWER

- Answer = **B**
- B acknowledges and refocuses.
- A violates the "Avoid" principle. C is counterproductive. D is inappropriate. E shifts focus to mandates, potentially increasing resistance, rather than building trust and addressing concerns collaboratively

What vaccination rate is recommended for herd immunity against measles?

- A) 75%
- B) 85%
- C) 90%
- D) 92%
- E) 95%

ANSWER

- Answer = **E**
- 95% at least required for herd immunity against measles.
Currently in US kindergarten vaccination rate of MMR is 92%

A parent is worried that giving multiple vaccines at the 2-month visit will "overwhelm" their baby's immune system. What is the most appropriate counseling point to address this specific concern?

- A. Acknowledge their concern but emphasize that alternative schedules are available to spread out the vaccines.
- B. Explain that infants' immune systems are constantly exposed to hundreds or thousands of antigens daily from their environment, and vaccines represent a very small challenge in comparison.
- C. Reassure them that serious side effects from vaccines are extremely rare, occurring less than one in a million doses.
- D. Inform them that delaying vaccines significantly increases the child's risk of contracting potentially deadly diseases like pertussis.
- E. Discuss the use of adjuvants like aluminum, which help reduce the amount of antigen needed in each vaccine, lessening the immune burden.

ANSWER

- Correct answer = **B** . While C and D are true and relevant to vaccine discussion, B specifically addresses the parent's stated concern. A is discouraged, and E discusses adjuvants, which doesn't directly address the quantity/overload issue

The mother of a 2-month-old infant has heard other parents talk about following an alternative vaccination schedule that spaces out and delays the administration of certain vaccines. She asks for your advice on this given that she keeps her child at home with her, and she isn't exposed to any illnesses.

As the PCP, you recommend against an alternative vaccination schedule for this healthy infant because:

- A. Alternative schedules have been well studied and do not perform as well as the recommended schedule
- B. Parents who utilize alternative schedules are often non-compliant with visits
- C. The alternative schedule addresses valid concerns but is illegal
- D. If used widely, alternative schedules would increase the risk of transmission of infectious disease among young children

answer

- D = Correct. If alternative schedules are used, vaccines are delayed and the risk of disease is higher.
- A is incorrect because while we do not think that alternative schedules work as well as the published CDC schedule, there have not been many studies looking at this.
- B is incorrect because parents may very well be compliant with visits but still choose to follow alternative schedules
- C is incorrect because it is not illegal to use alternative schedules