I-VAC Learning Collaborative for COVID-19 Vaccination

- Please use your first name and health center name when you join the session

- Use the “chat” feature to let us know if you have a question

- Please remember to mute your microphone unless speaking

- If you can’t connect audio via computer or lose computer audio at anytime, you can call in to session at (669) 900-6833, Meeting ID 822 0588 8102##
Disclosures

• No one in a position to control the education content of the activity has any relevant financial disclosures with ineligible companies to disclose

• What gets said here today may change based on new data and recommendations
  – Knowledge is shared more rapidly through ECHO
Track Covid-19 in the U.S.

Updated Nov. 7, 2023

Daily Covid hospital admissions

Avg. on Oct. 21: 3,809
14-day change: -6%

15 hospital admissions per 100,000

Early Indicators

Test Positivity
% Test Positivity: 9.0%
(October 22 to October 28, 2023)

Emergency Department Visits
% Diagnosed as COVID-19: 1.2%
(October 22 to October 28, 2023)

Trend in % Test Positivity
No change in most recent week

Trend in Emergency Department Visits
-5.3% in most recent week

Severity Indicators

Hospitalizations
Hospital Admissions: 15,745
(October 22 to October 28, 2023)

Emergency Department Visits
% Diagnosed as COVID-19: 1.2%
(October 22 to October 28, 2023)

Trend in Hospital Admissions
+0.1% in most recent week

Trend in % COVID-19 Deaths
No change in most recent week

cdc.gov
Reported COVID-19 New Hospital Admissions Rate per 100,000 Population in the Past Week, by County - United States
Wastewater Analysis

**Wastewater**: Effective SARS-CoV-2 virus concentration (copies / mL of sewage)

![Graph](https://biobot.io/data/)

**Source**: Wastewater data from Biobot Analytics

[https://biobot.io/data/](https://biobot.io/data/)
More Than 15M Americans Have Received Updated COVID-19 Vaccines So Far, HHS Says

• Over 15 million people in the United States, around 4.5% of the population, had received the updated COVID-19 shots by Oct. 27, a Department of Health and Human Services (HHS) spokesperson said on Wednesday, lagging behind last year's vaccinations.

• 23 million people had received updated boosters as of Oct. 26 last year

• 56.5 million people 17% of the U.S. population, received last year's version of the vaccines.
Newborn and Early Infant Outcomes Following Maternal COVID-19 Vaccination During Pregnancy

- Population-based retrospective cohort study took place in Ontario, Canada, using multiple linked health administrative databases. Singleton live births with an expected delivery date between May 1, 2021, and September 2, 2022, were included.

- 142,006 infants were included; 85,670 were exposed to 1 or more COVID-19 vaccine doses in utero (60%).

- Infants of vaccinated mothers with mRNA COVID-19 vaccination during pregnancy was associated with lower risks of SNM, neonatal death, and NICU admission. In addition, neonatal and 6-month readmissions were not increased in infants of mothers vaccinated during pregnancy.

Table 3. Association Between COVID-19 Vaccination During Pregnancy and Neonatal and Infant Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>No./total No. (%)</th>
<th>Risk ratio or hazard ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vaccine exposed</td>
<td>Unexposed</td>
</tr>
<tr>
<td>Severe neonatal morbidity</td>
<td>6229/85,670 (7.3)</td>
<td>4697/56,336 (8.3)</td>
</tr>
<tr>
<td>Neonatal death</td>
<td>74/85,670 (0.09)</td>
<td>91/56,336 (0.16)</td>
</tr>
<tr>
<td>Neonatal intensive care unit admission</td>
<td>9721/85,670 (11.4)</td>
<td>7391/56,336 (13.1)</td>
</tr>
<tr>
<td>Neonatal readmission</td>
<td>4664/84,798 (5.5)</td>
<td>2820/55,417 (5.1)</td>
</tr>
<tr>
<td>Discharged within 7 d after birth</td>
<td>4588/82,581 (5.6)</td>
<td>2769/53,330 (5.2)</td>
</tr>
<tr>
<td>Hospital admission up to 6 mo of age</td>
<td>5361/63,834 (8.4)</td>
<td>3941/48,625 (8.1)</td>
</tr>
<tr>
<td>Discharged within 7 d after birth</td>
<td>5020/61,426 (8.2)</td>
<td>3611/46,007 (7.9)</td>
</tr>
</tbody>
</table>

RSV Vaccination in Pregnancy

Rational for Neonatal Protection

Edward Linn, MD
Each year in U.S. children aged less than 5 years, RSV is associated with...

- **100–300**\(^1,2\) deaths
- **58,000–80,000**\(^3,4\) hospitalizations
- \(~520,000\)\(^3\) emergency department visits
- \(~1,500,000\)\(^3\) outpatient visits

\(^1\)Thompson et al, JAMA, 2003; \(^2\)Hansen et al, JAMA Network Open, 2022; \(^3\)Hall et al, NEJM, 2009; \(^4\)McLaughlin et al, J Infect Dis, 2022 (*estimate 80,000 hospitalizations in infants <1y)
RSV is the leading cause of hospitalization in U.S. infants\(^1\)

- Most (68%) infants are infected in the first year of life and nearly all (97%) by age 2 years\(^2\)
- 2-3% of young infants will be hospitalized for RSV\(^3,4,5\)
- RSV is a common cause of lower respiratory tract infection in infants
- Highest RSV hospitalization rates occur in first months of life and risk declines with increasing age in early childhood\(^3,5\)
- 79% of children hospitalized with RSV aged <2 years had no underlying medical conditions\(^3\)

\(^1\) Suh et al. JID 2022; \(^2\) Glezen et al, Arch Dis Child, 1986; \(^3\) Hall et al, Pediatrics, 2013; \(^4\) Langley & Anderson, PIDJ, 2011; \(^5\) CDC NVSN data
Where are we with RSV Infections
RSV in Chicago

While RSV seasonality in Chicago has been disrupted since the COVID-19 pandemic, RSV activity has been low this summer.

Local epidemiology supports October start to nirsevimab administration.

Gray boxes represent typical RSV season, October-March. Source: Aggregate, weekly PCR test results from a convivence sample of Chicago hospital laboratories and a commercial laboratory serving Chicago healthcare facilities. Data reported through 8/26/2023.
What’s New? As of 8/22/23...

FDA Approves First Vaccine for Pregnant Individuals to Prevent RSV in Infants

For Immediate Release: August 21, 2023

Today, the U.S. Food and Drug Administration approved Abceysv (Respiratory Syncytial Virus Vaccine), the first vaccine approved for use in pregnant individuals to prevent lower respiratory tract disease (LRTD) and severe LRTD caused by respiratory syncytial virus (RSV) in infants from birth through 6 months of age. Abceysv is approved for use at 32 through 36 weeks gestational age of pregnancy. Abceysv is administered as a single dose injection into the muscle. The FDA approved Abceysv in May for the prevention of LRTD caused by RSV in individuals 60 years of age and older.

“RSV is a common cause of illness in children, and infants are among those at highest risk for severe disease, which can lead to hospitalization,” said Peter Marks, M.D., Ph.D., director of the FDA’s Center for Biologics Evaluation and Research. “This approval provides an option for healthcare providers and
Pfizer’s RSV vaccine, ABRYSVO™, is:

- CDC recommended to help protect adults 60 years and older against RSV
- Given at 32 through 36 weeks of pregnancy to help protect babies from RSV from birth through 6 months

What drove the FDA decision to approve abrysvo for pregnancy?
GSK halts its trials
In February 2022, GSK halted enrolment and vaccination across three phase 3 trials of its maternal RSV vaccine candidate, citing a safety signal in one of them.

It emerged that the concern was about an increased risk of preterm birth in the vaccine arm.

In a document submitted to the FDA, GSK’s data showed 238 preterm births out of 3496 (6.8%) in the vaccine arm and 86 out of 1739 (4.9%) in the placebo arm—around one extra preterm birth for every 54 vaccinated mothers.

There were 13 neonatal deaths in the vaccine arm and three in the placebo arm.

https://www.bmj.com/content/381/bmj.p1021
FDA approval for RSVpreF vaccine

- On August 21, 2023, FDA approved Pfizer RSVpreF vaccine for use in pregnant people for the prevention of RSV lower respiratory tract disease and severe lower respiratory tract disease in infants from birth to 6 months of age

- Approved as a single dose to be given at 32–36 weeks gestation
  - In phase 2b and 3 trials, vaccination was given during 24–36 weeks gestation
  - A numerical imbalance in preterm births was observed in RSVpreF vaccine compared to placebo recipients in two clinical studies
  - Available data are insufficient to establish or exclude a causal relationship between preterm birth and RSVpreF
  - Additionally, a numerical imbalance in hypertensive disorders of pregnancy was observed in RSVpreF vaccine compared to placebo recipients
• MATISSE Trial:
  • RCT examined efficacy and safety of RSVpreF vaccine between 24-26 weeks
  • International
  • Phase 3
  • Double-blind, placebo-controlled
  • Met criteria for vaccine efficacy at the prespecified interim analysis
Vaccine efficacy
## Vaccine safety and side effects

### B. Adverse Events of Special Interest

- Premature Delivery
- SARS-CoV-2 Test Positive
- Developmental Delay
- Low Birth Weight
- Prematurity

#### Percentage of Maternal Participants

<table>
<thead>
<tr>
<th>Event</th>
<th>RSVpreF vaccine (N=3682)</th>
<th>Placebo (N=3675)</th>
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<tbody>
<tr>
<td>Premature Delivery</td>
<td>13.8</td>
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<td>Developmental Delay</td>
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<td>Low Birth Weight</td>
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<td>Prematurity</td>
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#### Percentage of Infant Participants

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### C. Serious Adverse Events

- Prolonged Labor
- Premature Separation of Placenta
- Premature Delivery
- Preeclampsia
- Postpartum Hemorrhage
- Oligohydramnios
- Gestational Hypertension
- Fetal Distress Syndrome
- Cephalopelvic Disproportion
- Arrested Labor
- Nonmeasuring Fetal Heart Rate Pattern
- Newborn Transient Tachypnea
- Respiratory Distress
- Prematurity
- Low Birth Weight
- Neonatal Jaundice
- Hypoglycemia
- Neonatal Sepsis
- Neonatal Hyperbilirubinemia
- Atrial Septal Defect
- Ventricular Septal Defect

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#### Percentage of Infant Participants

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Conclusions

• When administered to pregnant people in pregnancy, the RSVpreF vaccine was effective against medically attended severe RSV-associated respiratory tract illness in infants

• No safety signals detected in mothers or infants

• Limitations:
  • High-risk pregnancies excluded
  • Study may be too small to know if the PTB difference is significant
  • Limited data from low-income countries
  • Conducted during COVID-19 pandemic – disruption of typical RSV circulation
FDA Guidance

- Priority Review status and Fast Track process of approval
- Abrysvo – RSV vaccine – approved for 32-36 weeks gestational age as a single IM dose for prevention of lower respiratory tract disease in infants from birth to 6 months
- FDA is requiring postmarketing surveillance for
  - PTB – “numerical imbalance in preterm births in Abrysvo recipients (5.7%) occurred compared to those who received placebo (4.7%)
  - Preeclampsia (1.8% vs 1.4%)
- FDA guidance is for a different gestational age window than the study
Limited Availability of Nirsevimab in the United States—Interim CDC Recommendations to Protect Infants from Respiratory Syncytial Virus (RSV) during the 2023–2024 Respiratory Virus Season

“Expectant parents should talk with their healthcare provider about receiving the RSV vaccine (Abrysvo, Pfizer) during pregnancy to protect their infant from severe RSV. CDC recommends that all infants are protected against RSV through either vaccination of the mother with RSV vaccine during pregnancy or giving the infant nirsevimab after birth.”
ACOG, SMFM, and AAP Statement on Nirsevimab Shortage

ACOG and the Society for Maternal-Fetal Medicine continue to recommend Pfizer’s RSVpreF vaccine (Abrysvo) for pregnant patients who are from 32 weeks and zero days to 36 weeks and six days of gestation as a safe and effective option for preventing severe RSV illness in infants. Particularly in areas where nirsevimab is unavailable, maternal RSV vaccination should be encouraged.

The American Academy of Pediatrics recommends pediatricians prioritize immunizing infants with nirsevimab, when available, according to the CDC advisory and continue to use palivizumab while nirsevimab is limited.
Obstetric Care Professionals Recommend RSV Vaccine for Pregnant Individuals

ACOG Clinical | Oct 13, 2023

- RSV is a potentially serious and even deadly disease for young children and infants. That is why, collectively, the American Academy of Family Physicians; American College of Nurse-Midwives; American College of Obstetricians and Gynecologists; Association of Women’s Health, Obstetric and Neonatal Nurses; National Association of Nurse Practitioners in Women’s Health; and the Society for Maternal-Fetal Medicine unequivocally support the CDC’s new recommendations for RSV vaccination during pregnancy to prevent lower respiratory tract infections (LRTI) in infants.

- Either RSV vaccination during pregnancy at 32–36 weeks of gestation or nirsevimab immunization for infants aged less than eight months born during or entering their first RSV season is recommended. However, administration of both products is not needed for most infants.

- By recommending RSV vaccination during pregnancy or monoclonal antibody immunization for infants of pregnant people who were not vaccinated, we can reduce hospitalizations and deaths related to RSV LRTI among infants.
The American College of Obstetricians and Gynecologists (ACOG) recommends a single dose of Pfizer’s RSV vaccine (Abrysvo) for pregnant individuals between 32 0/7 and 36 6/7 weeks of gestation, using seasonal administration, to prevent RSV lower respiratory tract infection in infants. For most of the United States, RSV season occurs from September through January.

Clinicians should counsel patients about the maternal RSV vaccine and the monoclonal antibody, nirsevimab, as safe and effective ways to prevent severe LRTI caused by RSV in infants.

Patient preferences should be considered when determining whether to administer the maternal RSV vaccine or not to administer the maternal RSV vaccine and rely on administration of nirsevimab to the infant after birth.

Maternal RSV vaccine can be administered at the same time as other vaccines routinely recommended during pregnancy.

Clinicians should document receipt or declination of maternal RSV vaccination in the patient’s medical chart.

The only RSV vaccine approved for use during pregnancy is Pfizer’s bivalent RSVpreF vaccine, Abrysvo.

GSK’s RSV vaccine, Arexvy, is not approved for use in pregnancy.
Areas to watch

<table>
<thead>
<tr>
<th>Post-marketing surveillance is required</th>
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<tbody>
<tr>
<td>ACOG and SMFM guidance</td>
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<tr>
<td>CDC Advisory Committee on Immunization Practices (ACIP) guidance</td>
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<tr>
<td>Insurance coverage and vaccine distribution</td>
</tr>
</tbody>
</table>

- Future study in high-risk (for PTB and for RSV) populations
- Study in low-income countries
Questions?
Next Session: Tuesday, November 21st

For any questions, email us at pgower@pedsbsd.uchicago.edu

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