Respiratory Syncytial Virus Prefusion F Vaccine (RSVpreF) in Pregnant People Living with HIV (PLHIV)

Landon Myer,[1] Emily Wasserman,[2] Saiqa Tabasum,[3] Yanping Liu,[4] Lisa Jose,[5] Elizea Horne,[6] Heather J. Zar,[1] Shabir A. Madhi,[7] Rahsan Erdem,[2] David Radley,[2] Olympia Evdoxia Anastasiou,[8] Kena A. Swanson,[2] Annaliesa S. Anderson,[2] Alejandra Gurtman,[2] and Iona Munjal[2]

[1]University of Cape Town, Cape Town, South Africa; [2]Pfizer Vaccines, Pearl River, NY , USA; [3]Pfizer Vaccines, Marlow, UK; [4]Pfizer Vaccines, Collegeville, PA, USA; [5]Wits-Vida, Johannesburg, South Africa; [6]Wits RHI, Johannesburg, South Africa; [7]University of the Witwatersrand, Johannesburg, South Africa; [8]Pfizer Hellas SA, Thessaloniki, Greece

Background

- Because >1 million pregnant people are living with HIV (PLHIV) globally, many of whom receive antiretroviral therapy to prevent vertical transmission, a large population of HIV-exposed uninfected (HEU) children exists.[1,2]
- HEU infants face increased severe respiratory syncytial virus (RSV)-associated lower respiratory tract illness (RSV-LRTI) rates compared with unexposed infants.[3,4]
- The pivotal MATISSE trial demonstrated that maternal RSV prefusion F (RSVpreF) vaccination can prevent severe RSV-LRTI in infants through 6 months of age.[5] However, data for HEU infants were not available previously because mothers with HIV were excluded from the MATISSE trial.

Objectives

- Evaluate the safety, tolerability, and immunogenicity of RSVpreF in pregnant PLHIV, as well as the safety and antibody levels in their infants, from the modified intent to treat (mITT) population to more closely represent real-world application of maternal RSVpreF vaccination in this population[6]

Methods

DESIGN

- MORISOT was a phase 3, multicenter, randomized, double-blind, placebo-controlled, descriptive clinical trial conducted in South Africa as described previously (NCT06325657).[7]
- Pregnant PLHIV (ie, maternal participants) with stable HIV disease and uncomplicated singleton pregnancies received single doses of RSVpreF or placebo at 24–36 weeks' gestational age (GA).

ASSESSMENTS AND ENDPOINTS

- Here we report immune responses evaluated by RSV neutralizing geometric mean titers (GMTs) before vaccination and at delivery in maternal participants and at birth in their infants in the mITT population (received intervention; ≥1 valid and determinate assay result after vaccination). Findings in the evaluable immunogenicity populations were reported previously.[7]
- Geometric mean ratios (GMRs) of neutralizing GMTs at delivery (maternal) or birth (infant) of the RSVpreF compared with the placebo group were calculated.
- Post hoc and exploratory objectives included comparing immune responses in maternal participants and their infants with those from South African participants without HIV from MATISSE.[5]
- Safety endpoints included reactogenicity events occurring in maternal participants, adverse events (AEs) and serious AEs (SAEs) in maternal and infant participants, and newly diagnosed chronic medical conditions (NDCMCs) in infants.
  - Pregnancy-related AEs of special interest (AESIs) for maternal participants included preterm delivery and hypertensive disorders of pregnancy. For infants, AESIs included preterm birth, birthweight <2500 g, and development delay.

Results

POPULATION CHARACTERISTICS

- 342 pregnant PLHIV received RSVpreF (n=172) or placebo (n=170); mITT populations included 331 pregnant PLHIV (RSVpreF, n=166; placebo, n=165) and 314 infants (RSVpreF, n=163; placebo, n=151).
- Demographic and clinical characteristics of maternal participants were generally well balanced between groups.
  - Median (range) maternal age and GA at vaccination were 31 (16–44) years and 29.3 (24.0–36.0) weeks, respectively.
  - Overall, 82% and 80% of maternal participants had undetectable HIV RNA viral load, and 68% and 50% had a CD4 count >500 cells/mm^3 at vaccination and delivery, respectively.

IMMUNOGENICITY

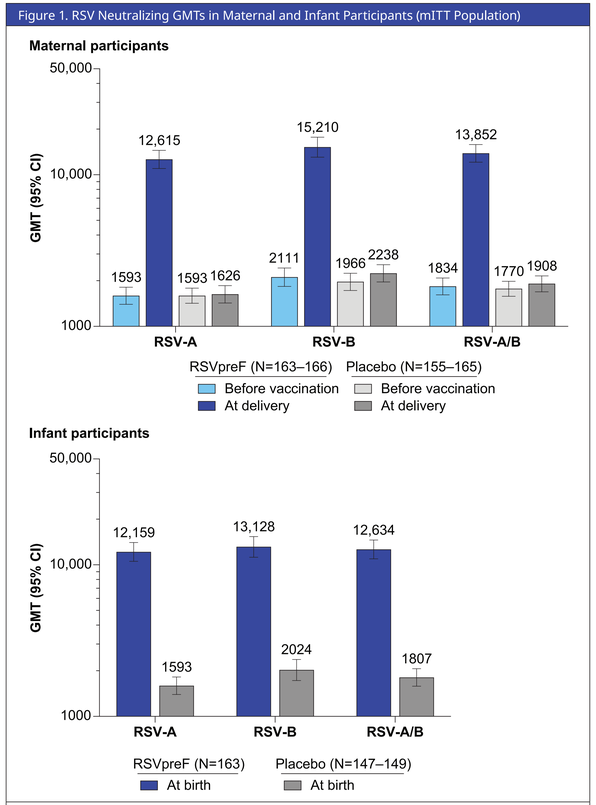
- In mITT populations, RSVpreF elicited maternal RSV neutralizing immune responses, with efficient RSV antibody transplacental transfer to infants (**Figure 1**).
- Neutralizing titers were greater in the RSVpreF group than in the placebo group and similar to a cohort of HIV-negative mothers and their infants from MATISSE.
  - GMR assessments in maternal and infant participants were similar between the mITT and evaluable immunogenicity populations (**Figure 2**).

Copyright ©2026. All rights reserved.

Statement of Key Findings

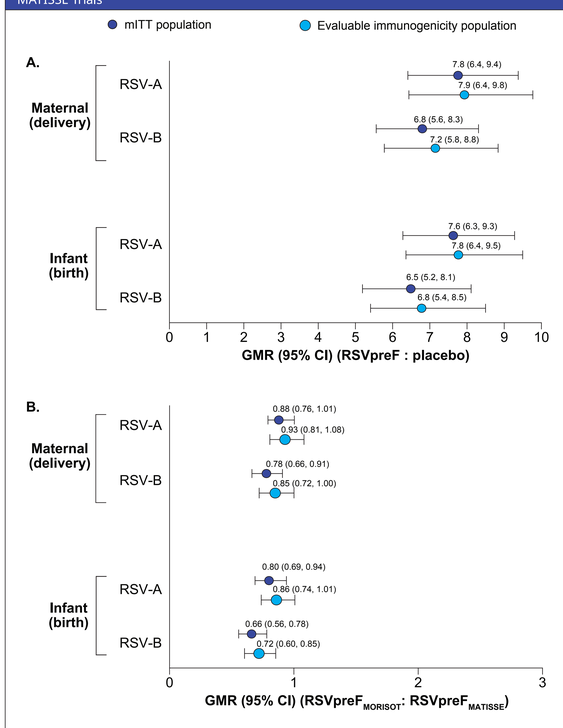
Results support maternal RSVpreF vaccination for pregnant PLHIV. Pregnant PLHIV demonstrated robust immune responses to RSVpreF. RSV neutralizing titers trended lower in infants of vaccinated PLHIV compared with infants of non-HIV exposed mothers. Regardless of HIV status and study population, RSVpreF responses were robust overall, supporting anticipated protection of HEU infants against RSV disease with real-world use. No safety concerns were identified.

Figure 1. RSV Neutralizing GMTs in Maternal and Infant Participants (mITT Population)



GMT, geometric mean titer; mITT, modified intent to treat; RSV, respiratory syncytial virus.

Figure 2. GMRs Between (A) RSVpreF and Placebo in the MORISOT Trial and (B) MORISOT and MATISSE Trials



GMRs were calculated as the group mean difference of logarithmically transformed antibody levels and back transformed to the original units. RSVpreF$_{MORISOT}$ includes pregnant PLHIV who received RSVpreF in the current MORISOT trial and their HEU infants. RSVpreF$_{MATISSE}$ includes a cohort from South Africa of HIV-negative mothers and their infants from the phase 3 MATISSE efficacy trial. GMR, geometric mean ratio; HEU, healthy HIV-exposed infant; PLHIV, people living with HIV; RSV, respiratory syncytial virus.

REACTOGENICITY

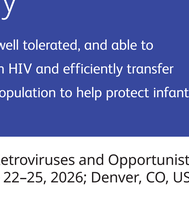
- Most reactogenicity events in pregnant PLHIV occurring within 7 days after study intervention were mild or moderate in severity.
- The most common local reaction was pain at injection site (RSVpreF, 27.0%; placebo, 17.5%); redness and swelling occurred in ≤2.5% of maternal participants across groups.
- Fatigue (RSVpreF, 35.0%; placebo, 41.6%) and headache (RSVpreF, 33.1%; placebo, 31.9%) were the most common systemic events; fever occurred in ≤3.1% of maternal participants across groups.

ADVERSE EVENTS

- In general, AEs and SAEs were reported at similar frequencies between RSVpreF and placebo groups for pregnant PLHIV and their infants.
- Hypertensive disorders of pregnancy and postpartum (including gestational hypertension, preeclampsia, and postpartum hypertension) and preterm delivery occurred in a similar percentage of RSVpreF and placebo maternal recipients (**Figure 3**).

Figure 3. Pregnancy-Related AESIs in Maternal Participants

	RSVpreF N=172 n (%)	Placebo N=170 n (%)	Difference, % (95% CI)
Gestational hypertension	9 (5.2)	8 (4.7)	0.5 (–4.4, 5.5)
Pre-eclampsia	4 (2.3)	8 (4.7)	–2.4 (–7.0, 1.7)
Postpartum hypertension	2 (1.2)	0 (0.0)	1.2 (–1.1, 4.1)
Preterm delivery	15 (8.7)	13 (7.6)	1.1 (–5.0, 7.2)



Shown is the difference in proportions expressed as a percentage (RSVpreF minus placebo) with 2-sided 95% CIs based on the Miettinen and Nurminen method. Most preterm deliveries were late preterm (34–<37 weeks) in both groups (RSVpreF, 93.3% [14/15]; placebo, 76.9% [10/13]). AESI, adverse event of special interest.

- No safety concerns were identified in infants.
  - Through 1 month after birth, NDCMCs were reported in <1% of infants in either group.
  - In each group, 1 infant tested positive for HIV.
- Similar percentages of AESIs were reported in infants in both groups.
  - Preterm birth: RSVpreF, 8.8% (15/171); placebo, 7.8% (13/166; risk difference estimate: 0.9% [95% CI: –5.2%, 7.1%])
  - Birthweight <2500 g: RSVpreF, 13.5% (23/171); placebo, 12.7% (21/166; risk difference estimate: 0.8% [95% CI: –6.6%, 8.1%])
  - Developmental delay: RSVpreF, 0%; placebo, 0.6% (1/166)

Plain Language Summary

The RSVpreF vaccine administered in pregnancy was safe, well tolerated, and able to produce an immune response in pregnant people living with HIV and efficiently transfer antibodies to their infants, supporting its potential in this population to help protect infants from RSV illness in their first 6 months of life.

References: 1. World Health Organization. The Global Health Observatory. Data on the HIV response. Available at: https://www.who.int/data/gho/data/themes/hiv-aids/data-on-the-hiv-aids-response. Accessed July 29, 2025. **2.** Slogrove AL, et al. *Lancet Glob Health*. 2020;8(1):e67-e75. **3.** Jallow S, et al. *Clin Infect Dis*. 2019;69(1):151-154. **4.** Cohen C, et al. *Pediatrics*. 2016;137(4):e20153272. **5.** Kampmann B, et al. *N Engl J Med*. 2023;388(16):1451-1464. **6.** Andrade C. *Indian J Psychol Med*. 2022;44(4):416-418. **7.** Myer L, et al. *Vaccines (Basel)*. 2025;13(12):1218.

Funding: This study was sponsored by Pfizer Inc.
Disclosures: South African authors were Pfizer investigators in this study. HJZ and SAM also report funding to their institutions from the Gates Foundation for RSV and from MSD and AstraZeneca related to RSV monoclonal antibodies. HJZ has also served on Pfizer and MSD advisory boards and on a Moderna data safety monitoring board. All other authors are employees of Pfizer and may hold stock/stock options.

Acknowledgments: We thank the participants, study team, all study site staff, and our Pfizer colleagues for their contributions to this study. Medical writing support was provided by Tricia Newell, PhD, and Sheena Hunt, PhD, of ICON (Blue Bell, PA, USA), which was funded by Pfizer Inc.
For more information please contact:
Emily Wasserman; Pfizer Vaccines; Pearl River, NY, USA; Emily.Wasserman@pfizer.com

Presented at the 2026 Conference on Retroviruses and Opportunistic Infections (CROI 2026); February 22–25, 2026; Denver, CO, USA