

September 30, 2025

PQC-VT Educational Webinar Series: Perinatal Vaccines

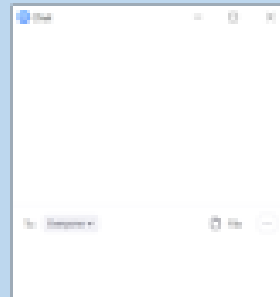
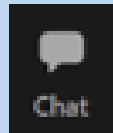
Presented by: Marjorie Meyer, MD & Katie Mahuron, RN



Housekeeping

Chat

Use the *Chat* box to type a question.



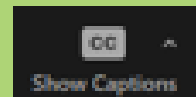
Microphone

You will be muted when you join. If you wish to verbally ask your question during the Q&A portion of the presentation, please unmute your microphone.



Captioning

Click *Show Captions* from your navigation bar to view automated captions.



Evaluation

Before leaving the event, please complete the evaluation by copying and pasting the link provided in the *Chat* into a browser. Thank you!

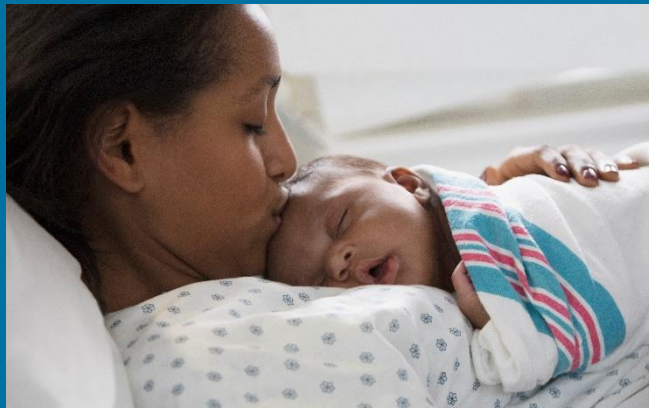


Collaborators



Disclosures

None



Immunization Updates

Katie Mahuron, RN – *Adult Nurse Coordinator*
Vermont Department of Health Immunization Program

September 30, 2025

Agenda – 09/30/2025

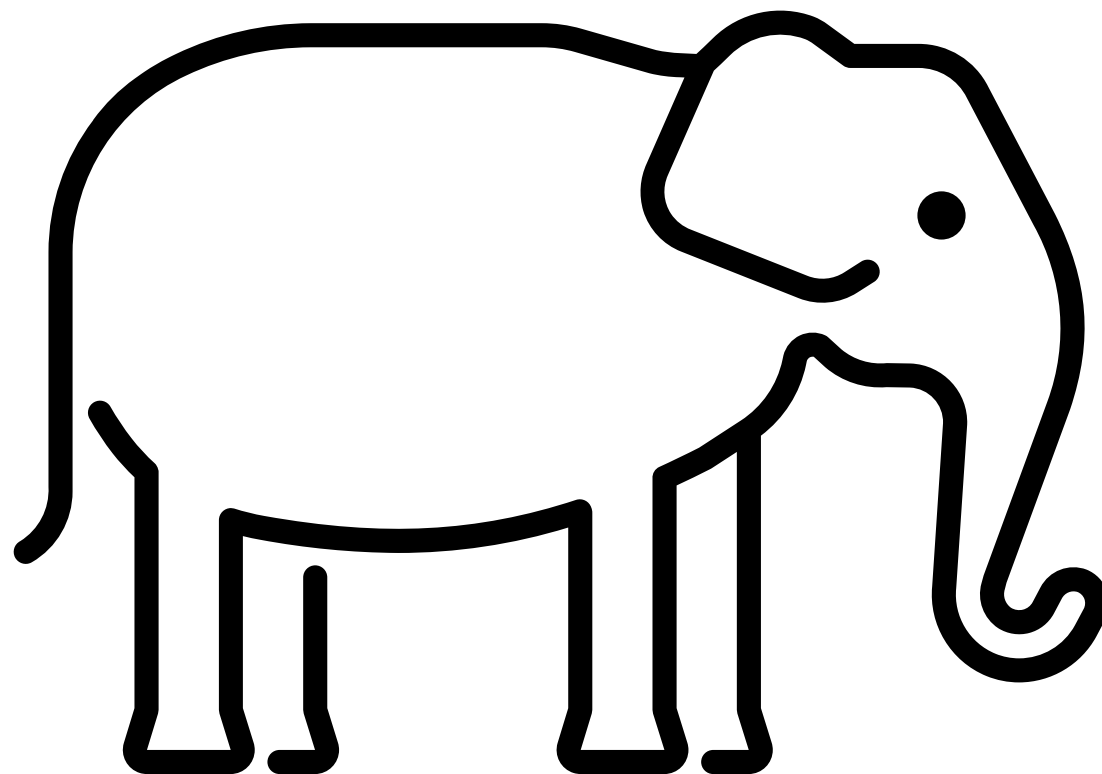
- Vermont Immunization Landscape 102
- Respiratory Virus Season Vaccine Updates
- Hepatitis B Birth Dose
- Key Takeaways

Contact Information

- Ordering, vaccine storage and handling, vaccine-specific information:
AHS.VDHImmunizationProgram@vermont.gov
- Immunization registry and reporting questions:
IMR@vermont.gov
- Program updates and e-mailed communications available on the Vaccine Information for Health Care Professionals Page:
 - Updates: www.healthvermont.gov/disease-control/immunization-providers#vvpupdate
 - E-mails: www.healthvermont.gov/disease-control/immunization-providers#vvpmemo

Vermont Immunization Landscape 102

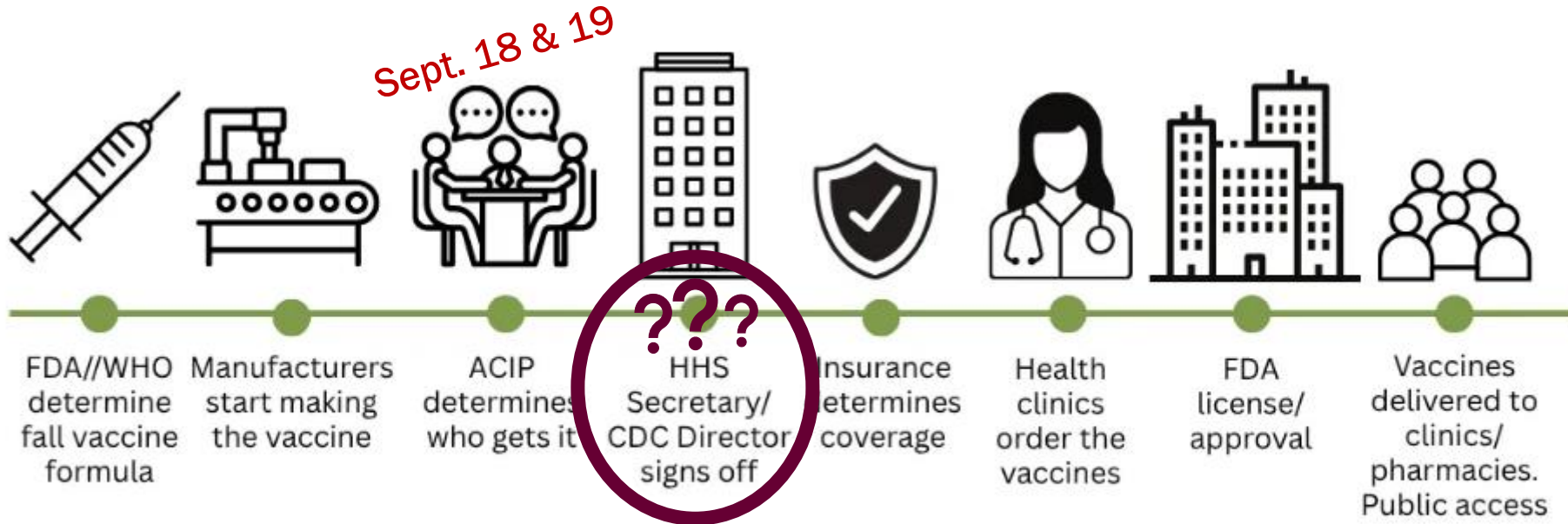




ACIP Changes: Committee Members



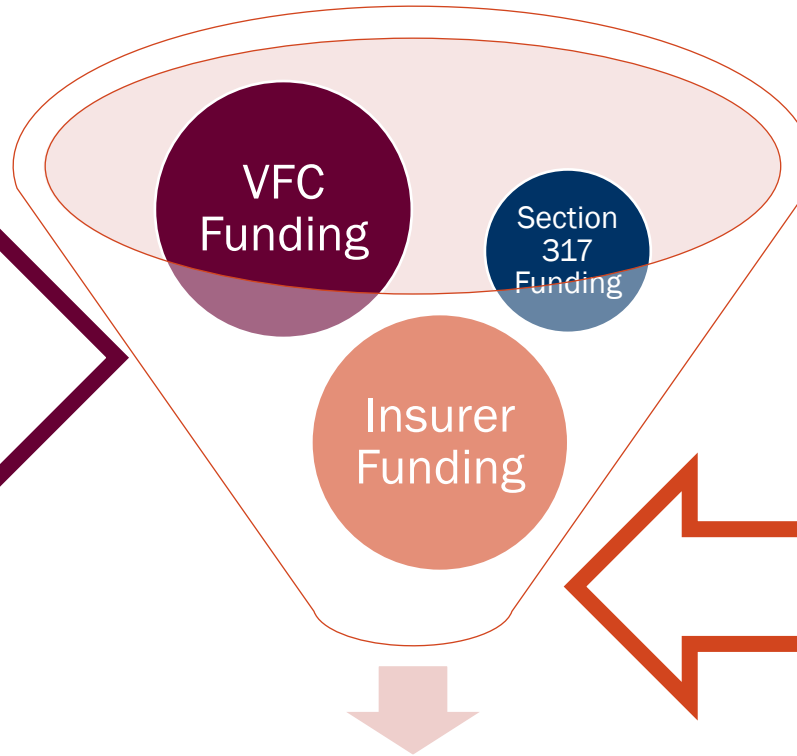
Traditional Fall Respiratory Vaccine Process



The fall respiratory vaccine process. Figure by Your Local Epidemiologist.

Vermont Vaccine Purchasing Program (VVPP)

- Funding only for vaccines through CDC contracts
- ACIP votes on which vaccines are included in VFC program
- Allocated based on number of children who are uninsured, enrolled in Medicaid, AI/AIN, underinsured



- Funding only for ACIP-recommended vaccines through CDC contract

- Insurers pay an assessment fee for each “covered life” for individuals up to 65 years
- Allows Vermont to have a ‘universal’ program
- Tied to ACIP recommendations in statute

Vermont Vaccine Purchasing Program vaccines



Vaccine Access Landscape in Vermont



- Vermont's universal vaccine purchasing program is linked to ACIP recommendations in statute.
 - Immunization Program working with leadership to address
- Vaccines purchased through CDC contract
 - Other means of purchase being explored
 - If a vaccine were to lose FDA licensure or EUA, we would expect loss of access nationally
- Insurance coverage is a key component of vaccine access:
 - [Health Plans' Continued Commitment to Vaccine Access – AHIP](#)
 - Immunization Program in regular contact with Medicaid and state insurers
- Vermont Department of Health [released state respiratory virus vaccine recommendations](#) and [standing orders](#) for pharmacists

Why vaccinate during pregnancy?



Enhanced risk of infectious morbidity during pregnancy



Gap immunity during early infancy



Dual protection through birthing person immunization



Promotion of life-long maternal and infant health and well-being

Source: Joseph, N.T. & Collier, A. Y. (2025, March 25). *Pregnancy and Vaccination* [Keynote presentation]. Massachusetts Adult Immunization Coalition, Newton, MA. [Plenary F: Pregnancy and Vaccination.pptx](#)

Vaccine Education During Pregnancy is Foundational



48% first-time expectant parents

18% previous pregnancies

4% young children

Source: [Study: Pregnancy Offers Critical Opportunity to Address Vaccine Uncertainty | Emory University - Rollins School of Public Health](#)

Respiratory Virus Season Vaccine Updates



Vaccines routinely recommended during pregnancy

VACCINATION	1 ST TRIMESTER	2 ND TRIMESTER	3 RD TRIMESTER
COVID-19	☒	☒	☒
FLU (Seasonal Inactivated Influenza)	☒	☒	☒
TDAP (Tetanus, diphtheria, and acellular pertussis)			☒
RSV (Respiratory Syncytial Virus)			☒
HEP B (Hepatitis B Virus)	☒	☒	☒

*Hepatitis B Vaccine recommended for all adults who lack documentation of vaccination or lack evidence of immunity

Source: Joseph, N.T. & Collier, A. Y. (2025, March 25). *Pregnancy and Vaccination* [Keynote presentation].
Massachusetts Adult Immunization Coalition, Newton, MA. [Plenary F: Pregnancy and Vaccination.pptx](#)

Vermont Department of Health Respiratory Virus Vaccine Recommendations

Health Advisory: Respiratory Virus Vaccine Recommendations

Health Advisory
September 18, 2025

To: Vermont Health Care Providers and Health Care Facilities
Date: September 18, 2025
From: Merideth Plumptre, RN, Immunization Program Manager

Updated Respiratory Virus Vaccine Guidance

Background

COVID-19, influenza and RSV vaccines remain the front line of defense and protection against each of the viruses they target. The science demonstrating their safety and efficacy is evidence-based and well documented and this hasn't changed. All three vaccines are recommended by the Centers for Disease Control and Prevention (CDC), American Academy of Pediatrics (AAP), American College of Obstetricians and Gynecologists (ACOG), the American Academy of Family Physicians (AAFP) and the Infectious Diseases Society of America (IDSA).

Requested Action

Discuss the risks and benefits of respiratory virus vaccines, including for COVID-19, influenza and respiratory syncytial virus (RSV), with your patients. Anyone can get a respiratory virus infection, but some people are at higher risk for serious illness.

COVID-19 Vaccines:

Changing federal guidance and conflicting recommendations have brought up many questions about this season's COVID-19 vaccines. The Vermont Department of Health's COVID-19 vaccination recommendations are supported by evidence-based guidance from the CDC, AAFP, AAP, ACOG and IDSA. On September 17, the Health Department issued a [standing order](#) authorizing qualified pharmacy personnel to administer the 2025-2026 COVID-19 vaccine to individuals ages 5 years and older based on the recommendations of

[Governor Phil Scott Takes Action to Ensure Access to COVID-19 Vaccines for Vermonters](#)
[| Office of Governor Phil Scott](#)

Vermont Respiratory Vaccine Recommendations

2025-2026 Respiratory Vaccine Recommendations



	Flu Vaccine	COVID-19 Vaccine	RSV Vaccine
Infants and Children	All children 6 months and older <i>Some children 6 months-8 years may need multiple doses</i>	All children 6-23 months All children 2-18 years <i>Especially important for those with certain risk factors</i>	All infants under 8 months <i>(nirsevimab, clesrovimab)</i> Children 8-19 months with risk factors <i>(nirsevimab)</i>
Pregnant or Lactating	All <i>At any point in pregnancy</i>	All <i>At any point in pregnancy</i>	OR 32-36 weeks pregnant <i>(Pfizer, Abrysvo only; given between September and January)</i>
Adults 19-50	All	All <i>Especially important for those with certain risk factors</i>	If pregnant <i>(see above)</i>
Adults 50+	All <i>High-dose, recombinant or adjuvanted flu vaccine preferred for 65+, if available</i>	All <i>Especially important for those with certain risk factors</i>	All 75+ and adults 50-74 with risk factors <i>One lifetime dose</i>

RSV Products

Choose one product to prevent severe RSV disease in infants



Maternal vaccination
September 1- January 31
- Abrysvo

or



Infant RSV antibody
October 1- March 31st
-Clesrovimab
Nirsevimab

RSV Monoclonal Antibodies

Nirsevimab (Beyfortus) Sanofi/AstraZeneca

Recommended
Age

Infants (birth to 8 months)
for 1st RSV season;
high-risk 8-19 months for
2nd RSV season

Weight-Based
administration?

Yes

- 50 mg: infants weighing <5 kg [<11 lb]
- 100mg: infants weighing ≥5 kg [≥11 lb]

Clesrovimab (Enflonsia) Merck

Recommended
Age

Infants (birth to 8 months)
for 1st RSV season

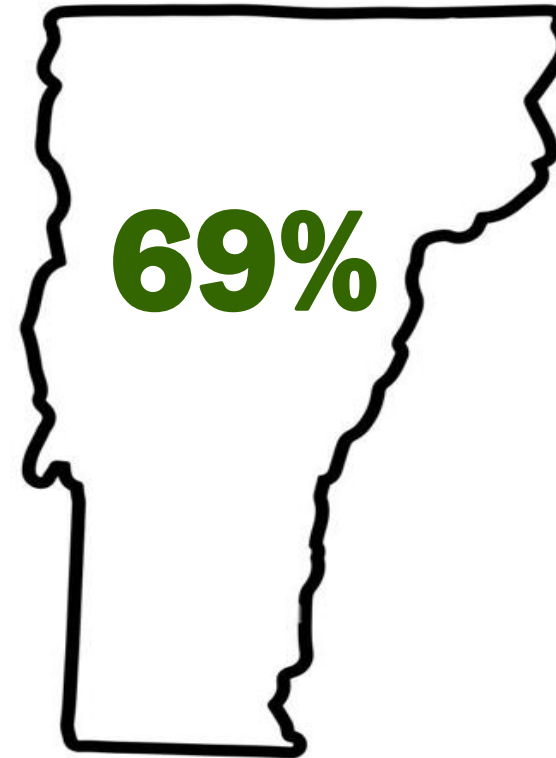
Weight-Based
administration?

No

single fixed dose of
105mg regardless of the
infant's weight

2024-2025 RSV Immunization Coverage for Infants

Addison	76%
Bennington	67%
Caledonia	54%
Chittenden	71%
Essex	*
Franklin	72%
Grand Isle	**
Lamoille	56%
Orange	74%
Orleans	55%
Rutland	70%
Washington	72%
Windham	68%
Windsor	75%



Data source: Vermont Immunization Registry

An asterisk (*) indicates data suppression when fewer than six people are vaccinated in a subgroup, or fewer than 50 people are in the subgroup. Two asterisks (**) indicates an additional value is suppressed since the totals are shown.

Influenza vaccine recommendations

Everyone age 6 months and older should receive annual influenza vaccine

2025-2026 TRIVALENT INFLUENZA VACCINE COMPOSITION

	Egg-Based Vaccines	Cell- or Recombinant-Based Vaccines
Influenza A/H1N1	A/Victoria/4897/2022 (H1N1)pdm09-like virus	A/Wisconsin/67/2022 (H1N1)pdm09-like virus
Influenza A/H3N2	A/Croatia/10136RV/2023 (H3N2)-like virus	A/District of Columbia/27/2023 (H3N2)-like virus
Influenza B/Victoria lineage	B/Austria/1359417/2021 (B/Victoria lineage)-like virus	B/Austria/1359417/2021 (B/Victoria lineage)-like virus



Influenza Vaccination During Pregnancy

- Administer inactivated influenza vaccine (IIV) or recombinant influenza vaccine (RIV) during any trimester.
 - For those who are in 3rd trimester, consider vaccination during July and August.
 - For those in the 1st or 2nd semester during July and August, waiting to vaccinate until September or October is preferable, unless reason to believe vaccination may not be possible at a later date.
- Vaccinate as long as influenza viruses are circulating.



Benefits of Influenza Vaccination During Pregnancy

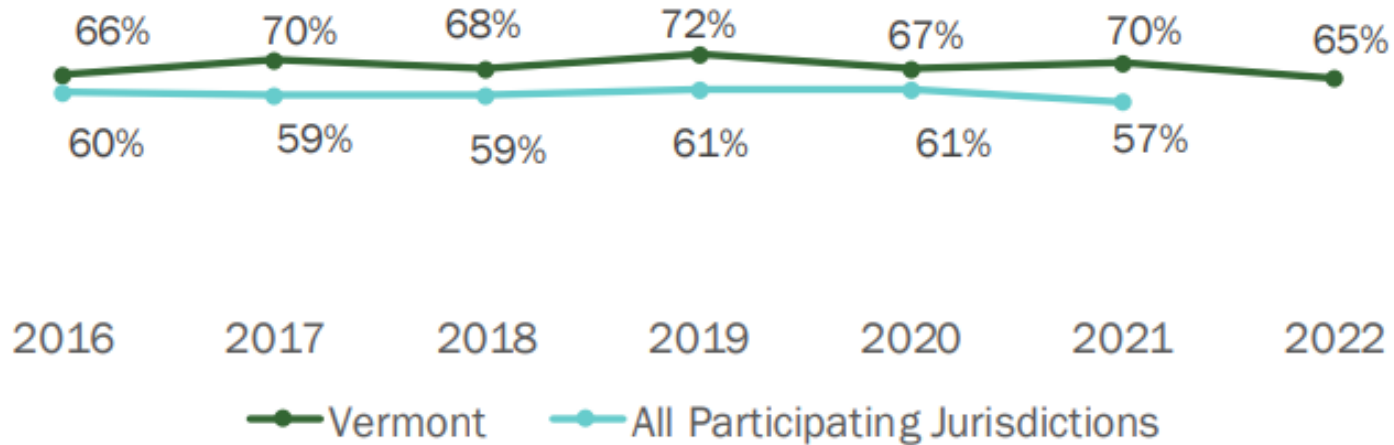


- In a [2023 study](#), vaccination during pregnancy was associated with a reduction in influenza-associated hospitalizations and ED visits in infants younger than 6 months.
 - Vaccine effectiveness was highest among infants when vaccination occurred during the third trimester (52% effectiveness).

Influenza vaccination during pregnancy provides protection to infants before they are eligible for vaccination.

Influenza Vaccination Rates

Influenza Vaccination Rates Before or During Pregnancy by Data Year



Source: VT PRAMS [Immunizations](#)

FDA approves 2025-2026 COVID-19 Vaccine Composition

☑ Recommendation: Monovalent JN.1-lineage based COVID -19 vaccine for the 2025-2026 formula

➡ Preferred Strain: LP.8.1

[COVID-19 Vaccines \(2025-2026 Formula\) for Use in the United States Beginning in Fall 2025 | FDA](#)

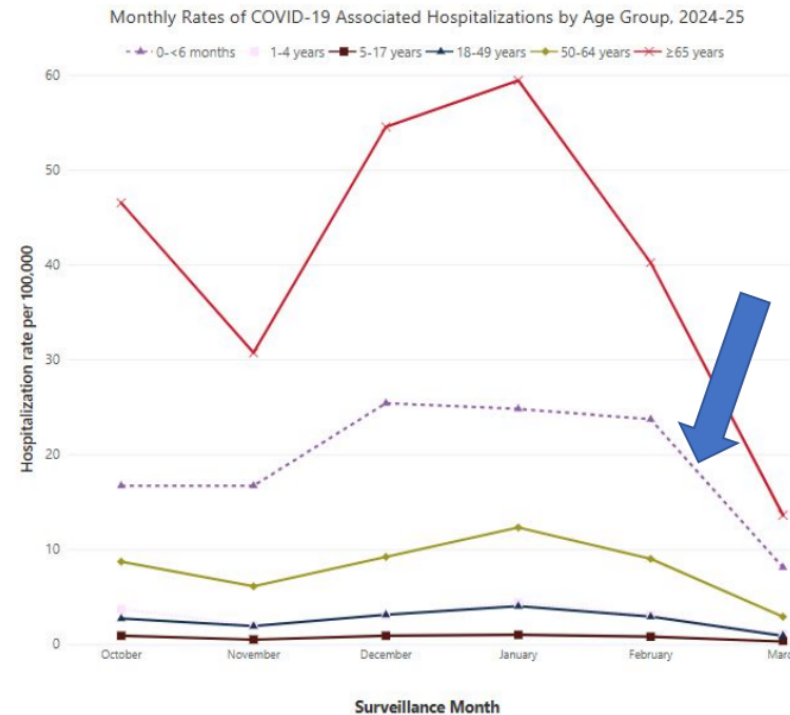
COVID-19 Risks During Pregnancy

- Pregnant individuals who get COVID-19 are more likely to need hospitalization, intensive care, or the use of a ventilator.
- COVID-19 infection during pregnancy also associated with increased risk of complications such as preterm birth or stillbirth.



Benefits of COVID-19 Vaccination During Pregnancy

Infant <6 months old have 2nd highest COVID-19 hospitalization rates; passive immunity from maternal immunization is critical



Source: Joseph, N.T. & Collier, A. Y. (2025, March 25). *Pregnancy and Vaccination* [Keynote presentation]. Massachusetts Adult Immunization Coalition, Newton, MA. [Plenary F: Pregnancy and Vaccination.pptx](#)

FDA Licensure of COVID-19 Vaccines

Manufacturer/Product		Licensure Age/Eligibility
Moderna	Spikevax	65 yrs.+; 6 months – 64 yrs. w/ at least one underlying condition that puts them at high risk
	mNexspike	65 yrs.+; 12 yrs. – 64 yrs. w/ at least one underlying condition that puts them at high risk
Novavax	Nuvaxvoid	65 yrs.+; 12 yrs. – 64 yrs. w/ at least one underlying condition that puts them at high risk
Pfizer	Comirnaty	65 yrs.+; 5 yrs. – 64 yrs. w/ at least one underlying condition that puts them at high risk

Confusion: COVID-19 Vaccination During Pregnancy

FDA Licensure	CDC Recommendations (2024-2025)	CDC Recommendations (2025-2026)	ACOG Recommendations 2025-2026	Society for Maternal-Fetal Medicine 2025-2026
Not licensed specifically for pregnant individuals, but also not contraindicated <i>(Note: similar to licensure of flu vaccine for use during pregnancy)</i>	No recommendation; not contraindicated (updated May 2025)	To be determined – not explicitly identified within ACIP votes on September 19 (will need to see updated clinical considerations and MMWR)	Recommend that all pregnant and lactating individuals receive an updated COVID-19 vaccine or “booster.” COVID-19 Vaccination Considerations for Obstetric–Gynecologic Care ACOG	Recommends pregnant people receive an updated 2025-2026 COVID-19 vaccine. Respiratory Disease Season - Society for Maternal-Fetal Medicine

Vermont COVID-19 Vaccine Recommendations

Everyone 6 months and older should receive an updated COVID-19 vaccine.

- Vaccination is especially important for certain groups who are at higher risk.

Pregnant individuals identified as a high-risk population in Department's recommendations (outlined below):

Vaccination against COVID-19 is recommended for all pregnant persons. ^{2, 4, 6}

- People who are pregnant, contemplating pregnancy or have recently been pregnant and those who are lactating **should** be vaccinated.
 - Vaccination may occur in any trimester.
 - For lactating individuals, there is no need to stop or delay breastfeeding.
 - There is no need to delay pregnancy following a COVID-19 vaccine.



Resource:

[COVID-19 Vaccination Considerations for Obstetric–Gynecologic Care | ACOG](#)

Vermont Respiratory Vaccine Recommendations

2025-2026 Respiratory Vaccine Recommendations



	Flu Vaccine	COVID-19 Vaccine	RSV Vaccine
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Adults 50+	All <i>High-dose, recombinant or adjuvanted flu vaccine preferred for 65+, if available</i>	All <i>Especially important for those with certain risk factors</i>	All 75+ and adults 50-74 with risk factors <i>One lifetime dose</i>

Hepatitis B Birth Dose



ACIP Votes and Discussion: Hepatitis B Birth Dose

VOTE: All pregnant women should be tested for hepatitis B infection.



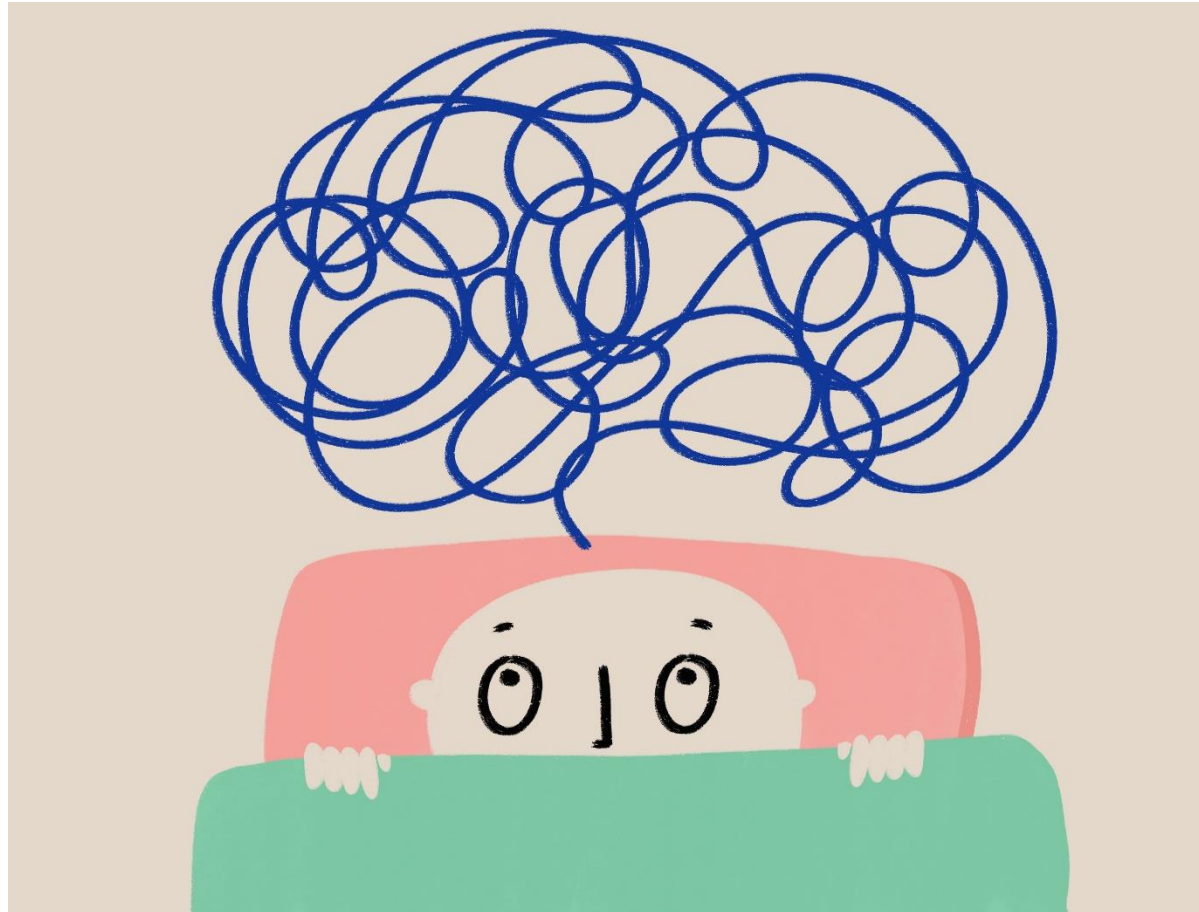
VOTE: The pediatric vaccine schedule should be updated to reflect the following change:

If a mother tests HBsAG-negative:

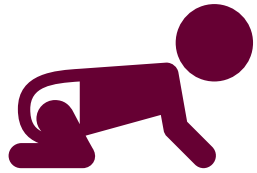
- The first dose of the Hepatitis B vaccine is not given until the child is at least one month old.
- Infants may receive a dose of hepatitis B vaccine before one month according to individual based decision-making.*

**Also referred to as shared clinical decision-making.*





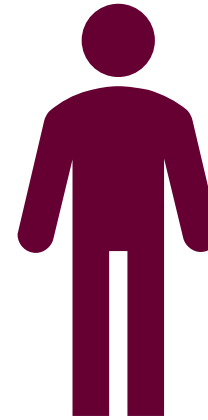
The Science: Hepatitis B Birth Dose



90%



(Age 1-4 yrs)
30%



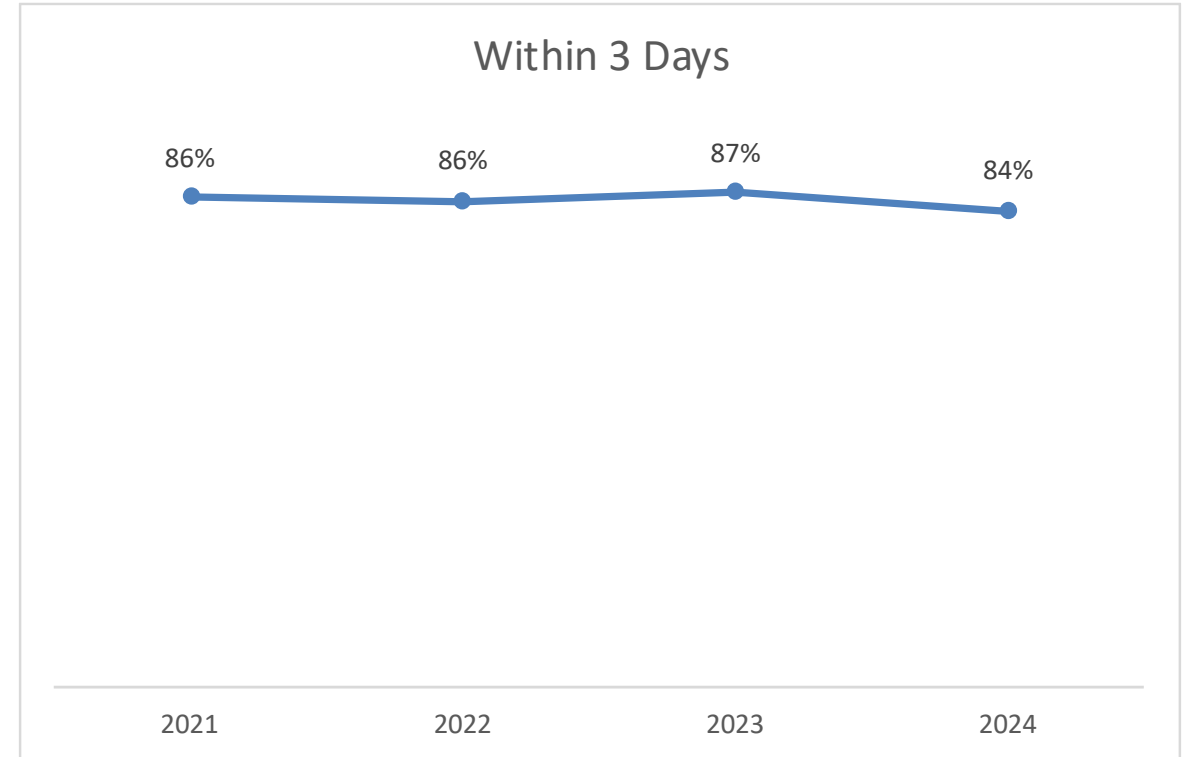
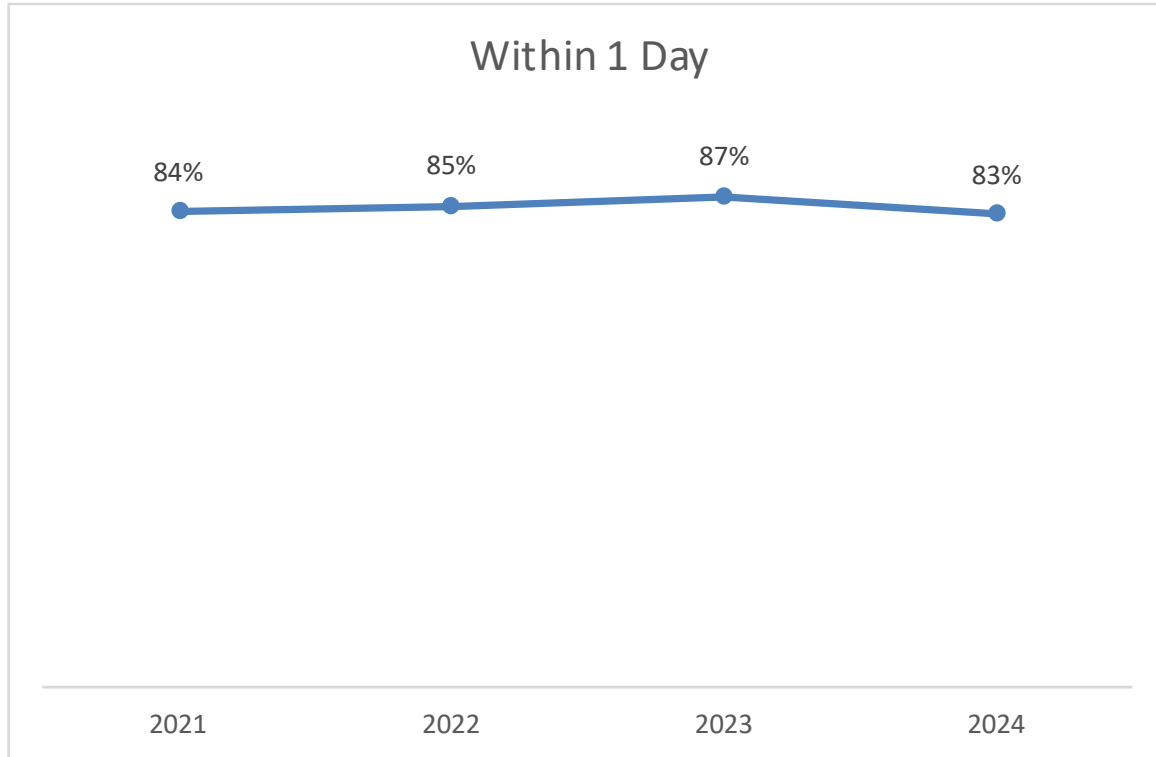
<5%

Sources:

Lernout, T., Hendrickx, G., Vorsters, A., Mosina, L., Emiroglu, N., & Van Damme, P. (2014). A cohesive European policy for hepatitis B vaccination, are we there yet? *Clinical Microbiology and Infection*, 20, 19–24. <https://doi.org/10.1111/1469-0691.12535>

World Health Organization. (2025, July 23). Hepatitis B. <https://www.who.int/news-room/fact-sheets/detail/hepatitis-b>

Hepatitis B Birth Dose Data: Vermont



A few takeaways

Vaccine Access Landscape in Vermont

Currently no major
impacts to
Immunization
Program's vaccine
supply

We remain
committed to
ensuring vaccine
access for
Vermonters

Vaccines are our best defense against...

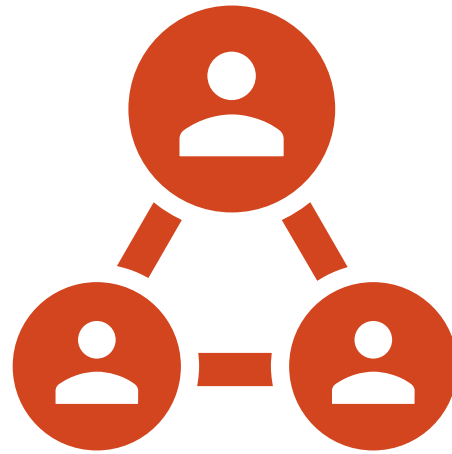


“The science is strong: Vaccines work, save lives, and are very safe.”



Vaccine policy meeting: The essentials

Vaccines are the social norm



New Poll: Majority of Americans Support Keeping Vaccines
Widely Available to Protect Children and Communities

Investing in trust is investing in immunizations



Confusion leads to inaction



Resources

Safe and recommended vaccines for pregnant patients:

- ✓ COVID-19
- ✓ Flu
- ✓ RSV
- ✓ Tdap

Talk with your health care professional about getting vaccinated today to protect you and your baby from serious illness.



ACOG

Immunizations During Pregnancy:

- [ACOG's Maternal Immunization Social Media Toolkit](#)
- [Pregnancy - Vaccinate Your Family](#)
- [COVID-19 Vaccination Considerations for Obstetric–Gynecologic Care | ACOG](#)
- [ACOG Releases Updated Maternal Immunization Guidance for COVID-19, Influenza, and RSV | ACOG](#)
- [Respiratory Disease Season - Society for Maternal-Fetal Medicine](#)
- [Pregnancy and Vaccination Pocket Guide](#)
- [Vaccine Guide for Pregnancy 2024 — High Risk Pregnancy Information](#)
- [Immunization Education: Everything You Need to Know About Vaccines Before and During Pregnancy – MotherToBaby](#)

Vermont Department of Health Resources

- [Health Advisory: Respiratory Virus Vaccine Recommendations](#)
- [Protect Your Baby Against Severe RSV](#) (RSV Monoclonal Antibody Factsheet)
- [Vaccination Rates Among Pregnant People](#), PRAMS 2016-2022
- [RSV Immunization Rates 2024-2025](#)

Protect Your Baby Against Severe RSV

January 2025

Respiratory syncytial virus (RSV) is a common virus that affects the lungs. It can be very dangerous for babies and older adults. It's the leading cause of hospitalization in babies. Fortunately, there are two options to protect babies from severe RSV, and most babies only need one: the RSV vaccine given during pregnancy or the RSV antibody, called nirsevimab, given to the baby. Your newborn may be eligible to receive nirsevimab at the hospital after birth. It provides **immediate protection** against RSV and **lasts at least five months**.

If you need help accessing or understanding this information, contact ahs.vdhiimmunizationprogram@vermont.gov.

Nirsevimab is 90% effective at preventing babies from being hospitalized with severe RSV.

RSV Facts



- RSV season starts in the fall and peaks in the winter.
- It can spread when an infected person coughs or sneezes, by direct contact with someone who has RSV, or by touching a contaminated surface.
- Many adults with RSV do not have any symptoms. Those who do will usually have a mild, cold-like illness.
- Very young infants with RSV almost always show symptoms. These include irritability, decreased activity, drinking or eating less, and apnea (pauses in breathing for more than 10 seconds).
- RSV can cause severe illness in infants and young children such as bronchitis (inflammation of the small airways in the lungs) or pneumonia (infection of the lungs).

RSV Antibody (Nirsevimab)



- The RSV antibody is given as one shot.
- It's recommended for infants under 8 months old who aren't already protected through the maternal RSV vaccine. It's given to babies during the months of October through March.
- Side effects are usually mild and end quickly.



HealthVermont.gov/RSV
802-863-7200



VERMONT
DEPARTMENT OF HEALTH

Resources for Understanding Misinformation

[The Evidence Collective](#)

[Locating the Latest Science-based Vaccine Recommendations | Children's Hospital of Philadelphia](#)

[Vaccines and Infectious Diseases in the News | Children's Hospital of Philadelphia](#)

[COVID-19 Vaccines: What's in the Vial? - Infographic | Vaccine Education Center at Children's Hospital of Philadelphia](#)

Thank you!

Let's stay in touch.

Email: AHS.VDHImmunizationProgram@vermont.gov

Web: healthvermont.org

Social: [@HealthVermont.gov](https://twitter.com/HealthVermont.gov)



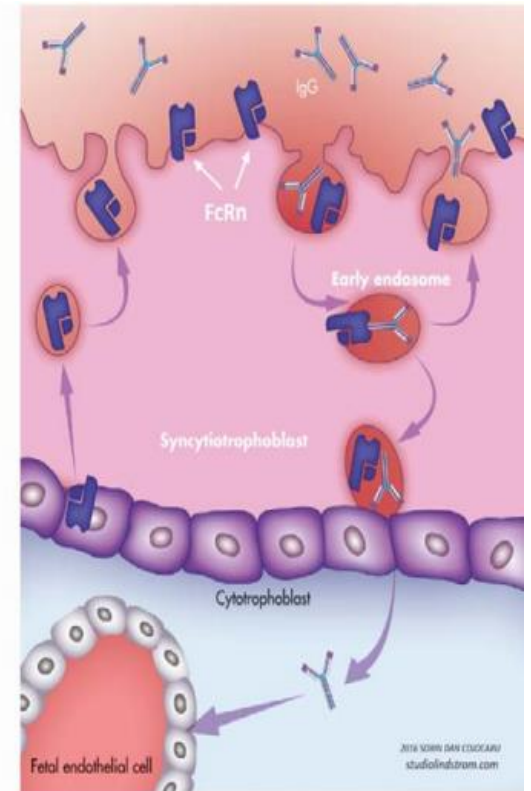
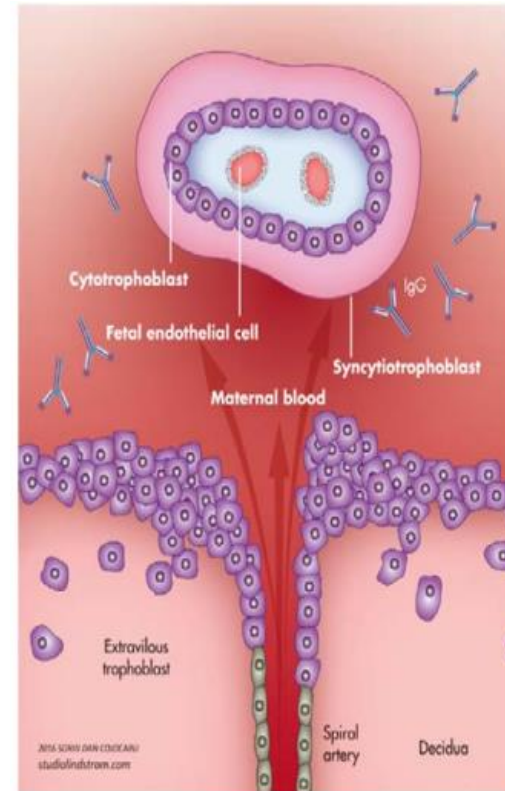
Clinical Vaccine Recommendations

Marjorie Meyer, MD
Maternal Fetal Medicine

Why maternal vaccines (and sometimes prior maternal infection) protect the newborn

- Maternal IgG can cross the placenta

(Tdap is essentially a booster for increased maternal IgG concentrations)
- Passive IgG in the newborn protects for about 3 months: protection until later vaccine schedules can be administered



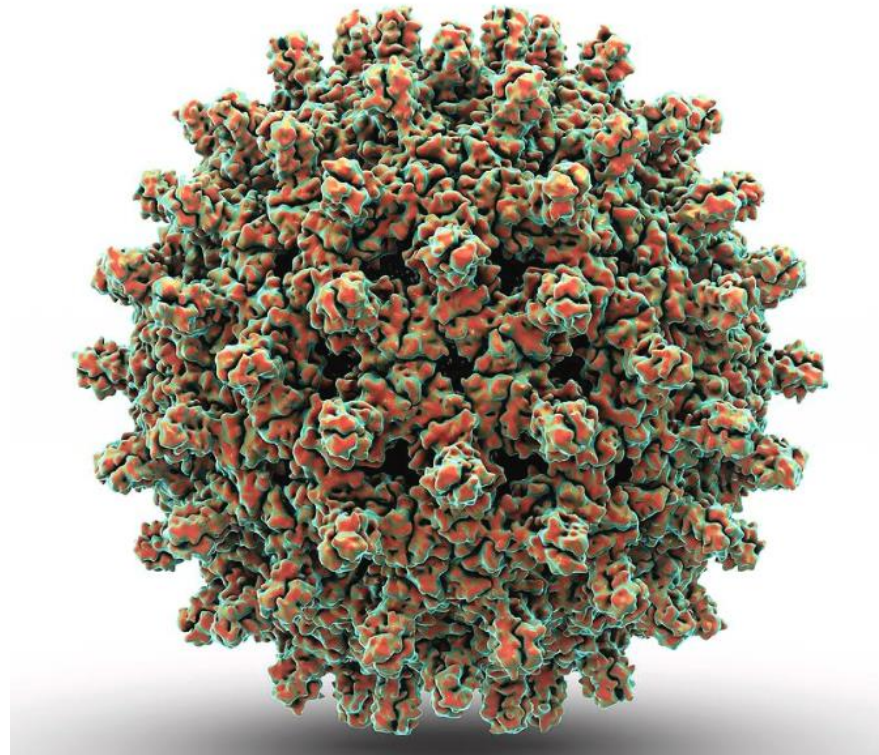
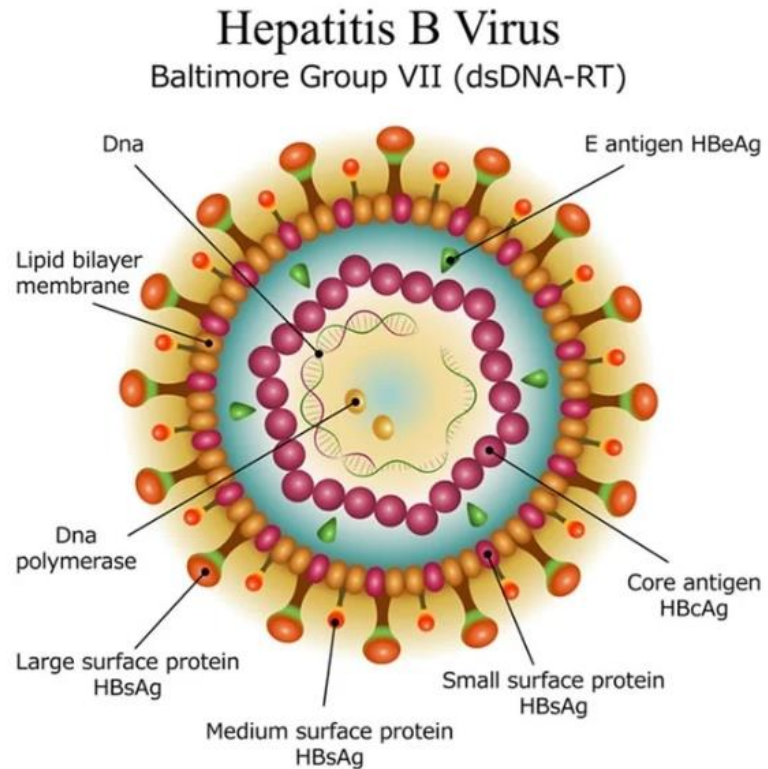
Neonatal infections amenable to prevention with pregnancy screening and intervention

- **Hepatitis B**
- Hepatitis C
- Pertussis (whooping cough)
- **RSV**
- GBS
- Flu



Hepatitis B Vaccine

Hepatitis B in Pregnancy



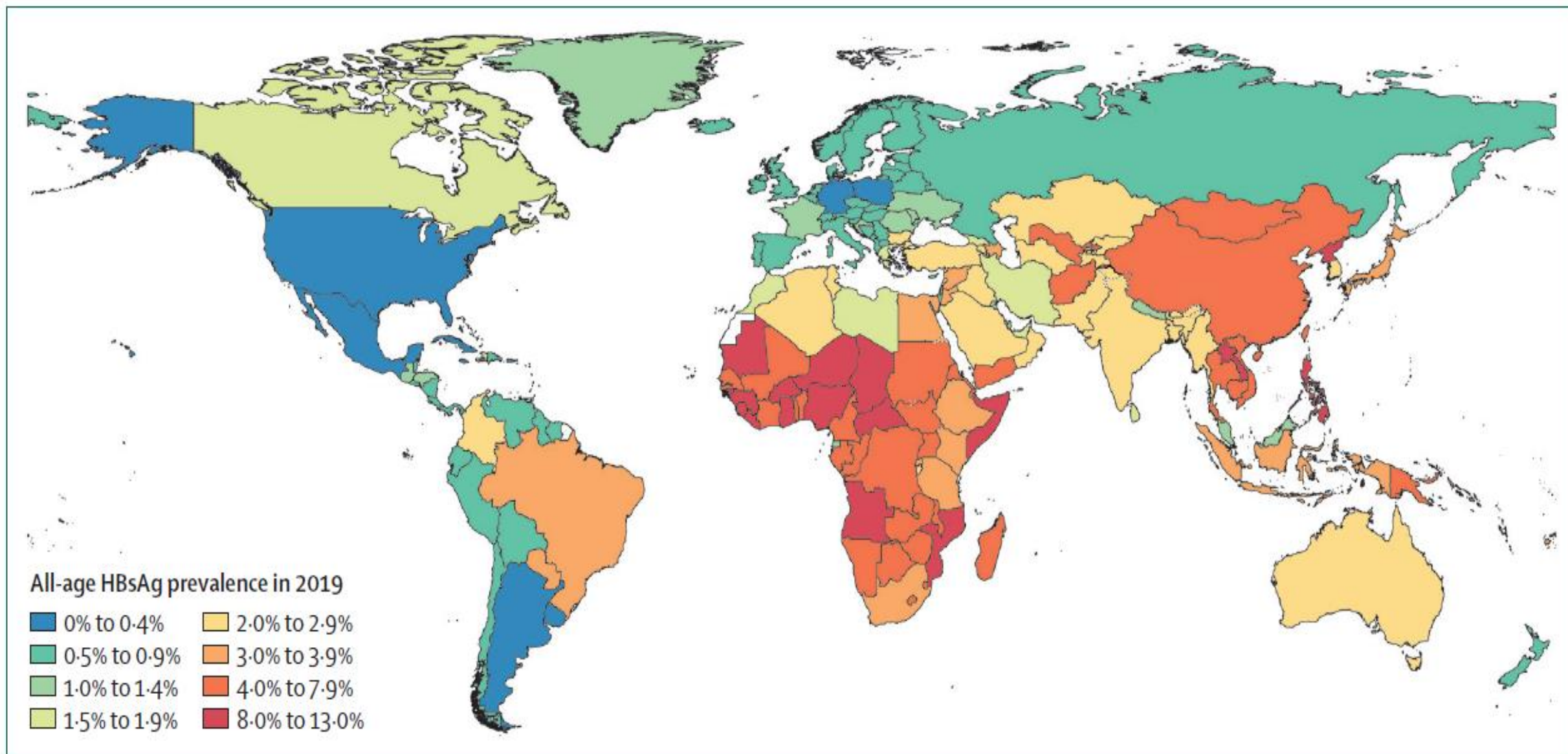


Figure 1: Global prevalence of HBsAg or chronic hepatitis B virus infection

Reproduced from GBD 2019 Hepatitis B Collaborators. HBsAg=hepatitis B surface antigen.

Why screening/prevention for HBV matters:

The risk of progression from acute to chronic infection is inversely proportional to the age at infection:

- approximately 90% when infection occurs in newborns (US: >25000 infants at risk for chronic infection)
- 20% in children aged 1-5 (intrafamilial)
- less than 5% in immunocompetent adults

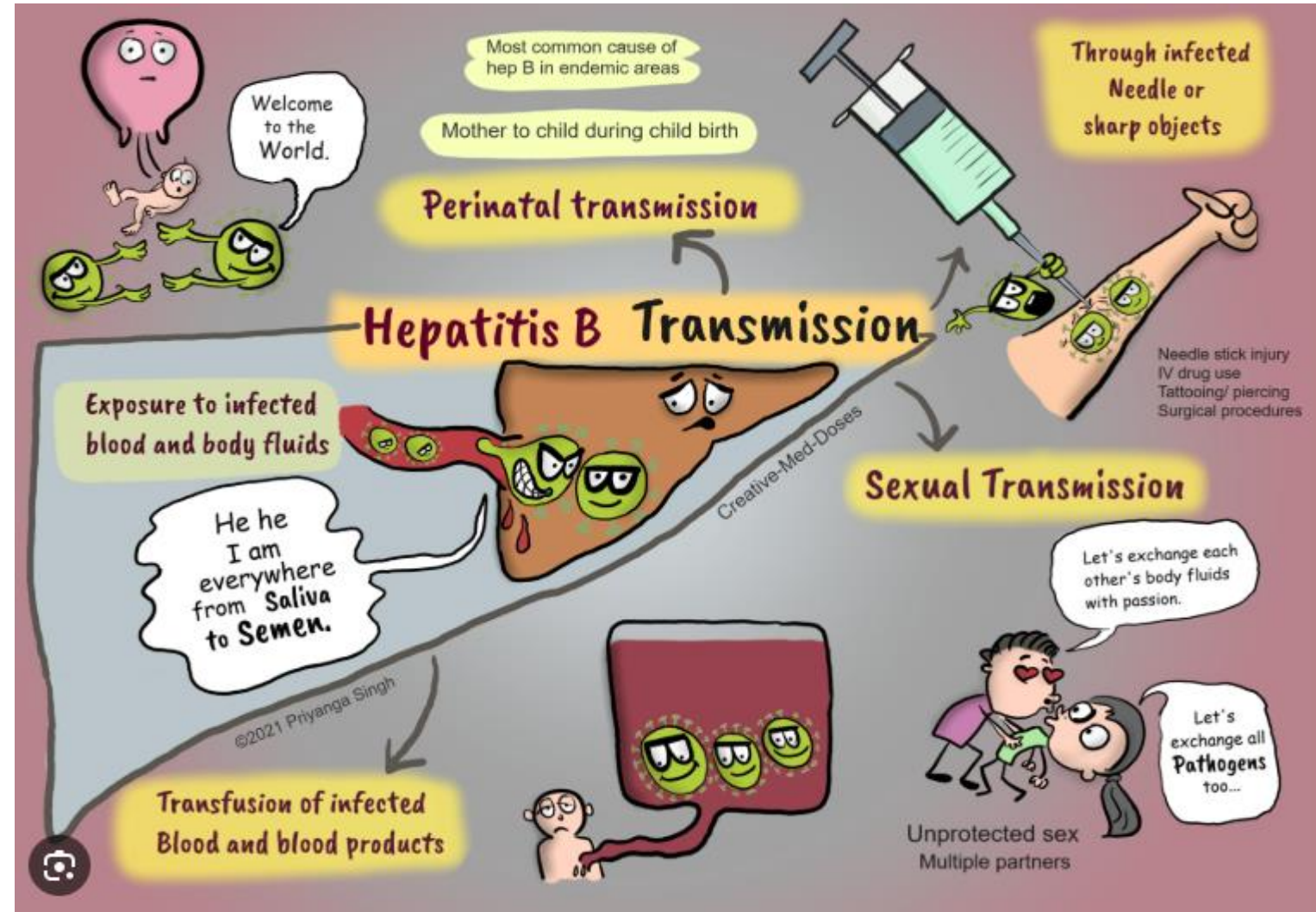
Regardless of age 20% of people with chronic Hep B will die of sequelae (liver disease, carcinoma)

Screening:

- 2/3 of people infected are unaware of infection
- In US: sexual intercourse and IVDU major contributor
- Screen: pregnancy, all adults >18

Prevention:

Universal vaccination <59 yo
Focus on neonatal vaccine



Chronic HBV infection is the major source of hepatocellular carcinoma globally, leading to 50% of cases worldwide and 80% of cases in high-endemic areas. (preventable cancer)

CDC/ACOG/SMFM recommendations for adults

ALL adults get screened at least once with a “triple screen” (unless <18 yo and completed vaccines as infant, March 2023):

- HBsAg
- Anti-HBs
- Total anti-HBc

No need for pre-vaccination testing; screen is to identify people in need of treatment

Post-vaccination testing only for high risk (NBN with maternal HBSAg, partners of +HBSAg)



Vermont Child Health Improvement Program

Population	Screening and testing recommendation	Vaccination recommendation
Adults with no known risk factors for hepatitis B	• If never previously screened, test for HBsAg, anti-HBs, and total anti-HBc (triple panel)	• Vaccinate ⁵ adults aged 19 – 59 years
People with <u>risk factors</u> , regardless of age.*	• If never previously screened, test for HBsAg, anti-HBs, and total anti-HBc (triple panel) ◦ Unless less than aged 18 years and completed a vaccine series as an infant • If previously screened, but still unvaccinated, offer testing to people who have ongoing risk for exposure	• Vaccinate ⁵

- Three single-antigen vaccines (Engerix-B, Heplisav-B, and Recombivax HB) (2 doses)
- Three combination vaccines (Pediarix (TDaP, HB), Vaxelis (Tdap, polio, Haem flu b, HB), and Twinrix (Hep A, B))

Pregnancy

Providers should vaccinate pregnant persons needing HepB vaccination with Engerix-B, Heplisav-B, Recombivax HB, or Twinrix.



Screening

ALL adults get screened at least once with a “triple screen” (unless <18 yo and completed vaccines as infant, March 2023):

- HBsAg
- Anti-HBs
- Total anti-HBc

Goal is to assess:

- immune because of infection
- immune because of vaccination
- infected with HBV
- susceptible to HBV infection

	HBsAG	Anti-HBs	Anti-HBc
infected with HBV	POS	NEG	POS
immune because of infection	NEG	POS	POS
immune because of vaccination	NEG	POS	NEG
immune because of infection (most common)	NEG	NEG	POS
susceptible to HBV infection	NEG	NEG	NEG

Vertical transmission of HBV

Defined as transmission occurring during pregnancy and in the perinatal period from the HBV-infected mother to the foetus or to the child, resulting in positivity at 6-12 mo of life of the hepatitis B surface antigen (HBsAg) or HBV DNA in infants

MM note: this definition made it difficult to find cord blood data re: in utero infection vs later Mother to Child transmission (MTCT) (and explains why MTCT is the preferred term since unclear really when infection happens)

Vertical transmission of HBV has high efficacy in the absence of any preventive interventions:

- 70% to 90% for hepatitis e antigen (HBeAg) positive mothers (reflective of high viral load)
- 10% to 40% for HBeAg negative mothers (lower viral loads)
- The high success rate of immunoprophylaxis provided to newborns in reducing the incidence of HBV transmission suggests that most vertical transmissions occur at or near the time of birth. (MM note: might be difficult to be sure since most receive HBIG and vaccine)
- Intrauterine infections take place in < 15% of pregnancies (no ref for this statement)

So what do we know about vertical transmission: Hep B viral load matters

Accuracy of HBeAg to identify pregnant women at risk of transmitting hepatitis B virus to their neonates: a systematic review and meta-analysis

Pauline Boucheron, Ying Lu, Kyoko Yoshida, Tianshuo Zhao, Anna L Funk, Françoise Lunel-Fabiani, Alice Guingané, Edouard Tuaillon, Judith van Holten, Roger Chou, Marc Bulterys, Yusuke Shimakawa

- Viral load is most important variable
- Neither HBeAg nor viral load is perfect to r/o potential transmission
- Neonates do best with HBIG (if needed) and HBV vaccine at birth

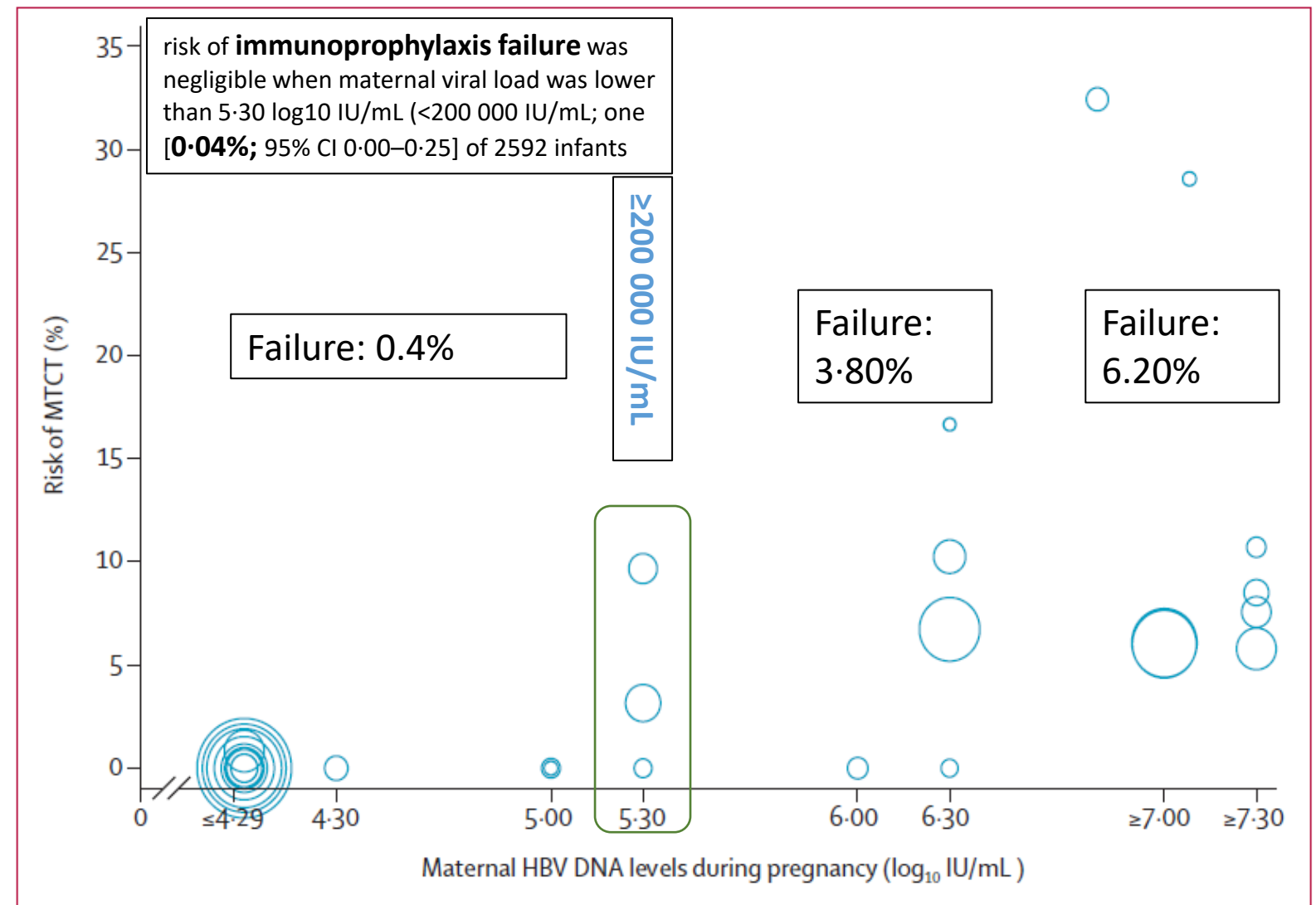


Figure 2: Risk of infant passive-active immunoprophylaxis failure according to maternal viral load during pregnancy

Relationship between maternal hepatitis B virus (HBV) DNA levels (horizontal axis) and risk of MTCT (vertical axis) reported at each viral load category in each of the 13 studies included in the first study question. Multiple dots can be displayed for one study as in one study, the risk of MTCT can be calculated for different maternal viral load intervals. The size of the dot is proportional to the sample size. HBV=hepatitis B virus. MTCT=mother-to-child transmission.

Chronic HBV in pregnancy:

Viral load in pregnancy can be reduced with treatment during pregnancy and risk of chronic infection of the neonate can be reduced

If Hep B Sag POS:

Check quantitative viral load

Refer to GI

Refer to MFM

Infected with HBV:
Assess viral load, AST, ALT, RUQ US

To GI for plan and expect:

- If ALT > 2x ULN and/or liver disease and VL > 20,000 may consider initiation of maternal treatment in pregnancy for maternal disease
- May need liver bx

In treatment:

- Continue treatment, may need change to tenofovir
- Planning pregnancy: change to tenofovir (interferon contraindicated)

>200,000:
Treatment in pregnancy (usually 28 weeks)

<200,000 AND
no indication for treatment based on maternal disease:
• Treatment AFTER pregnancy

Neonate: HB Ig and HB vaccine immediately (<12 hrs) after birth
Notify Peds at delivery

Breastfeeding

- Breastfeeding is not contraindicated.
- No difference in rates of infection between breastfed and formula-fed infants born to HBV-infected women who received immunoprophylaxis, with rates between 0% and 5% in both groups.
- If a breastfeeding individual has bleeding nipples, discard milk from the affected breast while continuing to feed or pump from the unaffected breast until the nipple is healed to prevent direct exposure to blood.

SMFM:

We recommend that individuals with HBV infection can breastfeed as long as the infant has received immunoprophylaxis at birth (GRADE 1C).

SMFM, 2024

Pre-pregnancy or early pregnancy/initial visit:

Screen if not already documented:

- HBsAg, HBsAb, total anti_HBc (core)
- If has had triple screen ONLY HBsAg

Infected with HBV:

- Check HBV viral load (DNA)
- Check ALT, AST (hepatic inflammation, realistically CMP)
- Get liver US (assess for cirrhosis)

Susceptible to HBV:

- **Vaccinate** during pregnancy (recommended): shots at 1, 2, 4 months (accelerated from non-preg 1, 2, 6 months)
- **Vaccinate** postpartum if declines in pregnancy

Note: Spoke with Dr. Lidofsky about HBeAg or Ab. This was a marker for viral load before these viral loads could be assessed quantitatively. Not much to add so may not see then from hepatology group. Can be important for some genotypes and if confusing picture-we can but do not need to order.

	HBsAG	Anti-HBs	Anti-HBc
infected with HBV	POS	NEG	POS
immune because of infection	NEG	POS	POS
immune because of vaccination	NEG	POS	NEG
immune because of infection (most common)	NEG	NEG	POS
susceptible to HBV infection	NEG	NEG	NEG



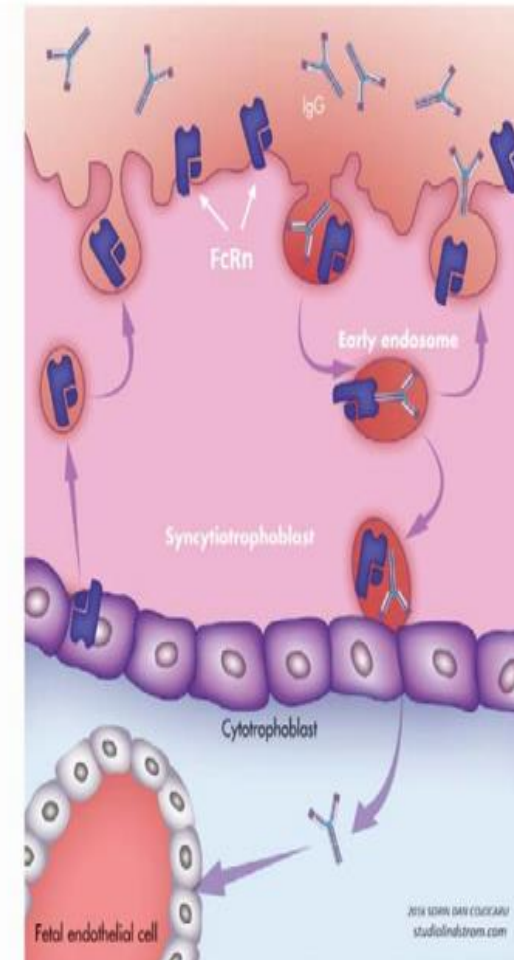
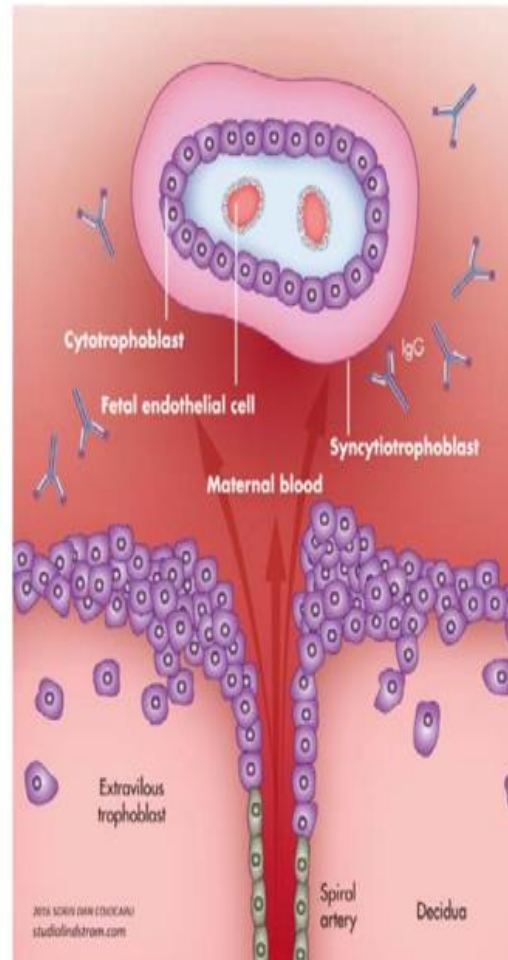
RSV Vaccine

RSV Vaccine

Protection:

Provide neonates with antibodies to RSV

- (1) Giving monoclonal antibody after birth (Nirsevimab, Beyfortus)
- (2) Give pregnant person a vaccine which boosts production of IgG antibodies that cross the placenta to the neonate in the third trimester (same model of TDaP for pertussis) (Abrysvo)



Note well:

- If a patient has received the RSV vaccine in a prior pregnancy, she is **NOT** a candidate for maternal RSV vaccine
- Neonate can be protected with neonatal approach

**Infant protection against respiratory syncytial virus (RSV) infection:
A vaccine for pregnant patients vs an antibody shot for newborns**

Pregnant person vaccine (ABRYOVO)

- Given at 32-36 weeks
- **DO NOT USE IF GIVEN IN PRIOR PREGNANCY;
USE NBN RSV PROTECTION**
- 77% effective against more severe cases of RSV
- Protects for about 3 months

Benefits:

- No newborn injection

Downsides:

- Slightly less effective
- Slightly shorter protection
- Some trials have higher risk of premature delivery (less than 37 weeks)

Newborn antibody shot (Beyfortus)

- Given in first week of life (newborn office visit)
- 81% effective against infant hospitalization due to RSV
- Protects for about 5 months

Benefits:

- Maybe slightly more effective and longer protection

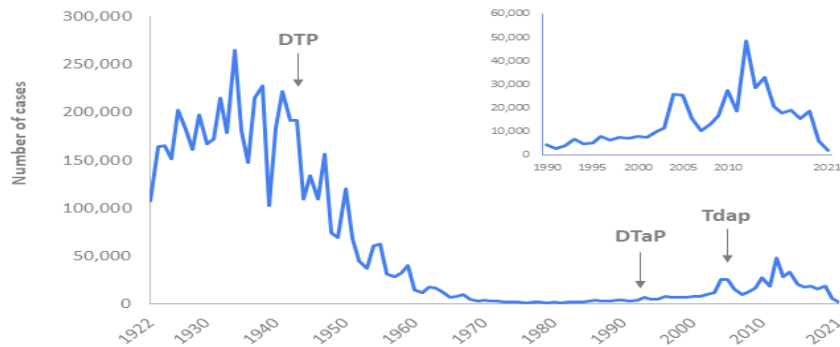
Downsides:

- Newborn injection required before 1 week

The baby can receive one method of protection but not both
The pregnant patient can choose (based on product availability)

Pertussis vaccine works

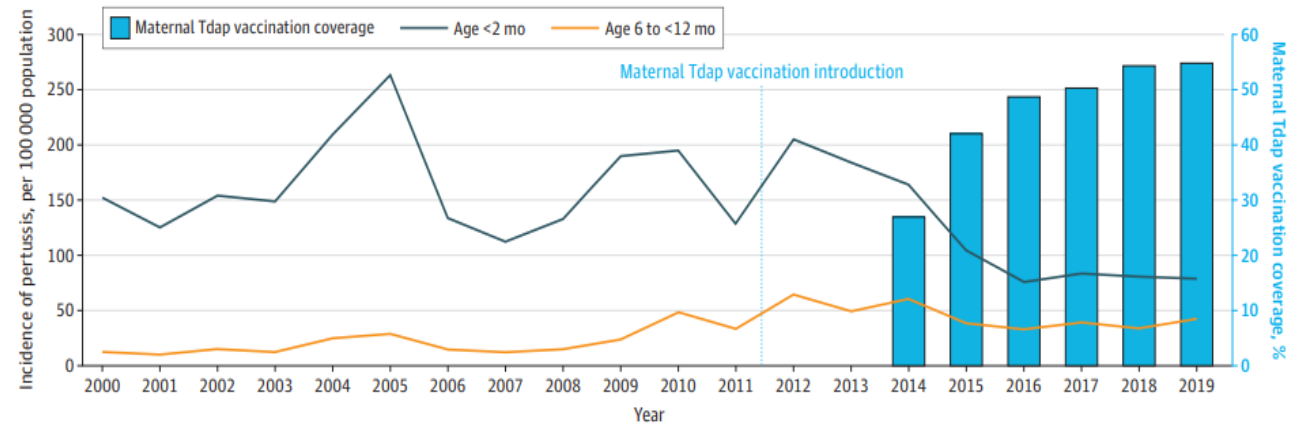
Reported NNDSS pertussis cases: 1922-2021



Pertussis incidence among infants younger than 2 months declined following maternal Tdap vaccination introduction; no similar decrease occurred among infants aged 6 months to less than 12 months.

(NNT: 1000 (low disease prevalence in US but can be high other countries))

Figure 1. Annual Incidence of Reported Pertussis Among Infants Younger Than 2 Months and Infants Aged 6 Months to Less Than 12 Months, 2000-2019



Maternal tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccination during pregnancy was introduced in the US in 2011. National coverage estimates of maternal Tdap vaccination for available years (beginning in 2014) were obtained through the Centers for Disease Control and

Prevention's internet panel survey.^{12,20-22} Changes in the internet panel survey methods may limit the ability to compare estimates for 2017 to 2018 with estimates from previous seasons.

Neonatal infections amenable to prevention with pregnancy screening and intervention

	GA of screen	Screen	Intervention	Timing of intervention	Postnatal
Hepatitis B	IVA	HBsAg (add viral load is POS) HBsAb, HBcAb,	HBsAb NEG-give vaccine HBsAg POS-consider treatment if +VL	Pregnancy; immediate post delivery	Neonate: Immediate post delivery HBigG and hepatitis B vaccine; treatment maternal postpartum if positive viral load
Hepatitis C	IVA	Hep C Ab, reflex viral load	Avoid FSE (use if needed)	Intrapartum, peds aware to follow	Follow and treatment if develops Hep C
Pertussis	NA	NA	Tdap	28 wks	Reduces pertussis 50%
RSV	NA	September-January (maternal)	Maternal vaccine or neonatal vaccine (not both, usually)	32-36 weeks DO NOT USE IN MORE THAN ONE PREGNANCY	Recommended if no maternal vaccine including subsequent pregnancies
GBS	IVA and 36 wks	Urine; vag and rectal swab	PCN labor	36 wks (preterm universal)	Fu maternal cults

Acetaminophen and pregnancy

Patient facing: <https://www.acog.org/womens-health/faqs/acetaminophen-and-pregnancy>

Provider facing: <https://www.acog.org/clinical-information/physician-faqs/acetaminophen-in-pregnancy>

- Talk to your patients (not just reassurance)
- Include that fever and pain can be detrimental to pregnancy (and parenting)
- It is not clear even if there is an association between acetaminophen and autism; there is no evidence of causation
- Important not to feel guilty that you would cause some outcome by taking care of yourself
- Patients may not trust medical providers as a whole but probably trust you-we should try to continue to listen to help earn their trust

<https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2025/09/acetaminophen-use-in-pregnancy-and-neurodevelopmental-outcomes>

<https://www.smfm.org/news/smfm-statement-on-acetaminophen-use-during-pregnancy-and-autism>

Questions & Discussion

Thank You

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Evaluation:

