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Pediatric Vaccine Conversations: Addressing Common Concerns

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Medical Director, NDSU CIRE

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Objectives

1. Review frequently asked questions and misconceptions healthcare providers encounter regarding childhood vaccinations.
2. Discuss clear, research-backed answers and communication strategies that effectively address vaccine-related questions from patients and caregivers.
3. Describe healthcare providers' ability to engage in productive, empathetic conversations that build trust and encourage vaccine confidence among patients and families.

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Why do we vaccinate newborn babies against hepatitis B?

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Case Study #1: Why do we vaccinate newborn babies against hepatitis B?

Sophia is due for her hepatitis B vaccine today, which helps protect her against a virus that can cause serious liver disease and cancer later in life. Any questions?

We don't understand why a brand-new baby needs a vaccine for something like hepatitis B. We don't think she's at risk right now.

What I hear you saying is that you're unsure why Sophia needs the hepatitis B vaccine so early, since she's a newborn and you don't see her as being at risk right now?

Exactly. We don't see how she could be exposed.

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9 in 10 babies <1 years old infected with hepatitis B have a chance of developing chronic hepatitis B.

25%

of those who develop chronic hepatitis B infection will die from the disease.

AAP, 2025; Hepatitis B Foundation, 2025

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Hepatitis B Vaccine - What to Know

VACCINE

Recommended newborns receive the 1st dose of hepatitis B vaccine **within 24 hours of birth.**

After completing the full 3 to 4-dose vaccine series, **98% of healthy infants achieve full immunity.**

SAFETY FIRST

The hepatitis B vaccine has been around since the 1980's and test extensively - **it's safe and effective.**

AAP, 2025; Hepatitis B Foundation, 2025

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• Maternal screening for hepatitis B is important—but not perfect.
• Rare errors can occur (missed infections, late exposures, or false negatives).
• The birth dose of the hepatitis B vaccine acts as a safety net—protecting newborns immediately, regardless of testing limitations.
IAC, 2025

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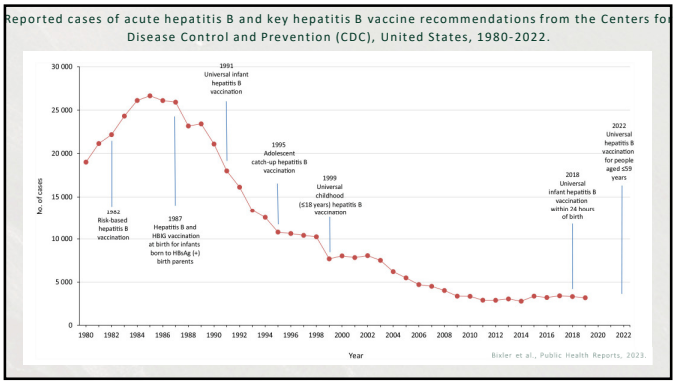
Reported cases of acute hepatitis B and key hepatitis B vaccine recommendations from the Centers for Disease Control and Prevention (CDC), United States, 1980-2022.
No. of cases
Year
1982 Risk-based hepatitis B vaccination
1987 Hepatitis B and HBIG vaccination at birth for infants born to HBsAg (+) birth parents
1991 Universal infant hepatitis B vaccination
1995 Adolescent catch-up hepatitis B vaccination
1999 Universal childhood (≤18 years) hepatitis B vaccination
2018 Universal infant hepatitis B vaccination within 24 hours of birth
2022 Universal hepatitis B vaccination for people aged ≤59 years
Bixler et al., Public Health Reports, 2023.

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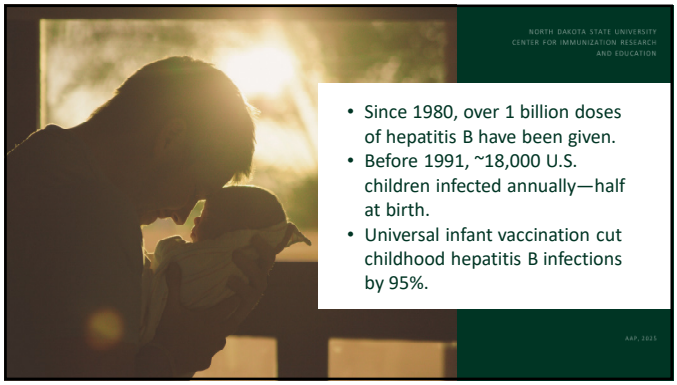
NORTH DAKOTA STATE UNIVERSITY
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• Since 1980, over 1 billion doses of hepatitis B have been given.
• Before 1991, ~18,000 U.S. children infected annually—half at birth.
• Universal infant vaccination cut childhood hepatitis B infections by 95%.
AAP, 2025

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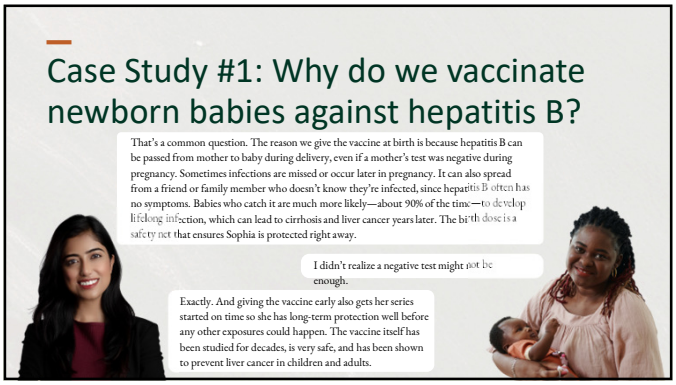
Case Study #1: Why do we vaccinate newborn babies against hepatitis B?
That's a common question. The reason we give the vaccine at birth is because hepatitis B can be passed from mother to baby during delivery, even if a mother's test was negative during pregnancy. Sometimes infections are missed or occur later in pregnancy. It can also spread from a friend or family member who doesn't know they're infected, since hepatitis B often has no symptoms. Babies who catch it are much more likely—about 90% of the time—to develop lifelong infection, which can lead to cirrhosis and liver cancer years later. The birth dose is a safety net that ensures Sophia is protected right away.
I didn't realize a negative test might not be enough.
Exactly. And giving the vaccine early also gets her series started on time so she has long-term protection well before any other exposures could happen. The vaccine itself has been studied for decades, is very safe, and has been shown to prevent liver cancer in children and adults.

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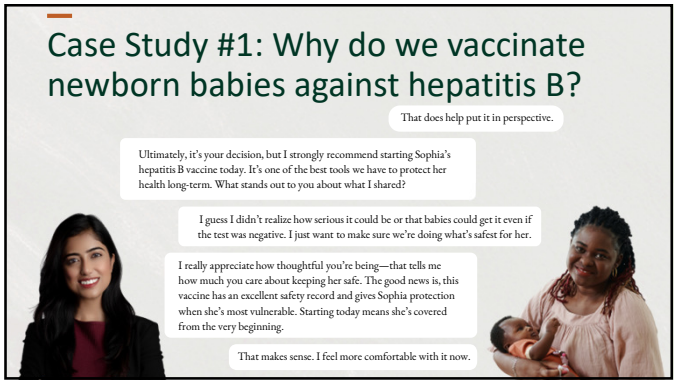
Case Study #1: Why do we vaccinate newborn babies against hepatitis B?
That does help put it in perspective.
Ultimately, it's your decision, but I strongly recommend starting Sophia's hepatitis B vaccine today. It's one of the best tools we have to protect her health long-term. What stands out to you about what I shared?
I guess I didn't realize how serious it could be or that babies could get it even if the test was negative. I just want to make sure we're doing what's safest for her.
I really appreciate how thoughtful you're being—that tells me how much you care about keeping her safe. The good news is, this vaccine has an excellent safety record and gives Sophia protection when she's most vulnerable. Starting today means she's covered from the very beginning.
That makes sense. I feel more comfortable with it now.

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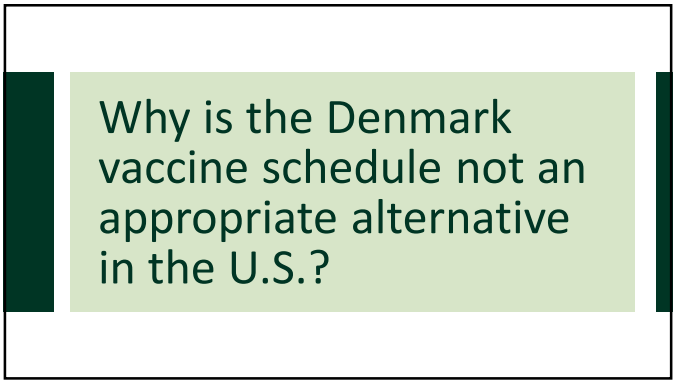
Why is the Denmark vaccine schedule not an appropriate alternative in the U.S.?

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Case Study #2: Denmark Vaccine Schedule

I've heard Denmark gives fewer vaccines, and if the U.S. is considering that, it makes me wonder whether fewer vaccines might be safer or less intense for my baby.

It sounds like you're thinking carefully about safety and wondering how the number and timing of vaccines affect your baby, especially early on.

[mom nods head]

That's a very reasonable concern — especially when you're sorting through a lot of conflicting information. Would it be okay if I shared some context about why Denmark's schedule looks different, and why pediatric experts here don't recommend using it for babies in the U.S.?

Yes, that would be helpful.

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Where's this coming from?

	TOTAL VACCINE DOSES	DISEASES TARGETED
UNITED STATES	72	18
DENMARK	11	10
SWEDEN	19	11
GERMANY	22	15
JAPAN	28	14

Presented at the December 4th, 2025 ACIP Meeting

The New York Times

Dec. 19, 2025

R.F.K. Jr. Likely to Swap U.S. Childhood Vaccine Schedule for Denmark's

The shift would mean fewer shots recommended for children. But a Danish health official found the idea baffling, saying the United States was getting "crazier and crazier in public health."

On December 19th news broke about changes to the recommended vaccination schedule

Hoeg, ACIP Presentation on 12/5/2025; Mandavilli, NYT, 2025; The Evidence Collective, 2025

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New HHS Childhood Immunization Schedule

(released January 5, 2026)

Recommended for all children

- Diphtheria
- Tetanus
- Acellular pertussis (whooping cough)
- Haemophilus influenza type b (Hib)
- Pneumococcal conjugate
- Polio
- Measles
- Mumps
- Rubella
- Human papillomavirus (HPV)
- Varicella (chickenpox)

Recommended for certain high-risk groups or populations

- RSV*
- Hepatitis A
- Hepatitis B
- Meningococcal

*Note: any children whose mother didn't have RSV vaccination during pregnancy should get one dose of RSV monoclonal antibody

Recommended based on shared clinical decision-making

- Rotavirus
- COVID-19
- Influenza (flu)
- Hepatitis A
- Hepatitis B
- Meningococcal

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Comparing population size:

Denmark = ~6 million people

=

U.S. = ~343 million people

Unbiased Science, 2025

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Comparing Universal Vaccine Recommendations

	RSV	Hep B	Rotavirus	Tetanus	Diphtheria	Pertussis	Hib	Pneumococcal	Polio	Flu	Measles	Mumps	Rubella	Varicella	Hep A	HPV	Meningococcal	Japanese Encephalitis	BCG (TB)
United States	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Australia		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Canada	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Denmark				✓	✓	✓	✓	✓	✓		✓	✓	✓			✓			
Germany	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓		
Japan		✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓		✓		✓	✓
Netherlands	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓		
United Kingdom		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		

Unbiased Science, 2025

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Comparing Universal Vaccine Recommendations

	RSV	Hep B	Rotavirus	Tetanus	Diphtheria	Pertussis	Hib	Pneumococcal	Polio	Flu	Measles	Mumps	Rubella	Varicella	Hep A	HPV	Meningococcal	Japanese Encephalitis	BCG (TB)
United States	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Australia		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		
Canada	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		
Denmark				✓	✓	✓	✓	✓	✓		✓	✓	✓			✓			
Germany	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓		
Japan		✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓		✓		✓	✓
Netherlands	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓		
United Kingdom		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		

Unbiased Science, 2025

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What is the difference between the U.S. and Denmark's pediatric vaccination schedules?

Where schedules differ, it's usually a matter of balancing disease burden, cost, and public health strategy.

Vaccine / Disease	United States (CDC)	Denmark (SSI)	Key Context	Burden Pre-vaccine (U.S)	Burden Post-Vaccination (U.S.)
Hepatitis B	Yes* (universal, birth dose ≤24 hrs + series)	No (targeted to infants of HBV-positive mothers)	U.S. uses universal birth dose as a safety net for missed screening/follow-up		
Rotavirus	Yes (routine infant series)	No	Prevents infant hospitalizations	Hospitalizations : 55,000-70,000 per year Deaths: 20-60 per year	Rare; national totals not routinely published
Varicella (Chickenpox)	Yes	No	Denmark accepts higher varicella disease burden	Hospitalizations 10,500–13,500/ year Deaths: 100-150/year	
Hepatitis A	Yes	No	Reflects lower endemic risk in Denmark	Hospitalizations : 3000-7000 per year; Deaths: 96 per year (average 1990-2004)	118 deaths (2022)
Influenza	Yes (annual for all ≥6 months)	No (risk-based; programs vary by year)	Annual flu alone inflates U.S. dose counts dramatically		
Meningococcal (MenACWY)	Yes (routine adolescents)	No	U.S. targets school/dorm outbreak risk		
COVID-19	Yes (included in routine framework)	No (offered, not routine)	Recent, evolving policy difference		
RSV (monoclonal)	Yes	No (RSV monoclonal antibodies for only high-risk infants)**		50,000-80,000 hospitalizations annually in children under 5	80% effective at preventing ICU admission and 83% effective at preventing acute respiratory failure

The Evidence Collective, 2025

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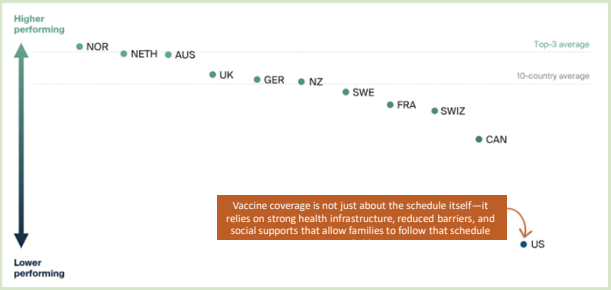
Comparative Health Care System Performance Scores



Unbiased Science, 2025; Common Wealth Fund, 2025

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Why it works in Denmark:

- Universal healthcare
- 46 weeks of paid parental leave
- Near universal prenatal screening
- Centralized medical records
- Reliable follow-up

Unbiased Science, 2025; YLE, 2025

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Why it DOESN'T work in the U.S.:

- Larger, more diverse population
- NO universal healthcare
- Lack of guaranteed paid parental leave
- Fragment care delivery
- Worse baseline health metrics

Mandavilli, NYT, 2025; Unbiased Science, 2025; YLE, 2025

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Hepatitis B Prevention Depends on Systems - Not Schedules

Denmark

- **Screens nearly 100%** of pregnant women for Hepatitis B
- Vaccinates only infants at known risk
- Reliable maternal–infant follow-up, centralized records and guaranteed care

U.S.

Universal birth-dose recommendations exist to protect infants when screening and follow-up fail.

- **12–18%** of pregnant people **are not tested** for Hepatitis B
- **Only 35% of those who test positive complete follow-up care** and U.S. has fragmented records/inconsistent care.
- Universal birth dose for all infants (AAP)

When hepatitis B is transmitted at birth, 90% of infants develop chronic infection—and up to 25% will die from related disease later in life. Missed prevention has lifelong

AAP, 2025; Scott, STAT, 2025; Mandavilli, NYT, 2025;Pham et al, Am J Prev Med, 2024; VYF, 2025

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Impact of Vaccines in the U.S.

CDC estimates that vaccination of children born between 1994-2023 will:

PREVENT

500+ MILLION illnesses will be prevented

1+ MILLION deaths will be prevented

RESULTING IN

$540 BILLION direct savings

$3,000,000,00 0 societal savings

Zuo et al, MMWR, 2024 | 73(31);682-685

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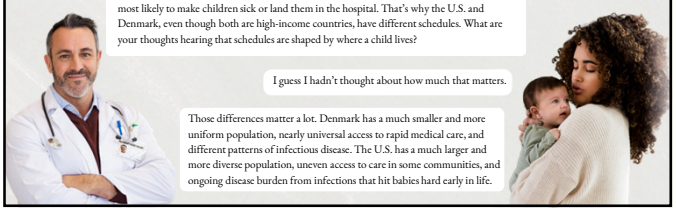
Case Study #2: Denmark Vaccine Schedule

One of the most important things to know is that vaccine schedules are not one-size-fits-all. Countries design them based on population size, access to health care, and which diseases are most likely to make children sick or land them in the hospital. That's why the U.S. and Denmark, even though both are high-income countries, have different schedules. What are your thoughts hearing that schedules are shaped by where a child lives?

I guess I hadn't thought about how much that matters.

Those differences matter a lot. Denmark has a much smaller and more uniform population, nearly universal access to rapid medical care, and different patterns of infectious disease. The U.S. has a much larger and more diverse population, uneven access to care in some communities, and ongoing disease burden from infections that hit babies hard early in life.



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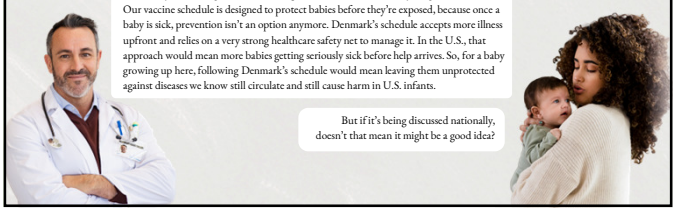
Case Study #2: Denmark Vaccine Schedule

For example, in the U.S., infections like rotavirus, RSV, hepatitis B, and chickenpox have historically caused large numbers of hospitalizations in infants and young children. Our vaccine schedule is designed to protect babies before they're exposed, because once a baby is sick, prevention isn't an option anymore. Denmark's schedule accepts more illness upfront and relies on a very strong healthcare safety net to manage it. In the U.S., that approach would mean more babies getting seriously sick before help arrives. So, for a baby growing up here, following Denmark's schedule would mean leaving them unprotected against diseases we know still circulate and still cause harm in U.S. infants.

But if it's being discussed nationally, doesn't that mean it might be a good idea?



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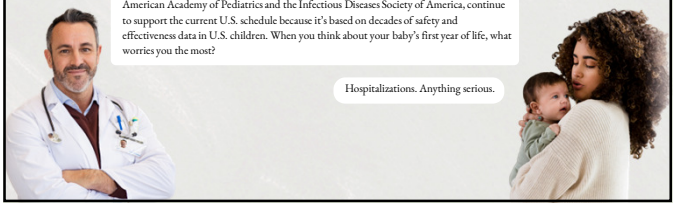
Case Study #2: Denmark Vaccine Schedule

That's a fair question. What's happening right now is discussion, not a change in evidence. The organizations that represent pediatricians and infectious disease experts, like the American Academy of Pediatrics and the Infectious Diseases Society of America, continue to support the current U.S. schedule because it's based on decades of safety and effectiveness data in U.S. children. When you think about your baby's first year of life, what worries you the most?

Hospitalizations. Anything serious.



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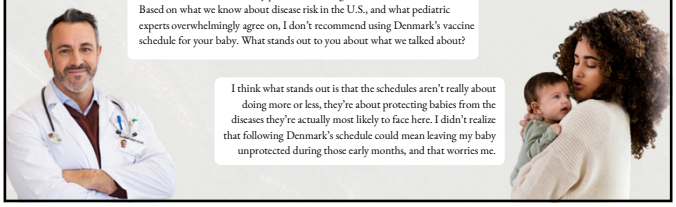
Case Study #2: Denmark Vaccine Schedule

Keeping your baby out of the hospital is the goal — and that's exactly why the U.S. schedule focuses on early protection during the most vulnerable months. Based on what we know about disease risk in the U.S., and what pediatric experts overwhelmingly agree on, I don't recommend using Denmark's vaccine schedule for your baby. What stands out to you about what we talked about?

I think what stands out is that the schedules aren't really about doing more or less, they're about protecting babies from the diseases they're actually most likely to face here. I didn't realize that following Denmark's schedule could mean leaving my baby unprotected during those early months, and that worries me.



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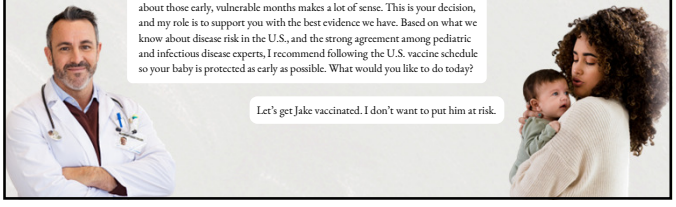
Case Study #2: Denmark Vaccine Schedule

I really appreciate how you're thinking about this. You're exactly right, it's about matching protection to the real risks babies face here. And your concern about those early, vulnerable months makes a lot of sense. This is your decision, and my role is to support you with the best evidence we have. Based on what we know about disease risk in the U.S., and the strong agreement among pediatric and infectious disease experts, I recommend following the U.S. vaccine schedule so your baby is protected as early as possible. What would you like to do today?

Let's get Jake vaccinated. I don't want to put him at risk.



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Weighing the Risk of Measles and MMR Vaccine

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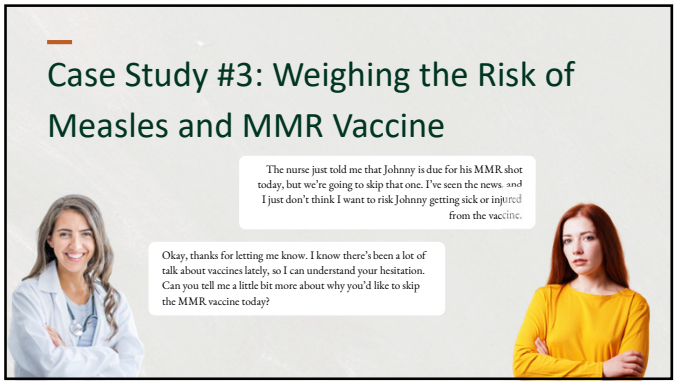
Case Study #3: Weighing the Risk of Measles and MMR Vaccine



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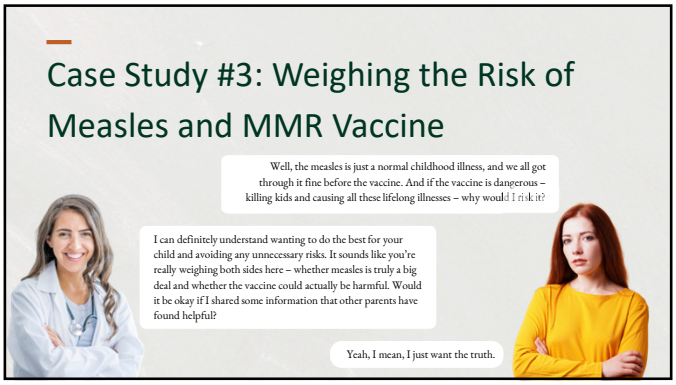
Case Study #3: Weighing the Risk of Measles and MMR Vaccine



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Measles on the Rise

2,065
Confirmed cases in the US in 2025.

In 2024, there were a total of **285** cases.
Over a 7X increase.

Over **92%** of cases are in **unvaccinated** individuals.

CDC, as of 9/24/2025.

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Elimination Status

5,162
cases have been reported in Canada in 2025.
As of 11/15/2025

As of November 2025 - Canada lost its measles elimination status (e.g. sustained transmission for 12+ months).

By default, the Americas region also lost that designation.

The U.S. and Mexico are not far behind as their outbreaks started in late January and early February, respectively.

CDC , 2025; Gov of Canada, 2025; AAP, 2025; CIDRAP, 2025

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What Patients Are Hearing

Recent media reports suggest the CDC is considering splitting the MMR vaccine into separate shots.

Headlines imply a change in safety or policy — but no new recommendations exist.

WHY IT'S CONFUSING:

Mixed messages make parents question what's "safer" or "recommended."

Splitting vaccines would mean more shots, more visits, more missed doses.

WHAT TO COMMUNICATE TO PATIENTS:

The combined MMR remains safe, effective, and recommended. Help patients understand: the science hasn't changed — only the headlines have.

KFF, 2025

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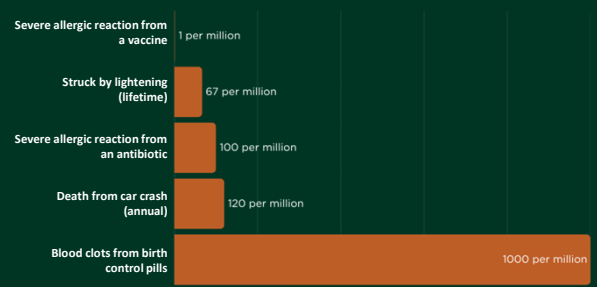
Putting Risk into Perspective



CDC Pink Book; NWS, 2019; Montañez, Front Immunol, 2017; Yellman & Sauber-Schatz, MMWR, 2022; Cleveland Clinic, 2022

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Measles is Highly Contagious

Measles is the most contagious disease in the world.

A person with measles can **spread it to others even before they have the disease** - from 4 days before developing the measles rash.

If ONE person has measles, **9 out of 10 people** who are not immune (had measles or been vaccinated against it) will ALSO become infected.

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CDC, 2025; CIRE Handout; Kondamudi & Waymack, StatPearls, 2023

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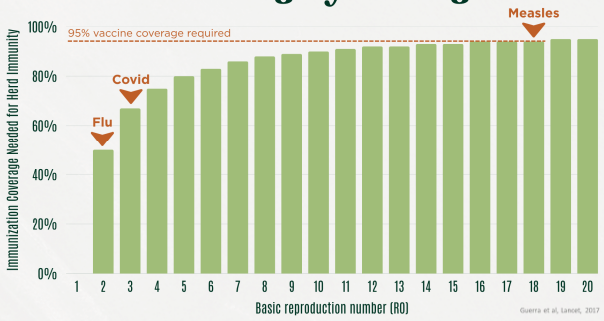
Measles is Highly Contagious



Guerra et al, Lancet, 2017

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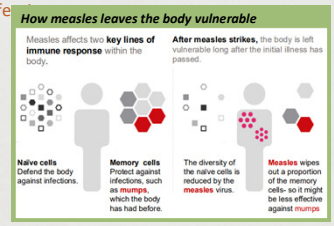
Measles Complications: Immune Amnesia

A condition where the immune system forgets previously acquired immunity following a measles infe

How does this happen?

The virus destroys memory cells in the immune system = loss of previous acquired immunity.

- 11-73% reduction in one's antibodies.
- Children who recover from measles have a higher risk of dying from other infections for 2-3 years due to loss of immunity.



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Mina et al, Science, 2019; YALE ESF-8, Special Report, 2025; CIRE Handout

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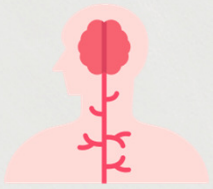
Measles Complications: Subacute Sclerosing Panencephalitis (SSPE)

A very rare but **fatal disease** of the central nervous system that can develop 7-10 years after a person has fully recovered from a measles infection.

- 4-11 per 100,000 cases of measles result in SSPE.
- Treatment may ease symptoms, but SSPE is ALWAYS fatal.
- People with this disease die ~1-3 years after diagnosis.



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Rocke & Belyayeva, StatPearls, 2023; CIRE Handout

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Measles Complications: Subacute Sclerosing Panencephalitis (SSPE)

This is not hypothetical. In 2025, a school-aged child in Los Angeles County died from SSPE. Infants rely on all of us being vaccinated to keep measles out of the community.

Los Angeles child dies from rare measles complication years after recovery

The county health department said the death is a "painful reminder" of how dangerous measles can be in unvaccinated people.

Child dies from complications of measles years after infection – SSPE explained

Why falling vaccination rates put vulnerable children at risk.

16 September 2025 · 3 min read by The Conversation

Gavi, 2025; NBC, 2025

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Measles is Preventable

THE MEASLES, MUMPS, & RUBELLA (MMR) VACCINE IS HIGHLY EFFECTIVE:

93% EFFECTIVE AT PREVENTING MEASLES AFTER **1 DOSE**

97% EFFECTIVE AT PREVENTING MEASLES AFTER **2 DOSES**

CDC, 2025

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25+ articles refute a connection between MMR vaccine and the development of autism. Let's look at a few...

Study	Location & Sample Size	Findings
Madsen et al., 2002	Denmark, 537,000+ children	No difference in autism rates between vaccinated and unvaccinated children.
Andrews et al., 2004	UK, 500,000+ children	No link between MMR and autism, even in high-risk children.
DeStefano et al., 2013	U.S., CDC study - 1,000+ children	No increased autism risk from MMR vaccine.
Taylor et al., 2014	Meta-analysis, 10 studies, 1.2M+ children	Comprehensive review found no association between MMR and autism.
Uno et al., 2015	Japan, 400+ children	Autism rates continued to rise even after MMR was discontinued, disproving causation.
Hviid et al, 2019	Denmark, 650,000+ children	MMR vaccine does not increase risk for autism, nor does it trigger autism in susceptible children.

Immunize.org, 2023

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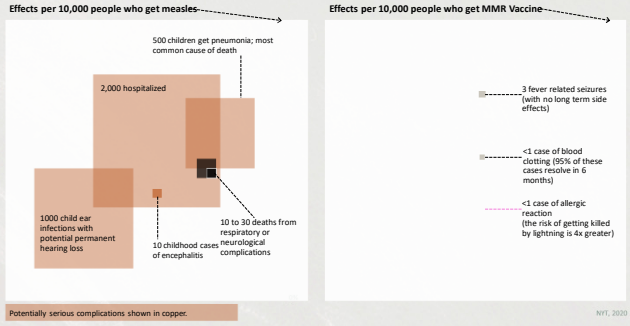
Comparing the risk: Measles vs MMR Vaccine



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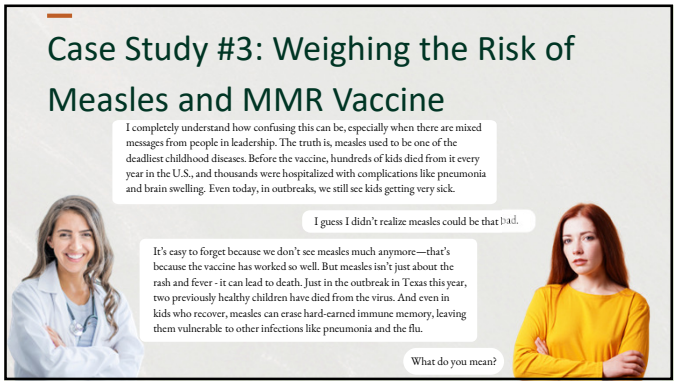
Case Study #3: Weighing the Risk of Measles and MMR Vaccine



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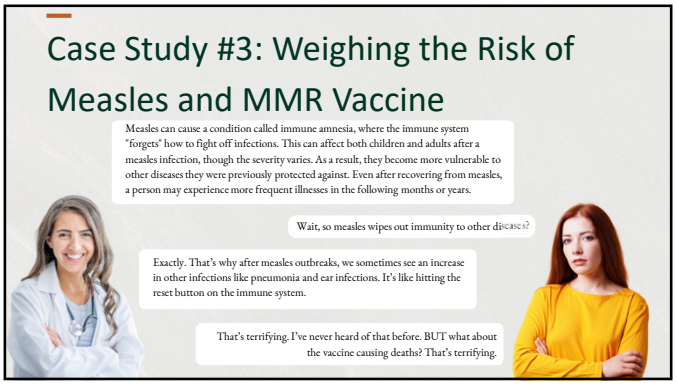
Case Study #3: Weighing the Risk of Measles and MMR Vaccine



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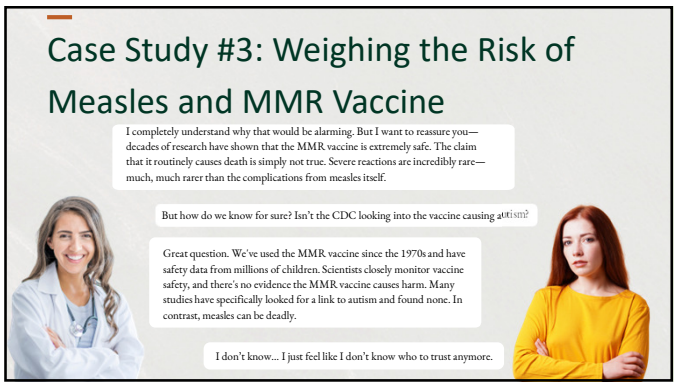
Case Study #3: Weighing the Risk of Measles and MMR Vaccine



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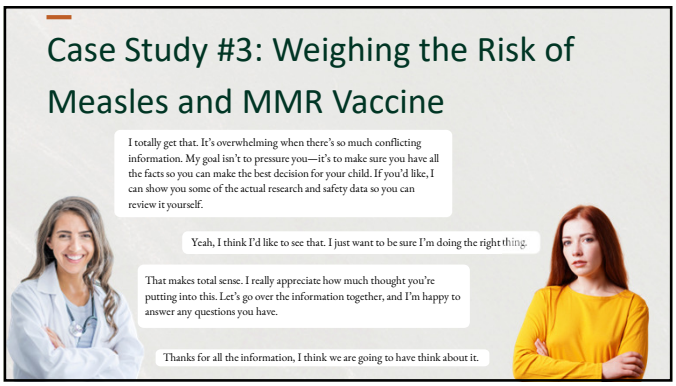
Case Study #3: Weighing the Risk of Measles and MMR Vaccine



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Questions?

THANK YOU FOR LISTENING

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