Advances in maternal immunization science and implementation in times of COVID-19-
How has the COVID-19 pandemic impacted the future of maternal immunization?

A COVAX Maternal Immunization Working Group Webinar

November 18th 2021
Presenter Reminders

• Please **turn on your video** during your assigned session. As a presenter / panelist, your video will be shown to the audience unless you turn it off.

• As a presenter, **you can mute / unmute yourself to speak**.

• Please **say “next slide”** to advance the slides. Monika will be sharing her screen with everyone’s presentations already loaded.

• If you do not see the correct slide on your screen, it may be due to internet connectivity issues. Please **say the name of the slide header** that you’d like to see on the screen. As a backup, please **open your slides separately in PowerPoint** to reference the materials in the event internet issues arise.

• The moderator of your session will chime in if you are over time. Otherwise, it is up to you to stay within your allocated time.

• **Q&A Chat**: Please DO NOT click “answer live” and kindly only type in responses to the questions asked by attendees.
Meeting Norms and Recording Disclaimer

Throughout the workshop, please ask any questions in the “Q&A” function. If you see that your question is already asked, you can “like” the question in the “Q&A” function.

During the discussion sessions, please “Raise Your Hand” if you want to say something. If called on by the moderator, you will be unmuted to intervene.

For any technical or connectivity issues please contact:
Dane Ichimura Dane.Ichimura@gatesfoundation.org

For any logistical issues please contact:
Amanda Berzins Amanda.Berzins@gatesfoundation.org.

This workshop will be recorded. Recording might be shared after the webinar. Please be mindful of the diverse audience attending the meeting when participating in open discussions.
# Workshop Agenda

<table>
<thead>
<tr>
<th>Time (PDT)</th>
<th>Session</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am PT (5 min)</td>
<td>Workshop welcome</td>
<td>Ajoke Sobanjo-ter Meulen Flor Munoz</td>
</tr>
<tr>
<td>7:05 am PT (15 min)</td>
<td>Keynote lecture: Research and Development approaches to Maternal Immunization</td>
<td>Melanie Saville</td>
</tr>
<tr>
<td>7:20 am PT (50 min)</td>
<td>Session 1 - Vaccine benefit-risk assessment post approval</td>
<td>Moderator: Andy Stergachis</td>
</tr>
<tr>
<td>7:20 am PT (10 min)</td>
<td>Vaccine effectiveness in pregnant women - Israel</td>
<td>Noa Dagan</td>
</tr>
<tr>
<td>7:30 am PT (10 min)</td>
<td>Vaccine reactogenicity in pregnant women - US</td>
<td>Alisa Kachikis</td>
</tr>
<tr>
<td>7:40 am PT (10 min)</td>
<td>The power of obstetric surveillance systems – the UK’s experience tracking COVID-19 during pregnancy and the impacts of variants and vaccination</td>
<td>Marian Knight</td>
</tr>
<tr>
<td>7:50 am PT (10 min)</td>
<td>COVID disease burden and vaccination strategies among pregnant women in Brazil</td>
<td>Cristiano M. Toscano</td>
</tr>
<tr>
<td>8:00 am PT (10 min)</td>
<td>Questions &amp; Answers</td>
<td>Andy Stergachis</td>
</tr>
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<tbody>
<tr>
<td>8:10 am PT</td>
<td><strong>Session 2 – Panel discussion</strong></td>
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<tr>
<td>55 min</td>
<td><strong>COVID-19 vaccines: De-risking of vaccine development for maternal immunization</strong></td>
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<tr>
<td></td>
<td><strong>Moderator:</strong> Ajoke Sobanjo-ter Meulen</td>
<td></td>
</tr>
<tr>
<td>8:10 am PT</td>
<td><strong>Introduction</strong></td>
<td>Ajoke Sobanjo-ter Meulen</td>
</tr>
<tr>
<td>5 min</td>
<td><strong>COVID-19 Maternal Vaccine Clinical</strong></td>
<td>Alejandra Gurtman</td>
</tr>
<tr>
<td>8:15 am PT</td>
<td><strong>Panel discussion:</strong></td>
<td></td>
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<tr>
<td>10 min</td>
<td><strong>Padmini Srikantiah</strong></td>
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<td></td>
<td><strong>Shabir A. Madhi</strong></td>
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<td><strong>Janet A. Englund</strong></td>
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<td></td>
<td><strong>Kathryn M. Edwards</strong></td>
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<tr>
<td>8:25 am PT</td>
<td><strong>BREAK</strong></td>
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<tr>
<td>9:05 am PT</td>
<td><strong>BREAK</strong></td>
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<tbody>
<tr>
<td>9:10 am PT (45 min)</td>
<td>Session 3 – Policy and regulatory considerations: The way forward</td>
<td>Moderator: Flor Munoz</td>
</tr>
<tr>
<td>9:10 am PT (10 min)</td>
<td>COMIT and PREVENT, what we've learned about data-driven policy decisions, and what we should anticipate in the future?</td>
<td>Ruth Karron</td>
</tr>
<tr>
<td>9:20 am PT (10 min)</td>
<td>Regulatory guidance/role (FDA) – how does COVID pandemic change the path for vaccine approval and access for pregnant women – Regulatory framework for maternal vaccines in the future</td>
<td>Marion F. Gruber</td>
</tr>
<tr>
<td>9:30 am PT (10 min)</td>
<td>Obstetric professional societies role in supporting access of vaccines for pregnant women</td>
<td>Linda O. Eckert</td>
</tr>
<tr>
<td>9:40 am PT (15 min)</td>
<td>Discussion</td>
<td>Flor Munoz</td>
</tr>
<tr>
<td>9:55 am PT (40 min)</td>
<td>LMIC Post-approval vaccine evaluation</td>
<td>Cristiana M. Toscano</td>
</tr>
<tr>
<td>9:55 am PT (40 min)</td>
<td>LMIC Regulatory and policy perspective</td>
<td>Delese Mimi Darko Esperança Sevéné</td>
</tr>
<tr>
<td>9:55 am PT (40 min)</td>
<td>WHO Perspective</td>
<td>Sami Gottlieb</td>
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<tr>
<td>9:55 am PT (40 min)</td>
<td>Vaccine Policy</td>
<td>Ruth Karron</td>
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<tr>
<td>9:55 am PT (40 min)</td>
<td>Vaccine Hesitancy</td>
<td>Linda O. Eckert</td>
</tr>
<tr>
<td>10:35 am PT (5 min)</td>
<td>Wrap-up</td>
<td>Ajoke Sobanjo-ter Meulen Flor Munoz</td>
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</tbody>
</table>
Workshop introduction

Ajoke Sobanjo-ter Meulen
MD MSc, Senior Program Officer, Global Health, Pneumonia, Bill & Melinda Gates Foundation, USA

Flor Munoz
MD MSc, Associate Professor, Pediatrics-Infectious Disease, Baylor College of Medicine, USA
COVID-19 AND PREGNANCY: CLOSING THE PREGNANCY DATA GAP TO ACCELERATE GENDER EQUALITY IN HEALTH INNOVATION

Ajoke Sobanjo-ter Meulen, M.D.
BMGF – Maternal Immunization
More than 95% of pregnant women who are hospitalized or dying from Covid-19 are UNVACCINATED.

PREGNANT PEOPLE with symptomatic COVID-19 have a 70% INCREASED RISK OF DEATH.

COVID-19 during pregnancy increases the risk for adverse pregnancy and neonatal outcomes, including preterm birth and admission of the baby to an intensive care unit.

GET VACCINATED. FIND A COVID-19 VACCINE NEAR YOU. VACCINES.GOV
Pregnant women were excluded from all COVID-19 vaccine trials and few trials include randomized evaluation of COVID-19 therapy.
COVID-19 drives a paradigm shift in clinical research in pregnancy

Global Regulators Envision Paradigm Shift Toward Inclusion of Pregnant and Breastfeeding Women in Clinical Research for Medicines and Vaccines

<table>
<thead>
<tr>
<th>Activity</th>
<th>Year</th>
<th>Region and agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content and Format of Labeling for Human Prescription Drug and Biologics</td>
<td>2014</td>
<td>US, US Food and Drug Administration</td>
</tr>
<tr>
<td>Requirements for Pregnancy and Lactation Labeling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Force on Research Specific to Pregnant Women and Lactating Women</td>
<td>2016</td>
<td>US, US Department of Health and Human Services</td>
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<tr>
<td>(PRSLAC)</td>
<td></td>
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<tr>
<td>Hormone Pregnancy Tests</td>
<td></td>
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<tr>
<td>PRSLAC Report to Congress</td>
<td></td>
<td>US, Department of Health and Human Services</td>
</tr>
<tr>
<td>Pregnant Women: Scientific and Ethical Considerations for Inclusion in</td>
<td>2018</td>
<td>US, US Food and Drug Administration</td>
</tr>
<tr>
<td>Clinical Trials: Draft Guidance for Industry</td>
<td></td>
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<tr>
<td>Drug Safety in Pregnancy in a Large, Multivariate Database: Mother-</td>
<td>2018</td>
<td>US, US Food and Drug Administration</td>
</tr>
<tr>
<td>Infant Linkage in Genentech</td>
<td></td>
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<tr>
<td>ConceptionX – Continuum of Evidence from Pregnancy Exposures, Reproductive</td>
<td>2019</td>
<td>Europe, Innovative Medicines Initiative</td>
</tr>
<tr>
<td>Toxicology and Breastfeeding to Improve Outcomes Now</td>
<td></td>
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</tr>
<tr>
<td>Guideline on Good Pharmacovigilance Practices: Pregnant and Breastfeeding</td>
<td>2019</td>
<td>Europe, European Medicines Agency</td>
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<tr>
<td>Women</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Lactation Studies, Considerations for Study Design: Guidance</td>
<td>2019</td>
<td>US, US Food and Drug Administration</td>
</tr>
<tr>
<td>for Industry</td>
<td></td>
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</tr>
<tr>
<td>Programme of Work: Research to Support the Safer Use of Medicine during</td>
<td>2019</td>
<td>UK, Medicines and Healthcare products Regulatory Agency</td>
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<tr>
<td>Pregnancy</td>
<td></td>
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<tr>
<td>Strategic Reflexion: EMA Regulatory Science to 2025</td>
<td>2020</td>
<td>Europe, European Medicines Agency</td>
</tr>
</tbody>
</table>

Nooney, Clin Pharm and Therapeutics 2021

FDA News July 21st, 2021
COVID-19 VACCINE AND PREGNANCY

- Not associated with any maternal or fetal complications
- May protect the baby from severe disease

No increased risk of miscarriages in the CDC v-safe vaccine pregnancy registry

Njugan HN, MMWR 2020
Pregnancy data build maternal vaccine confidence

- Inclusion of pregnant women in clinical vaccine trials
- Pregnancy surveillance data available worldwide
- Linked obstetric and vaccine data systems in place before the next pandemic

Rapid access to timely, accessible, and robust data
Saves the lives of mothers and babies
Keynote lecture - Research and Development approaches to Maternal Immunization

Dr. Melanie Saville
A global partnership

Vision
A world in which epidemics and pandemics are no longer a threat to humanity.

Mission
To accelerate the development of vaccines and other biologic countermeasures against epidemic and pandemic threats so they can be accessible to all people in need.
CEPI's unique connecting role and extensive networks allow it to pool and deploy resources in ways that nation states often cannot.
CEPI’s approach to maternal immunization

• Endorse PREVENT guidance

• Facilitate identification of gaps and enablers to promote vaccination against Emerging Infectious Diseases of pregnant and lactating women
  • Stakeholder workshop in 2020 with a focus on Lassa¹

• Support consensus-building and knowledge-sharing for inclusion of pregnant women in COVID-19 vaccine trials and generation of data to enable maternal immunization of emergency-authorized COVID-19 vaccines
  • COVAX Maternal Immunization working group

- Voss et al., Vaccine, in press
CEPI’s contribution to maternal immunization: Vaccine R&D

• Funding for Ebola vaccine trials that **include** pregnant and lactating women
  • Uganda (NCT04028349): N=800, Janssen, MRC/UVRI and LSHTM Uganda Research Unit, Epicentre, 2019-2021
  • DRC (NCT04152486): N=20426, Janssen, LSHTM, Epicentre, MSF, PHE, Ministère de la Santé de la RDC, 2019-2022

• Funding for Ebola vaccine trials that are **specifically designed** to evaluate the safety and immunogenicity in pregnant and lactating women
  • Rwanda (NCT04556526): N=2000, Janssen, Center for Family Health Research (CFHR), Emory University, 2020-2022
CEPI’s contribution to maternal immunization: Vaccine Safety

- CEPI has partnered with the Brighton Collaboration for the Safety Platform for Emergency vACCines project in 2019 through the Taskforce for Global Health (https://brightoncollaboration.us/speac)
- Access to vaccine safety expertise, tools and standards
- Benefit-Risk Assessment of VAccines by TechnolOgy (BRAVATO)
Benefit-Risk Assessment of Vaccines by Technology (BRAVATO)

- *Standardized vaccine templates* with key benefit/risk assessment considerations, allowing standardized and effective communication of key information

- Originally developed for vector vaccines – VSV-Ebola and Yellow fever-Dengue were initial examples
  - COVID-19 pandemic – proliferation of vaccine candidates of all possible type – templates now for all possible vaccines – nucleic acid (mRNA, DNA), inactivated, etc.

- Template to summarize safety considerations of Vaccines for Maternal Immunization in development, with specific sections addressing:
  - Key Questions on the Pathogen, the Disease and Pregnancy
  - General Questions on Specific Vaccine Platforms and Characteristics (Based on the Brighton Collaboration BRAVATO vaccine platform modules)
  - Key Questions on Development and Planning for All Candidate Vaccines (regardless of construct/platform) for Pregnant and Lactating women
  - Key Questions for Post-Licensure Safety Evaluation of Vaccine Use During Pregnancy
  - Summary of Evaluation of Vaccine for Use During Pregnancy and Lactation
COVAX Maternal Immunization working group

- Important role in promoting maternal immunization with COVID-19 vaccines
- Unique forum for MI experts to
  - Identify and communicate research gaps
  - Facilitate information exchange
- Dissemination through
  - Webinars and reports
  - Website

https://epi.tghn.org/covax-overview/clinical-science/maternal-immunization/#ref1
Maternal immunization in the context of WHO priority pathogen vaccine development and disease X

- Leverage learnings from COVID-19
  - Vaccine platform data
  - Knowledge sharing mechanisms (as exemplified by COVAX MIWG)
- Disease-specific approach for priority pathogens
- Inclusion of maternal immunization in pandemic preparedness strategies and concrete disease X development plans
Conclusion

• The COVAX Maternal Immunization Working Group has an important role to play for COVID-19 and beyond
• During the ongoing COVID-19 pandemic, we have witnessed progress in raising awareness, but the inclusion of pregnant women in clinical trials is still lagging behind
• Limited safety surveillance infrastructure in LMICs
• Much has been achieved and much remains to be done – Thank you to all contributors to the MIWG
Session 1
Vaccine benefit-risk assessment post approval

Moderator
Andy Stergachis, PhD
Professor of Pharmacy & Global Health
University of Washington, Seattle, WA USA
Vaccine effectiveness in pregnant women - Israel

Noa Dagan
Head of data & AI-driven medicine,
Clalit Research Institute
Vaccine effectiveness (VE) in pregnant women - Israel

Noa Dagan MD, PhD, MPH
Head of Data & AI Driven Medicine, Clalit Research Institute, Israel
Lecturer, Software & Information Systems Engineering, Ben Gurion University

November 2021
Setting – COVID-19 vaccines in Israel

» Vaccination campaign started on December 20, 2020
» Pfizer vaccines
» Very efficient rollout
» Recommendation for pregnant women shifted from uncertainty to clear recommendation to receive the vaccine
» Percent of pregnant women who got vaccinated increased gradually during the vaccination campaign
Setting – Clalit Health Services

» Largest healthcare organization in Israel (of 4 that provide national health insurance)
» >4.7M members (>50% of population)
» Digitalized >20 years
» Payer & provider
» Clinics & hospitals
» Low attrition rate
The need for observational data to study VE in pregnancy

» Pregnant women were not included in the phase 3 clinical trials of mRNA vaccines

» The immune system is known to undergo alterations during pregnancy => it is plausible that the immune response triggered by mRNA vaccines in pregnant women may be altered

» Confidence in VE among pregnant women was sown to be a strong predictor of COVID-19 vaccine acceptance
Challenge: simulating an RCT using observational data
Challenge: simulating an RCT using observational data

» Vaccinated are different than non-vaccinated at baseline:
  - Demographics
  - Geographics
  - Health status
  - Cautiousness

» Hence, the two groups may also be different in their:
  - Likelihood of infection
  - Likelihood of seeking medical care
  - Prognostic factors for severe illness
Challenge: simulating an RCT using observational data

Confounding Variables
Age, trimester, SES, geographic area, sector, health vigilance, ≈20 comorbidities, calendar time

Exposure
COVID-19 vaccines

Outcome
COVID-19 related infection / hospitalization / severe disease

Causal correlation?
What kind of data is needed for evaluating VE

Anonymized data of a large cohort of individuals that includes:

- Vaccination status
- All laboratory COVID-19 PCR tests and results
- All outcomes for patients that are treated in the community
- All outcomes for patients that are treated in the hospitals (including hospitalization status, severity and death events)
- Relevant background sociodemographic information (age, SES, geographic area)
- Relevant background medical information (pregnancy trimester, all CDC risk factors for severe COVID-19, vaccination history etc.)
Defining a target trial using observational data

Vaccination Campaign

20/12/2020

Unvaccinated

Vaccinated

03/06/2021
Defining a target trial using observational data

Vaccination Campaign

20/12/2020

03/06/2021

Vaccinated

Unvaccinated
Defining a target trial* using observational data

* Hernán MA, Robins JM. Using big data to emulate a target trial when a randomized trial is not available. Am J Epidemiol 2016;183:758-64.
Effectiveness of the BNT162b2 mRNA COVID-19 vaccine in pregnancy

Noa Dagan, Noam Barda, Tal Biron-Shental, Maya Makov-Assif, Calanit Key, Isaac S. Kohane, Miguel A. Hernán, Marc Lipsitch, Sonia Hernandez-Diaz, Ben Y. Reis & Ran D. Balicer

Nature Medicine 27, 1693–1695 (2021) | Cite this article

Based on methodology from our NEJM study of Pfizer VE in the general population from Feb 2021
Negative control
Outcome*
Table 1 Vaccine effectiveness measures

From: Effectiveness of the BNT162b2 mRNA COVID-19 vaccine in pregnancy

<table>
<thead>
<tr>
<th>Period</th>
<th>Documented infection</th>
<th>Symptomatic infection</th>
<th>Hospitalization</th>
<th>Severe disease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 – RR (95% CI)</td>
<td>1 – RR (95% CI)</td>
<td>1 – RR (95% CI)</td>
<td>1 – RR (95% CI)</td>
</tr>
<tr>
<td>Days 14–20 after first dose</td>
<td>67% (40–84%)</td>
<td>66% (32–86%)</td>
<td>3 versus 0*</td>
<td>2 versus 0*</td>
</tr>
<tr>
<td>Days 21–27 after first dose</td>
<td>71% (33–94%)</td>
<td>76% (30–100%)</td>
<td>5 versus 0*</td>
<td>0 versus 0*</td>
</tr>
<tr>
<td>Days 7–56 after second dose</td>
<td>96% (89–100%)</td>
<td>97% (91–100%)</td>
<td>89% (43–100%)</td>
<td>1 versus 0*</td>
</tr>
</tbody>
</table>

RRs and RDs (per 100,000 persons) of COVID-19 outcomes for vaccination versus no vaccination at several time points after vaccination in pregnant women who are members of the CHS, 20 December 2020 through to 3 June 2021. The study population numbered 10,861 individuals in each arm and 1,529 individuals were first included as unvaccinated and then re-recruited as vaccinated.

*Estimates were only calculated for cells with more than five events; otherwise, raw counts are reported.
Main conclusions:

» BNT162b2 mRNA COVID-19 vaccine is highly effective in pregnant women for the variants circulating in Israel at the time of the study

» Vaccine effectiveness was comparable to that estimated in the general population

=> It is plausible that the VE estimated in the general population for future variants may be used to infer the effectiveness in pregnant women for the same variants

Lessons for the next pandemic:

» The importance of good data infrastructures

» The importance of developing research capabilities for producing real-time research insights to inform the population
Thank You!
Vaccine reactogenicity in pregnant women - US

Alisa Kachikis, MD, MSc
Assistant Professor of Maternal-Fetal Medicine,
Department of Obstetrics & Gynecology
University of Washington
Vaccine reactogenicity in pregnant women - US

Alisa Kachikis, MD, MSc

COVAX MATERNAL IMMUNIZATION WORKING GROUP WEBINAR
November 18, 2021
DISCLOSURES

Consultant on maternal immunization related projects
- GlaxoSmithKline
- Pfizer

Co-Investigator on COVID-19 seroprevalence study funded by Merck.
OVERVIEW

- Available data sources early on:
  - COVID-19 in pregnancy
  - COVID-19 vaccine in pregnancy

- Studies on vaccine reactogenicity in the United States

- What have we learned?
OVERVIEW

- Available data sources early on:
  - COVID-19 in pregnancy
  - COVID-19 vaccine in pregnancy

- Studies on vaccine reactogenicity in the United States

- What have we learned?
Data sources in the US: COVID-19 infection in pregnancy

Start of the pandemic

• Knowledge about increased morbidity and mortality with influenza, also SARS, MERS, in pregnancy.

• Uncertainty about impact of COVID-19 illness in pregnant individuals.

- CDC surveillance
- Establishment of national and regional registries and collaborations
  - PRIORITY registry (UCSF)
  - Washington State COVID-19 in Pregnancy Collaborative
- Site specific data (i.e. New York)
Data sources in the US: COVID-19 vaccine in pregnancy

Presentation of results of clinical trials to:

- Food and Drug Administration (FDA) for consideration of Emergency Use Authorization (EUA)
- CDC’s Advisory Committee for Immunization Practices (ACIP)

Data in the pregnant population

- Pregnant persons were **EXCLUDED** from clinical trials
- DART data: only available for Pfizer
- Limited data on vector virus vaccines (e.g. Ebola vaccine) in pregnancy
Data sources in the US: COVID-19 vaccine in pregnancy

Post approval data sources on vaccine reactogenicity in pregnant individuals

- CDC’s VSAFE data and prospective study
- Vaccine Adverse Event Reporting Surveillance (VAERS) system
- Site specific studies:
  - University of Washington’s Registry for COVID-19 vaccine in Pregnancy and Lactation with prospective survey-based study

Receiving the COVID-19 vaccine and pregnant, breastfeeding or thinking about getting pregnant soon? Please consider signing up for a registry of persons who receive the COVID-19 vaccine and are also pregnant or breastfeeding via https://redcap.link/covidvaccpregregistry or scan the following QR code with your phone camera.

By registering you can sign up for email or text notifications regarding quality improvement initiatives and/or research studies that you may be eligible for.

You can also email the Maternal Immunization study team at the University of Washington Department of Obstetrics and Gynecology at covidvaccpreg@uw.edu.
OVERVIEW

- Available data sources early on:
  - COVID-19 in pregnancy
  - COVID-19 vaccine in pregnancy
- Studies on vaccine reactogenicity in the United States
- What have we learned?
PRELIMINARY FINDINGS OF mRNA COVID-19 VACCINE SAFETY IN PREGNANT PERSONS

Most Frequent Local & Systemic Reactions Reported via V-safe Surveillance System on the Day after Vaccination
University of Washington prospective survey-based study

- Data: Jan 23 – March 16, 2021

- 17,525 participants with known pregnancy status
  - Pregnant: 7,809; Lactating: 6,815; Planning pregnancy: 2,901
REATIONS 1 DAY POST-VACCINATION
RESPONSES RELATED TO LACTATION

- Interrupted breastfeeding:
  - 1st dose: 2.3%
  - 2nd dose: 2.2%
- Decreased milk supply for less than 24 hours
  - 1st dose: 5.0%
  - 2nd dose: 7.2%
- Concerns about the infant after vaccination:
  - 1st dose: 3.0%
  - 2nd dose: 4.4%

Any concerns with infant after feeding with breastmilk (qualitative data), self-limited
- mostly:
  - Feeling unsure about the vaccine in general
  - Worry about breastmilk supply
  - Sleepiness
  - Fussiness
- Less commonly:
  - Rash
  - Diarrhea
  - Congestion
### OTHER RESPONSES

<table>
<thead>
<tr>
<th>Should individuals receive the COVID-19 vaccine...</th>
<th>Pregnant participants (n= 7456)</th>
<th>Lactating participants (n= 6466)</th>
<th>Participants planning pregnancy (n= 2669)</th>
</tr>
</thead>
<tbody>
<tr>
<td>... if pregnant?</td>
<td>6153 (82.5)</td>
<td>6080 (94.0)</td>
<td>2520 (94.4)</td>
</tr>
<tr>
<td>Depends on the circumstances</td>
<td>1300 (17.4)</td>
<td>382 (5.9)</td>
<td>148 (5.6)</td>
</tr>
<tr>
<td>No</td>
<td>3 (0)</td>
<td>4 (0.1)</td>
<td>1 (0)</td>
</tr>
</tbody>
</table>
OVERVIEW

- Available data sources early on:
  - COVID-19 in pregnancy
  - COVID-19 vaccine in pregnancy
- Studies on vaccine reactogenicity in the United States
- What have we learned?
WHAT HAVE WE LEARNED?

- Having data for the pregnant population is extremely important in the midst of a pandemic
- Data collection:
  - Establishing networks of hospitals/care centers for prospective clinical data collection
  - Surveillance systems and surveys can be effective ways to collect data
- Characteristics of pregnant individuals
  - May perceive their own risks with disease or treatment differently
  - Extremely willing to participate in research
QUESTIONS?
The power of obstetric surveillance systems – the UK’s experience tracking COVID-19 during pregnancy and the impacts of variants and vaccination

Marian Knight
Professor of Maternal and Child Population Health, University of Oxford, UK
The power of obstetric surveillance systems: the UK's experience tracking COVID-19 during pregnancy and the impacts of variants and vaccination

Professor Marian Knight,
National Perinatal Epidemiology Unit, University of Oxford, UK
UK Obstetric Surveillance System

- Established in all obstetric units in the UK since 2005 (n=194 hospitals)
- Effectively covers the whole birth population of the UK
- Monthly case reporting, including negative case reports
- Rapid responsive studies conducted with other emerging infections (Influenza A/H1N1, Zika virus)
- ‘Pandemic portfolio’ study funded and hibernated in 2012

UK Obstetric Surveillance System (UKOSS)

- Monthly prospective case collection from obstetric anaesthetist, obstetrician, midwife and risk midwife (individualised by hospital)
- Anonymous information collected on women’s characteristics, treatment and outcomes in order to improve quality of care
- Conditions included change over time
- Central data collection
Completed Studies

2006
• Eclampsia
• Peripartum Hysterectomy
• Acute Fatty Liver
• Antenatal PE
• TB
2007
• Gastrochisis
2008
• Extreme Obesity
• FMAIT
2009
• Therapies for peripartum haemorrhage
• Multiple repeat caesarean section
• Pregnancy in renal transplant recipients
2010
• H1N1v influenza in pregnancy
• Antenatal Stroke
• Failed Intubation
• Malaria
• Congenital Diaphragmatic Hernia
• Myocardial Infarction
• Uterine Rupture
2011
• Sickle cell disease in pregnancy
• Placenta accreta
• Aortic dissection
• Obstetric cholestasis

2012
• Pregnancy in non-renal transplant recipients
• Pulmonary vascular disease
• Severe maternal sepsis
• HELLP
• Pregnancy in women with a gastric band
2013
• Myeloproliferative disorders
• Pituitary tumours
• Massive transfusion in obstetric haemorrhage
2014
• CKD stage 5
• Cardiac arrest in pregnancy
• ITP in pregnancy
• Pregnancy in women aged 48 or over
2015
• Adrenal tumours in pregnancy
• Pregnancy in women with artificial heart valves
• Anaphylaxis in Pregnancy
2016
• Pregnancy in women with a gastric bypass
• Vasa praevia
• Pulmonary embolism
• Pulmonary aspiration
2017
• Breast cancer in pregnancy
• Cystic Fibrosis
• Epidural haematoma or abscess
• Female Genital Mutilation type 3
• Severe epilepsy in pregnancy
• Single Twin Demise
• Spontaneous haemoperitoneum in pregnancy
• WHO GLOSS Global Maternal Sepsis Study
• Zika virus in pregnancy
2018
• Seasonal influenza
• Low maternal plasma fibrinogen
2019
• Near-miss suicide
• Impacted fetal head
• High Neuraxial Block
2020
• Cirrhosis in pregnancy
• Diabetic ketoacidosis in pregnancy
• Hyponatraemia
2021
• COVID-19 Vaccination in Pregnancy
• Extremely preterm prelabour rupture of membranes (EPPROM)
A 9 year gestation

2009 A/H1N1 influenza

2011 – call for ‘hibernated studies’

2012 - Funding awarded: study materials and database prepared

2015 Possible modification for other viruses

2017 Activated for seasonal influenza

2018 Rapid activation exercise

February 2020 Request to modify for SARS-CoV-2

22/03/2020 SARS-CoV-2
Covid-19 and pregnancy

Characteristics and outcomes of pregnant women admitted to hospital with confirmed SARS-CoV-2 infection in UK: national population based cohort study

Marian Knight, Kathryn Burch, Nicola Vouladen, Edward Morris, Nigel Simpson, Chris Gale, Patrick O'Brien, Mara Quigley, Peter Brocklehurst, Jennifer J Kurinczuk. On behalf of the UK Obstetric Surveillance System

The incidence, characteristics and outcomes of pregnant women hospitalized with symptomatic and asymptomatic SARS-CoV-2 infection in the UK from March to September 2020: A national surveillance study

Nicola Vouladen, Kathryn Burch, Peter Brocklehurst, Jennifer J Kurinczuk

Impact of SARS-CoV-2 variant on the severity of maternal infection and perinatal outcomes: Data from the UK Obstetric Surveillance System national cohort

Nicola Vouladen, Rona Ranakrishnan, Kathryn Burch, Edward Morris, Nigel Simpson, Christopher Gale, Patrick O'Brien, Mara Quigley, Peter Brocklehurst, Jennifer J Kurinczuk, Marian Knight

doi: https://doi.org/10.1101/2021.07.22.21261000
4.9 women hospitalized with SARS-CoV-2 per 1000 giving birth (95%CI 4.5-5.4)  
01/03/2020-14/04/2020
## Inequalities

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Incidence of admission with SARS-CoV-2 in pregnancy per 1000 maternities</th>
<th>Rate ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>1.6</td>
<td>0.4 (0.1 to 1.1)</td>
</tr>
<tr>
<td>20-34</td>
<td>3.9</td>
<td>1 (ref)</td>
</tr>
<tr>
<td>≥35</td>
<td>8.8</td>
<td>2.3 (1.8 to 2.7)</td>
</tr>
<tr>
<td><strong>BMI (kg/m²)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal (&lt;25)</td>
<td>3.5</td>
<td>1 (ref)</td>
</tr>
<tr>
<td>Overweight (25 to &lt;30)</td>
<td>6.8</td>
<td>2.0 (1.5 to 2.5)</td>
</tr>
<tr>
<td>Obese (≥30)</td>
<td>8.7</td>
<td>2.5 (2.0 to 3.2)</td>
</tr>
<tr>
<td><strong>Ethnic group (England Only)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>3.5</td>
<td>1 (ref)</td>
</tr>
<tr>
<td>Asian</td>
<td>13.9</td>
<td>4.0 (3.1 to 5.1)</td>
</tr>
<tr>
<td>Black</td>
<td>28.4</td>
<td>8.1 (6.2 to 10.5)</td>
</tr>
<tr>
<td>Chinese/ other</td>
<td>9.5</td>
<td>2.7 (1.7 to 4.0)</td>
</tr>
<tr>
<td>Mixed</td>
<td>6.9</td>
<td>2.0 (0.9 to 3.8)</td>
</tr>
</tbody>
</table>
Women of BAME background, [or with other risk factors such as hypertension, diabetes or raised BMI], should be advised that they may be at higher risk of complications of COVID-19; we advise they seek advice without delay if they are concerned about their health.

Clinicians should be aware of this increased risk, and have a lower threshold to review, admit and consider multidisciplinary escalation of symptoms in women of BAME background.

When reorganising services, maternity units should be particularly cognisant of evidence that BAME individuals are at particular risk of developing severe and life threatening COVID-19 disease.

RCOG Coronavirus (COVID-19) and pregnancy guideline (Royal College of Obstetricians and Gynaecologists and The Royal College of Midwives 2020)
Hospital admissions with COVID-19 over time

Pregnant women eligible for vaccination

https://www.medrxiv.org/content/10.1101/2021.07.22.21261000v1
Outcomes of COVID-19 for pregnant women and their babies after admission to hospital with symptoms

3371 women admitted
3036 babies born (335 women have not yet given birth)
Respiratory support needs during Wildtype, Alpha and Delta variant periods

<table>
<thead>
<tr>
<th></th>
<th>Wildtype N=1435 (%)</th>
<th>Alpha N=1765 (%)</th>
<th>Delta N=171 (%)</th>
<th>OR Alpha vs. Wildtype (95% CI)</th>
<th>aOR Alpha vs. Wildtype (95% CI)</th>
<th>OR Delta vs. Alpha (95% CI)</th>
<th>aOR Delta vs. Alpha (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite indicator of moderate to severe infection</td>
<td>350 (24.4)</td>
<td>631 (35.8)</td>
<td>77 (45.0)</td>
<td>1.72 (1.48-2.01)</td>
<td>1.75 (1.48-2.06)</td>
<td>1.47 (1.07-2.02)</td>
<td>1.53 (1.07-2.17)</td>
</tr>
<tr>
<td>Evidence of pneumonia on imaging</td>
<td>274 (19.1)</td>
<td>486 (27.5)</td>
<td>63 (36.8)</td>
<td>1.61 (1.36-1.90)</td>
<td>1.65 (1.38-1.98)</td>
<td>1.54 (1.12-2.13)</td>
<td>1.64 (1.14-2.35)</td>
</tr>
<tr>
<td>Respiratory support required</td>
<td>183 (20.3)</td>
<td>466 (27.2)</td>
<td>52 (33.3)</td>
<td>1.47 (1.21-1.78)</td>
<td>1.39 (1.13-1.71)</td>
<td>1.34 (0.95-1.90)</td>
<td>1.43 (0.97-2.11)</td>
</tr>
<tr>
<td>Critical Care received</td>
<td>111 (7.7)</td>
<td>199 (11.3)</td>
<td>26 (15.2)</td>
<td>1.52 (1.19-1.94)</td>
<td>1.61 (1.24-2.10)</td>
<td>1.41 (0.91-2.20)</td>
<td>1.60 (0.99-2.59)</td>
</tr>
</tbody>
</table>

https://www.medrxiv.org/content/10.1101/2021.07.22.21261000v1
Disease severity

The proportion of hospitalized symptomatic women with moderate to severe COVID-19 has increased

– First wave:

– Alpha variant:

– Delta variant:

Pregnant and postpartum women appear disproportionately severely affected compared to non-pregnant people of reproductive age

https://www.medrxiv.org/content/10.1101/2021.07.22.21261000v1
### Pharmacological management

<table>
<thead>
<tr>
<th>Pharmacological Management Total*</th>
<th>Wildtype N=1435 (%)</th>
<th>Alpha N=1765 (%)</th>
<th>Delta N=171 (%)</th>
<th>OR Alpha vs. Wildtype (95% CI)</th>
<th>aOR Alpha vs. Wildtype (95% CI)</th>
<th>OR Delta vs. Alpha (95% CI)</th>
<th>aOR Delta vs. Alpha (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tocilizumab</td>
<td>99 (6.9)</td>
<td>253 (14.3)</td>
<td>28 (16.3)</td>
<td>2.26 (1.77-2.88)</td>
<td>2.37 (1.83-3.07)</td>
<td>1.17 (0.76-1.79)</td>
<td>1.35 (0.87-2.12)</td>
</tr>
<tr>
<td>Steroids for maternal indication</td>
<td>68 (4.7)</td>
<td>219 (12.4)</td>
<td>25 (14.6)</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
<tr>
<td>Regeneron Monoclonal Antibodies</td>
<td>0 (0)</td>
<td>6 (0.3)</td>
<td>0 (0)</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
<tr>
<td>Recruited to RECOVERY</td>
<td>21 (1.5)</td>
<td>87 (4.9)</td>
<td>0 (0)</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
</tbody>
</table>
Covid-specific medical therapies in pregnant women

- Covid-specific medical therapies are still used infrequently, even for women who are critically ill
- Steroids for maternal indication administered to only around a quarter of pregnant women admitted to intensive care

Balancing choices:
Always consider individual benefits and risks when making decisions about pregnancy
• Follow-up of pregnant RECOVERY participants
• The same as non-pregnant, + linkage to UKOSS
Covid-19 and pregnancy: RCOG

Quick reference summary of acute COVID-19 management in pregnancy

- Assess – admit or discharge with clear advice about symptom deterioration and specific contact details.
- Oxygen to maintain saturations above 94%, escalating with e.g. nasal prongs, masks, CPAP, IPPV, ECMO
- No antibiotics unless additional bacterial infection suspected.
- LMWH for VTE prophylaxis

- Steroids if oxygen is needed (e.g. oral prednisolone 40 mg once daily or IV hydrocortisone 80 mg twice daily with intramuscular dexamethasone 6 mg twice daily for four doses followed by oral prednisolone as below if fetal lung maturity is also required).

- MDT review – is escalation required? Does birth need expediting?

- Strongly consider tocilizumab (400 mg/600 mg/800 mg single IV infusion depending on weight) if C-reactive protein at or above 75 mg/l or in ICU.

- Strongly consider REGEN-COV monoclonal antibodies (8 g single IV infusion) in those with no SARS-CoV-2 antibodies.

Remdesivir should only be considered for those who are not improving or who are deteriorating.

Azithromycin, hydroxychloroquine and lopinavir/ritonavir have been shown to be ineffective and should not be offered.
Delta variant and perinatal outcomes

Overall:
• 1 in 100 have a stillbirth
• 1 in 3 have a preterm birth
• 1 in 5 babies admitted to neonatal unit

Delta variant:
• 1 in 100 have a stillbirth

• In Alpha variant: 23% increase in NNU admission
Impact of vaccination:

Hospital admissions with symptomatic COVID-19 in pregnancy

1st February 2021 to 30th September 2021

1714 pregnant women admitted to hospital with symptomatic COVID

235 of whom (14%) were admitted to intensive care

98.1% unvaccinated
1.5% one dose
0.4% two doses

98.7% unvaccinated
1.3% one dose
Hospital admissions with symptomatic COVID-19 in pregnancy

1714 pregnant women admitted to hospital with symptomatic COVID
235 of whom (14%) were admitted to intensive care

Maternal deaths during pregnancy or up to 42 days after pregnancy with COVID-19

Balancing choices:
Always consider individual benefits and risks when making decisions about pregnancy

98.1% unvaccinated
1.5% one dose
0.4% two doses

98.7% unvaccinated
1.3% one dose
Summary

• Obstetric Surveillance Systems allow for rapid activation of covid-19 studies
• Ethnicity, obesity, age and comorbidities increase risk of hospitalization and severity
• Risks to pregnant women have increased with changing variants
  – 1 in 3 have pneumonia and need respiratory support
  – 1 in 8 need intensive care
  – Up to 1 in 3 have a preterm birth
  – 1 in 5 babies need neonatal unit admission
• Evidence of reluctance to use evidence-based medical therapies in pregnancy
• *Vaccination is strongly protective against severe disease in the real world*
Acknowledgements

• The UKOSS study was co-funded by the National Institute for Health Research HTA Programme (project number 11/46/12). MK is an NIHR Senior Investigator. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health and Social Care.
COVID disease burden and vaccination strategies among pregnant women in Brazil

Cristiana Toscano, MD, PhD
Professor at the Federal University Goiás in Brazil and Member of the PAHO TAG and WHO SAGE working group on COVID-19 vaccines
COVID disease burden and vaccination strategies among pregnant women in Brazil

*Advances in maternal immunization science and implementation in times of COVID-19*

November 18th, 2021

**Cristiana Toscano, MD, PhD**
Professor, Head, Collective Health Department
Federal University of Goiás (UFG), Brazil
Member of the PAHO Technical Advisory Group of Experts on Immunization (TAG)
Member of the COVID-19 working group, Strategic Advisory Group of Experts (SAGE)-WHO
Disclaimer and Acknowledgements

• No conflicts of Interests to declare
• Disclaimer
  • Infectious Disease Epidemiologist, Professor at the University
  • Technical consultation meetings and technical committees
  • Not part of the Brazilian MoH
  • Not representing policies and positions of any of the institutions below

• Slides, Data and Thanks:
  • Literature
  • Ministry of Health, Immunization and Surveillance Bulletins
  • Pan-American Health Organization
Outline

• COVID Burden of Disease in Pregnant Women in Brazil
• Maternal vaccination strategy in Brazil and in the Latin American Region
• Evidence on maternal COVID-19 vaccine effectiveness
• COVID-19 vaccine safety surveillance system in pregnant women
COVID-19 Disease Burden in Pregnant Women
COVID-19 vaccination in pregnancy, Brazil

Jan 17, 2021
Covid-19 vaccination starts

Early May 2021
257.9 cases & 20.3 deaths/100,000 pregnant women

April 26th, 2021
Ntl Rec to vaccinate Pregnant women (and post-partum)¹

¹Nota Técnica 467/2021 - CGPNI/DEIDT/SVS/MS
²Nota Técnica 627/2021 - CGPNI/DEIDT/SVS/MS
Severe Acute Respiratory Syndrome in Pregnant Women, Brazil, 2021, by mid-May 2021

- Estimated pregnant women in Brazil: 2,488,052

<table>
<thead>
<tr>
<th></th>
<th>Número</th>
<th>Incidência/100 mil habitantes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casos SRAG</td>
<td>6.880</td>
<td>276,52</td>
</tr>
<tr>
<td>Casos de SRAG por covid-19</td>
<td>4.442</td>
<td>178,53</td>
</tr>
<tr>
<td>Óbitos por SRAG</td>
<td>541</td>
<td>21,74</td>
</tr>
<tr>
<td>Óbitos de SRAG por covid-19</td>
<td>514</td>
<td>20,75</td>
</tr>
</tbody>
</table>

Fonte: SIVEP-Gripe, atualizado em 17/05/2021, dados sujeito a alterações

Mortality among pregnant and recently pregnant women with SARIs is high among those with COVID-19, particularly in regions where maternal mortality is already high.
Characteristics and outcomes of pregnant women with COVID-19 and SARI in Brazil, Jan – Nov 2020

• Data from SIVEP-Gripe (national surveillance system) in Brazil
  • n = 945,460 SARI cases

• Characteristics of 11,074 women aged 10–49 who were
  • pregnant (7964) or
  • recently pregnant (3110)

• COVID-19 was confirmed in 50% of the study population

• Mortality among those with COVID-19 was elevated, compared with the other SARI groups

• High mortality among pregnant women with COVID-19 aged 30-39 or who had hypertension/other cardiovascular diseases or diabetes, when compared with their counterparts with other SARIs

Fig. 2 Distribution of cases and deaths due to SARIs among pregnant and recently pregnant women, by state, SIVEP-Gripe, Brazil, January-November 2020 ($n = 11,074$)

A. SARI with influenza or other etiological agents
   A1-Number of confirmed cases
   A2-Number of reported deaths

B. SARI cases with unknown etiology
   B1-Number of confirmed cases
   B2-Number of reported deaths

C. COVID-19 cases
   C1-Number of confirmed cases
   C2-Number of reported deaths

Published evidence on COVID disease burden in pregnant women in LMIC

- Data from the Brazilian Ministry of Health’s Influenza Epidemiological Surveillance Information System (SIVEP-Gripe) by April 2021
  - disproportionately large number of maternal deaths attributed to COVID-19, particularly during the postpartum period
  - Racial disparities
  - High maternal in-hospital fatality rates

https://www.thelancet.com/action/showPdf?pii=S2589-5370%2821%2900197-8
COVID-19 vaccination in pregnancy, Brazil

**Jan 17, 2021**
Covid-19 vaccination starts

**Early May 2021**
257.9 cases & 20.3 deaths/100,000 pregnant women

**May 14th, 2021**
Suspension of COVID-19 vaccination in pregnant women

**April 26th, 2021**
Ntl Rec to vaccinate Pregnant women (and post-partum)¹

**May 7th, 2021**
Death of pregnant women post Vx

**July 6th, 2021**
Reinstatement of Maternal Vaccination

¹Nota Técnica 467/2021 - CGPNI/DEIDT/SVS/MS
²Nota Técnica 627/2021 - CGPNI/DEIDT/SVS/MS
Detailed description of notified adverse events in pregnant women, by vaccine type, by May 16th, 2021

Astrazeneca/Oxford/Fiocruz
- 1 death in patient with TTS
- 1 death due to pre-existing illness (no relation to vaccine)
- 5 spontaneous abortions in unknowingly pregnant women vaccinated in the first trimester
- 3 premature labors
- 7 non-specified events under investigation
- 1 placental abruption

Sinovac/Butantan
- 7 spontaneous abortions in unknowingly pregnant women vaccinated in the first trimester
- 1 premature labor with neonatal death, under investigation

Pfizer/Wyeth
- 1 episode of convulsion, resumed without sequelae, under investigation
- 1 fetal death in a patient with a history of placental abruption prior to vaccination

Risk Benefit Analysis

Hospitalization due to COVID-19 in pregnant women in Brazil, 2021

Deaths due to COVID-19 in pregnant women in Brazil, 2021

TTS post-COVID-19 vaccination with AstraZeneca/Oxford

~200/100,000

~20/100,000

~1/100,000
Brazilian Obstetric Observatory (OOBr) COVID-19

- Created in April 7, 2021
- Part of the Brazilian Obstetric Observatory
- Public dashboard, updated weekly when new data are released by the Ministry of Health.
- Numerous exploratory data analyses available
- Dynamic visualization and filtering, which can be customized by the user.
- Available at (in Brazilian Portuguese):
  https://observatorioobstetrico.shinyapps.io/covid_gesta_puerp_br

Severe Acute Respiratory Syndrome and COVID vaccination in Pregnant Women, Brazil – Nov 15th, 2021

• Estimated pregnant women in Brazil: 2,488,052

• COVID vaccination
  • 1.15 million pregnant and post-partum women have received 1st dose (46%)
  • 867K women received second dose (35%)

• Disease Burden

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Incidence/100,000 pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>SARS cases (unspecified)</td>
<td>14,024</td>
<td>563.54</td>
</tr>
<tr>
<td>SARS cases due to COVID-19</td>
<td>18,601</td>
<td>747.61</td>
</tr>
</tbody>
</table>

https://observatorioobstetrico.shinyapps.io/covid_gesta_puerp_br
Maternal COVID-10 vaccine effectiveness
CoronaVac inactivated COVID VE in Pregnant Women in Brazil

- Test negative design, 19,838 pregnant women aged 18 to 49 years with PCR tests conducted in Brazil, from

- Data linkage
  - records of negative and positive SARS-CoV-2 PCR tests to national vaccination records
  - records of test positive cases with notification of severe, hospitalized or fatal Covid19

- CoronaVac VE (2-dose)
  - 41% (95% CI 27.1-52.2) against symptomatic Covid-19
  - 85% (95% CI 59.5-94.8) against severe Covid-19
  - 75% (95% CI 27.9-91.2) in preventing progression to severe Covid-19 among those infected

Maternal COVID-19 Vaccination in Brazil and LAC Region
Number of countries with recommendations on the use of COVID-19 vaccines in pregnant women, Region of the Americas, 2021

*Mexico and Suriname > 9 weeks; Chile > 16 weeks
Source: Country reports to FPL-IM/PAHO. Data as of 15 November 2021
## Countries with COVID-19 Vaccination Policies for Pregnant Women in LAC

<table>
<thead>
<tr>
<th>Policy</th>
<th># Countries/Territories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant not specified</td>
<td>7</td>
</tr>
<tr>
<td>Pregnant risk group</td>
<td>2</td>
</tr>
<tr>
<td>Pregnant &gt;12 weeks</td>
<td>13</td>
</tr>
<tr>
<td>Pregnant &gt;9 weeks</td>
<td>2</td>
</tr>
<tr>
<td>Pregnant Universal</td>
<td>19</td>
</tr>
<tr>
<td>No Vaccinating PW</td>
<td>2</td>
</tr>
<tr>
<td>No response</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>51</strong></td>
</tr>
</tbody>
</table>

Source: eJRF country-reports
Adverse events following COVID-10 vaccination in pregnant women
COVID-19 Post-Vaccination Adverse Events in pregnant women
Brazil, by Nov 16th 2021

Deaths: 79 (3.9/100 K doses)

Severe events: 206 (10.2/100 K doses)

Total events: 1,320 (65.5/100 K doses)

- AstraZeneca: 734
- Sinovac: 195
- Pizer: 381
- Janssen: 10

- AstraZeneca: 60
- Sinovac: 40
- Pizer: 105
- Janssen: 10

- AstraZeneca: 15
- Sinovac: 17
- Pizer: 47
- Janssen: 0

*Excluindo São Paulo
Fonte: Planilha compartilhada pela CGPNI/DEIDT/SVS/MS

By vaccine

#UniversalHealth
Regional Monitoring System Strategies of ESAVI

01 REGULATORY ASPECTS:
- RISK MANAGEMENT PLANS, MAPS AND COVID-19 DASHBOARD

02 STRENGTHEN PASSIVE SURVEILLANCE
- GLOBAL AND REGIONAL MANUALS, WHO ADAPTED INVESTIGATION AND CAUSALITY ASSESSMENT TOOLS, INFORMATION SYSTEM

03 STRENGTHENING OF NATIONAL CAPACITIES
- ONLINE COURSES, SUBREGIONAL WORKSHOPS, WEBSITE FOR VACCINE SAFETY

04 STRENGTHEN ACTIVE SURVEILLANCE
- SENTINEL SURVEILLANCE, HEALTH WORKERS AND PREGNANT STUDIES

05 STRATEGIC ALLIANCES AND COMMUNICATION
- REGIONAL ESAVI COMMITTEE, COMMUNICATION TOOLS
Gaps and data needs

- COVID surveillance and disease burden in pregnant women
- Routine monitoring and information on COVID vaccine coverage in pregnant women
- Ongoing routine monitoring of COVID-19 vaccine safety surveillance system
  - Data analysis and sharing
- Ongoing vaccine effectiveness and impact studies
- Prospective enhanced safety surveillance studies
Thank you!!!!!
ctoscano@ufg.br
Session 2 – Panel discussion
COVID-19 vaccines: De-risking of vaccine development for maternal immunization

Moderator
Ajoke Sobanjo-ter Meulen
MD MSc, Senior Program Officer, Global Health, Pneumonia, Bill & Melinda Gates Foundation, USA
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Padmini Srikantiah
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Kathryn M. Edwards
MD, Sarah H. Sell and Cornelius Vanderbilt Professor, Department of Pediatrics, Vanderbilt University School of Medicine

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Kathryn M. Edwards
MD, Sarah H. Sell and Cornelius Vanderbilt Professor, Department of Pediatrics, Vanderbilt University School of Medicine
Alejandra Gurtman
Vice President
Vaccine Research and Development
Pfizer Inc

COVID-19 Maternal Vaccine Clinical
COVID-19 Maternal Vaccine Clinical
Alejandra Gurtman, MD
Pfizer
Vaccine Research and Development
Nov 18, 2021
Timeline for COVID Vaccine in Pregnant Women

• April 2020: Interaction initiated with CBER through IND regarding a potential maternal study

• July 2020: DART study initiated

• Dec 18, 2020: CBER accepted DART Study

• Dec 22, 2020: Final maternal immunization protocol submitted to CBER
  • Phase 2/3 design with initial smaller cohort
  • Stopping rules incorporated
C4591015 — Timeline of Key Events

- **Dec 2020**
  - Final approved protocol
  - Sample size: 4,000 healthy pregnant women

- **Feb 2021**
  - Phase 2 enrollment begins
  - Sample size reduction: 700 healthy pregnant women
  - FSFV: 16-Feb-2021

- **May 2021**
  - Protocol amendment
  - FSFV 14-Jun-2021

- **Jun 2021**
  - Phase 3 enrollment begins
  - FSFV 14-Jun-2021

- **Sep 2021**
  - Proposal to regulatory authorities to stop enrollment

- **Oct 2021**
  - Endorsement from EMA and FDA to stop enrollment
  - Enrollment ends
  - LSFV on 5-Nov-2021

- **Nov 2021**
  - Enrollment ends
  - LSFV on 5-Nov-2021
  - End of study
  - LSLV on 24-Aug-2022

---

**Recommendation for vaccination of pregnant women**

Increased global availability of COVID-19 vaccines

**Challenges with enrollment**
C4591015 Study

- Enrolment stopped early due to recruitment challenges secondary to global availability and universal recommendation of COVID-19 vaccination in pregnant women

- **345 maternal participants enrolled (<10% of initial target)**
  - Brazil, South Africa, Spain, UK, and US
  - Mozambique included originally
    - Regulatory process was longer than other countries
    - Central Ethics Committee concerns about availability of vaccine for pregnant women as vaccine was not included in the country vaccination plan at the time, due to storage conditions and cost
  - Phase 2: 209 participants
  - Phase 3: 136 participants

- **247 infants born to maternal study participants**
Questions

• How important is to obtain an indication for pregnant women?
  • What is the medical value of an indication when the vaccine is recommended?

• Clinical trial initiation – how quickly can we really do it?

• Distinction on access after approval in high and LMICs
  • How critical is to include both in clinical trials?
  • How much do we need to anticipate logistics after approval (COVID vaccine shipment/storage in LIC countries)

• If we move forward with the same platform and include pregnant women in other studies evaluating vaccines against different pathogens
  • Will regulators agree that a DART study from a platform is sufficient or would it be an expectation to repeat (ie COVID DART to be use for other mRNA vaccines)
  • Will a change in antigen delivery (LNPs) require additional DART studies

• For other platforms, should we consider doing Phase 1 in pregnant women or just allowing them to be in phase 3

• How do we anticipate ideal GA for new platforms?
  • How are we going to evaluate safety signals vs disease. (Zika microcephaly)
  • How early can we go

• How important is to assess benefit from direct vaccination and protection to pregnant women and/or infant protection
<table>
<thead>
<tr>
<th>Panel Members</th>
<th>Potential Discussion Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Padmini Srikantiah</td>
<td>1. How has the use of mRNA COVID-19 vaccine in pregnancy shaped the BMGF RSV Vaccine strategy?</td>
</tr>
<tr>
<td>Shabir A. Mahdi</td>
<td>2. Learning from the COVID-19 pandemic: What do vaccine developers need to know to enable equitable access to vaccines for pregnant women in LMIC?</td>
</tr>
<tr>
<td>Janet Englund</td>
<td>3. What has COVID-19 vaccine development taught us about maternal vaccine confidence and uptake in pregnant women?</td>
</tr>
<tr>
<td>Kathryn M. Edwards</td>
<td>4. What can we do better to generate timely, accessible, and robust vaccine safety data in pregnant women prior to and during pandemics?</td>
</tr>
</tbody>
</table>
Session 3
Policy and regulatory considerations: The way forward

Moderator
Flor Munoz
MD MSc, Associate Professor, Pediatrics
Infectious Disease, Baylor College of Medicine, USA
COMIT and PREVENT, what we’ve learned about data-driven policy decisions, and what we should anticipate in the future?

Ruth Karron
Professor, Department of International Health, Johns Hopkins Bloomberg School of Public Health; Director, Center for Immunization Research
What have we learned about data-driven policy decisions?

What should we anticipate in the future?

Ruth Karron
18 November 2021
Beginning with the conclusion...

• As a global community, we have already developed frameworks to consider and plan for the needs of pregnant people in the context of epidemic and endemic diseases

• Pregnant people have been and will continue to be disadvantaged unless deliberate and concerted actions are taken by governments, regulators, vaccine developers, and supranational organizations
PREVENT Guidance

• **22 Recommendations** across 3 domains to equitably and responsibly include the interests of pregnant people and their offspring in the development and delivery of epidemic vaccines

Available Open Access in Vaccine: https://doi.org/10.1016/j.vaccine.2019.01.011

English, Spanish and French versions also available at: vax.pregnancyethics.org
The Presumption of Exclusion

Exclusion from research

Lack of Evidence

Exclusion from delivery

perpetuated cycle of exclusion and evidence gaps on products and platforms

Morally unacceptable... need a new paradigm!
The Presumption of Inclusion: a virtuous cycle

Include pregnant women in vaccine R&D and deployment

**UNLESS**
scientific & ethical justification for exclusion
(e.g., *that risks > benefits*)

- **not automatic** inclusion of pregnant women in every vaccine study or campaign **BUT**
- changes the default: burden of proof for exclusion, not inclusion

Greater knowledge about platforms, adjuvants, and vaccine technologies to inform future research and use

Appropriate inclusion in research
Better evidence of safety & immunogenicity
Appropriate inclusion in vaccine campaigns
Enhanced evidence for use in future outbreaks
PREVENT Guidance in the context of the COVID-19 pandemic

- **Recommendation #7**: Pregnant women should not be left behind as new technologies are developed  

- **Recommendation #9**: Non-clinical studies required prior to clinical evaluation during pregnancy (DART studies) should be conducted early in clinical development, as promising and appropriate candidates move to phase 2  

- **Recommendation #11**: Pregnant women should have the opportunity to enroll in studies conducted during outbreaks when prospect of benefit > risk for pregnant women, their offspring, or both  

- **Recommendation #17**: Pregnant women should be offered vaccines as part of an outbreak or epidemic response. Pregnant women should only be excluded if a review of available evidence by relevant experts concludes that the risks to pregnant women and their offspring from the vaccine are demonstrably greater than the risks of not being vaccinated.
COVID-19 vaccine policies for pregnant and lactating people worldwide.

What have we learned about data-driven policy decisions?

COVID-19 Maternal Immunization Tracker (COMIT) provides:

• a global snapshot of public health policies that influence access to COVID-19 vaccines for pregnant and lactating people.

• maps, tables and country profiles to document the response to the dynamic state of the pandemic and emerging evidence.

https://www.comitglobal.org/
COVID-19 vaccine policies for pregnant and lactating people worldwide.

Policies for COVID-19 vaccination during pregnancy have evolved over time

23 April 2021

16 November 2021

www.comitglobal.org
COVID-19 vaccine policies for pregnant and lactating people worldwide.

Absence of data delayed permissive recommendations

106 countries/territories (54%) that issued guidance on COVID-19 vaccine and eligibility referenced the absence of safety or efficacy data in pregnant persons

Mozambique (Mar 2021): “As there are no data on efficacy and safety in specific population groups, children <15 years and pregnant women are excluded from this vaccination process. These groups may be vaccinated later, as soon as scientific evidence of safety and efficacy is produced.”

Countries also cited the absence of DART data as a reason to not permit use of certain vaccines in pregnancy.

France (April 2021): “As a precautionary measure, while awaiting the final results of studies carried out in animals for the AstraZeneca vaccine and in view of the influenza-like syndromes having been reported with this vaccine, it is recommended to give preference to pregnant women mRNA vaccines (Comirnaty® or Moderna®), or the Covid-19 Janssen® vaccine.”
Availability of data facilitated recommendations

65 countries/territories (33%) cited observational data, and in some cases, these data were cited as the primary reason for a shift in position, as in the Netherlands in July:

Netherlands (July 2021): “Pfizer and Moderna's vaccines against COVID-19 are mRNA vaccines. Based on the research data and efficacy of these vaccines, there is no reason to believe that these vaccines would be harmful when used during pregnancy. We now know that 90,000 pregnant women in the United States have been vaccinated with the mRNA vaccines from Pfizer and Moderna. No serious side effects have been reported. That is why it is recommended that all pregnant women - if they are called upon to do so - be vaccinated.”
Policy ≠ Uptake

% of U.S. Pregnant People Fully Vaccinated with COVID-19 vaccine as of 6 Nov 2021

https://covid.cdc.gov/covid-data-tracker/#vaccinations-pregnant-women
What should we anticipate in the future?

Without specific efforts and concerted plans for change, inequities for pregnant people may increase...

Speeding up vaccine development: Can we go from lab to jab in just 100 days?
# Acknowledgements

## Pregnancy Research Ethics for Vaccines, Epidemics, and New Technologies

### PREVENT

<table>
<thead>
<tr>
<th>Ruth Faden</th>
<th>Principal Investigator</th>
<th>Johns Hopkins Berman Institute of Bioethics</th>
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<tr>
<td>Carleigh Krubiner</td>
<td>Co-Principal Investigator</td>
<td>Johns Hopkins Berman Institute of Bioethics</td>
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<tr>
<td>Ruth Karron</td>
<td>Co-Principal Investigator</td>
<td>Johns Hopkins Bloomberg School of Public Health</td>
</tr>
</tbody>
</table>

| Margaret Little | Co-Investigator | Georgetown University Kennedy Institute of Ethics |
| Jon Abramson | Wake Forest University School of Medicine |
| Alejandro Cravioto | Universidad Nacional Autónoma de México Faculty of Medicine |
| Bruce Gellin | Sabin Vaccine Institute |
| David C. Kaslow | PATH Essential Medicine |
| Florencia Luna | FLACSO-Argentina Bioethics Program & CONICET |
| Jeanne Sheffield | Johns Hopkins University School of Medicine |

| Anne Lyerly | Co-Investigator | University of North Carolina Center for Bioethics |
| Richard Beigi | Magee-Womens Hospital of University of Pittsburgh Medical Center |
| Anna Durbin | Johns Hopkins Bloomberg School of Public Health |
| Swati Gupta | International AIDS Vaccine Initiative (IAVI) |
| Sonali Kochhar | Global Healthcare Consulting |

| Carla Saenz | Pan American Health Organization Regional Program on Bioethics |
| Paulina Tindana | Navrongo Health Research Centre |

Ruth Faden
Carleigh Krubiner
Eleonor Zavala
Chizoba Wonodi
Elana Jaffe
Andrew Nicklin
Rachel Gur-Arie
Regulatory guidance/role (FDA) – how does COVID pandemic change the path for vaccine approval and access for pregnant women – Regulatory framework for maternal vaccines in the future

Marion F. Gruber, PhD
COVAX Maternal Immunization Working Group Webinar

Did the COVID-19 Pandemic Change the Path For Vaccine Approval and Access For Pregnant Women?

Regulatory Framework For Maternal Vaccines In The Future

Marion F. Gruber, PhD

November 18, 2021
Disclaimer

• The following opinions and statements made represent my personal views.
• The opinions expressed herein do not represent those of FDA.
• The statements made have not been evaluated by FDA.
COVID-19 Pandemic – Situation presenting for pregnant women

• Pregnant women are at increased risk from complications due to COVID-19 leading to adverse pregnancy outcomes.

• FDA encouraged COVID-19 vaccine developers to present a plan for including pregnant women early in COVID-19 vaccine trials.
  • Vaccine manufactures did not propose plans on gathering safety and immunogenicity in pregnant women early in development.

• DART studies were the rate limiting step with respect to inclusion of pregnant women in clinical trials

• Pregnant women were excluded from participation in phase 3 clinical safety and efficacy trials with COVID-19 vaccines.

• Data from women with inadvertent pregnancies in these trials were limited and did not allow conclusions about the safety and effectiveness of candidate COVID vaccines in pregnancy.
Vaccine Development Pathway: Current Approach

- Proof of concept studies
- Local tolerance and repeat dose toxicity testing

Safety, immunogenicity & efficacy studies in non-pregnant individuals

Post-authorization/postmarketing studies in pregnant individuals

R&D | Pre-clin | Phase 1 | Phase 2 | Phase 3 | BLA | Phase 4

DART Studies
FDA Initiatives

- Pregnant and lactating women should not be protected from participation in research, but rather should be protected through participation in research.
- FDA convened the Vaccines and Related Biological Products Advisory Committee (VRBPAC) in November 2015 to publicly discuss clinical trial considerations for vaccines for use in pregnancy.
- VRBPAC acknowledged that development of vaccines for use during pregnancy is possible with consideration of unique scientific, clinical and regulatory considerations.
- Manufacturers should seek guidance on clinical development programs for vaccine to be administered during pregnancy.
# Highlights Of Recent Pregnancy And Lactation Activities in the United States And Europe

<table>
<thead>
<tr>
<th>Activity</th>
<th>Year</th>
<th>Region and agency</th>
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</thead>
<tbody>
<tr>
<td>Content and Format of Labeling for Human Prescription Drug and Biological Products: Requirements for Pregnancy and Lactation Labeling</td>
<td>2014</td>
<td>US, US Food and Drug Administration</td>
</tr>
<tr>
<td>Task Force on Research Specific to Pregnant Women and Lactating Women (PRGLAC)</td>
<td>2016</td>
<td>US, US Department of Health and Human Services</td>
</tr>
<tr>
<td>PRGLAC Report to Congress</td>
<td>2018</td>
<td>US, Department of Health and Human Services</td>
</tr>
<tr>
<td>ConcePTION – Continuum of Evidence from Pregnancy Exposures, Reproductive Toxicology and Breastfeeding to Improve Outcomes Now</td>
<td>2019</td>
<td>Europe, Innovative Medicines Initiative</td>
</tr>
<tr>
<td>Guideline on Good Pharmacovigilance Practices: Pregnant and Breastfeeding Women</td>
<td>2019</td>
<td>Europe, European Medicines Agency</td>
</tr>
<tr>
<td>Programme of Work: Research to Support the Safer Use of Medicine during Pregnancy</td>
<td>2019</td>
<td>UK, Medicines and Healthcare products Regulatory Agency</td>
</tr>
<tr>
<td>Strategic Reflection: EMA Regulatory Science to 2025</td>
<td>2020</td>
<td>Europe, European Medicines Agency</td>
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Global Regulators Call For A Paradigm Shift Toward Inclusion of Pregnant Women in Clinical Trials

- **Research**: COVID-19 pandemic highlighted the need for addressing gaps in clinical trial research in pregnant women.

- **Call to Action**: Call to action on approaches to clinical trials in pregnant and lactating women.

- **Global Regulatory Strategy**: Experience with providing COVID-19 vaccines and therapeutics to pregnant women should be leveraged to form a global strategy for collecting systematic data for this patient population.

- **Collection of Safety Data**: Need for systematic plan to collect safety and immunogenicity data early in clinical development, e.g., “maternal immunization plan”?

FDA National and International Initiatives

Task Force on Research Specific to Pregnant and Lactating Women (PRGLAC)

To advise the Secretary of HHS on research and the development of safe and effective therapies specific to pregnant women and lactating women

Include and integrate pregnant women and lactating women in the clinical research agenda

Proactive protocol planning for inclusion of pregnant women

ICRMA Workshop on Pregnancy & Lactation

Support for international collaboration and a global strategy for collecting systematic data in pregnant women

Pregnancy and Lactation Cluster

Working Group formed by the FDA Office of Global Policy and Strategy, FDA medical product centers, EMA and MHRA

To foster a consistent global approach across regulatory jurisdictions to assure evidence-based safe and effective use of medicines during pregnancy and lactation
Potential Vaccine Development Pathway: Integration of Studies in Pregnant Women

- **DART studies**
- **Safety, immunogenicity & efficacy studies in non-pregnant individuals**
- **Phase 1 / 2 studies**
- **Safety, immunogenicity & efficacy studies in pregnant individuals**
- **Phase 1**
- **Phase 2**
- **Phase 3**
- **Phase 4**
- **BLA**
- **Post-authorization/postmarketing studies in non pregnant & pregnant individuals**
Concluding Remarks

• The COVID-19 pandemic highlighted:
  - The need for including pregnant women in pre-licensure clinical trials
  - Necessity of “paradigm shift” towards inclusion of pregnant and lactating women in clinical trials

• Global regulators put forth a united call to action for including pregnant women in medical research and opportunities for change in nonclinical, clinical and post-marketing data collection
THANK YOU
Obstetric professional societies’ role in supporting access of vaccines for pregnant women

Linda Eckert
MD
Professor Obstetrics & Gynecology
Adjunct Professor, Global Health
University of Washington
Obstetric professional societies role in supporting access of vaccines for pregnant individuals

LINDA O ECKERT, MD, FACOG
Professor, Department of Obstetrics & Gynecology
Adjunct Professor, Department of Global Health
University of Washington

November 18, 2021
FINANCIAL DISCLOSURES

No disclosures
Practicing obstetrician for ~30 years – including Liberia in 1987 when tetanus was huge killer of moms and babies

WHO in 2009 as the HPV vaccine focal point and 2014 began consultancies with WHO in maternal immunization

GAIA as the obstetrics coordinator for developing key terms of interest

ACOG Expert Immunization Advisory Group since its 2011 inception

GAVI immunization review committee 2012-2018, and 2020 ongoing

ACOG Liaison to ACIP 2019
Began in 2011
- Group of ~12 Ob/Gyns and Peds – most with ID training
- Advise ACOG on policy and also create educational materials
- ACOG staff members very active
- Flu and Tdap recommendations in Pregnancy

PANDEMICS/EPIDEMICS EXPANDED NEED AND RESPONSES
- H1N1 Pandemic – quite active
- ZIKA – began producing rapid cycle information and advice
When Covid hit – ACOG IEWG was poised to act

**Expertise**
- Third time around in OB ID “urgent/emergent” situation
- Front line providers
- Vaccine researchers/experts- PASSIONATE BELIEVERS in maternal immunization

**Cross leadership**
- SMFM leaders
- CDC ACIP past and current voting members
- VRPAC
- Peds ID

**Formed active writing subgroups – with standing calls**
- Covid working group
WHAT HAPPENED: a case study of the COVID-19 vaccine in the US – vaccine clinical trials

Development of the vaccine
- Accelerated process given high public interest and adequate funding
- Pregnant persons were EXCLUDED from clinical trials despite high level advocacy by key professional organizations to include them.

Recommendations were made by ACOG and SMFM, TO INCLUDE the pregnant population in clinical trials
WHAT HAPPENED: a case study of the COVID-19 vaccine in the US-initial vaccine data

Presentation of results of clinical trials to:

- Food and Drug Administration (FDA) for consideration of Emergency Use Authorization (EUA)
- CDC’s Advisory Committee for Immunization Practices (ACIP)
- DART data: only available for Pfizer

ACOG and SMFM in alignment prepare joint statements highlighting the need for vaccines TO BE AVAILABLE to the pregnant population given risks for extreme morbidity and mortality with COVID-19 illness (published 1 day following ACIP vote).
ACOG Practice Advisory

Comprehensive clinical guidance for ACOG members regarding COVID-19 Vaccination for Pregnant and Lactating Individuals.

MULTIPLE UPDATES
Latest: Nov 3, 2021

Conversation Guide for Clinicians

Highlights the main conversation points for clinicians from ACOG’s Practice Advisory to help discuss COVID-19 vaccines with pregnant individuals.

➢ Intended to help guide risk/benefit conversations
Vaccinating Pregnant Individuals: Eight Key Recommendations for COVID-19 Vaccination Sites

- Brand new resource from ACOG intended for all variations of COVID-19 vaccination sites
- Provides key recommendations from ACOG regarding COVID-19 vaccines and pregnancy
- Not intended to be a guide for risk/benefit conversations
Statement on Access to COVID-19 Vaccines for Pregnant Individuals

In response to reports of pregnant individuals being denied COVID-19 vaccines simply because of their pregnancy status, ACOG leveraged the Maternal Immunization Task Force to publish a joint statement with 17 partner organizations, further advocating for pregnant individuals to be free to make their own decision regarding their health, in conjunction with their clinical care team when appropriate.
Patient Education Resources

COVID-19 resources on ACOG’s Patient Education Portal include:

- Expert columns
- Frequently Asked Questions
Coding for COVID-19 Immunizations

Brand new practice management resource outlining coding specifics for COVID-19 vaccines.
ACOG (and SMFM) quickly responded to World Health Organization Recommendations

• WHO recommendations for both the Pfizer and Moderna vaccines initially explicitly stated that these vaccines should not be given to pregnant women unless they are high-risk of exposure, such as health care workers.

• These recommendations did not align with CDC nor ACOG and other obstetric medical societies.
Recognizing that the WHO recommendations would create confusion among clinicians and the public, ACOG and SMFM worked quickly to put out a statement affirming its recommendations that COVID-19 vaccines should be available to all pregnant individuals who are eligible and choose to be vaccinated.

- This statement yielded immense engagement in ACOG social media.
WHO Revised Recommendations

- Shortly after the ACOG statement and strong engagement and support from members, WHO revised their recommendation to be slightly more permissive:

  “those pregnant women at high risk of exposure to SARS-CoV-2 (e.g. health workers) or who have comorbidities which add to their risk of severe disease, may be vaccinated in consultation with their health care provider.”
WHAT HAPPENED: a case study of the COVID-19 vaccine in the US- data in pregnant individuals builds

Start of the pandemic

• Knowledge about increased morbidity and mortality with influenza, also SARS, MERS, in pregnancy.

• Uncertainty about impact of COVID-19 illness in pregnant individuals.

- CDC surveillance
- Establishment of national and regional registries and collaborations
  - PRIORITY registry (UCSF)
  - Washington State COVID-19 in Pregnancy Collaborative
- Site specific data (i.e. New York)
WHAT HAPPENED: a case study of the COVID-19 vaccine in the US – vaccines recommended

Increasing studies showing 1) safety of COVID-19 vaccines in pregnancy and lactation and 2) risk with COVID-19 illness and 3) successful antibody transfer

- Statements ACOG, SMFM and CDC RECOMMENDING COVID-19 vaccines for pregnant people

Messaging by:
- CDC, national groups
- Obstetrical associations
- State departments of health
- Hospital systems provider groups
- Other health groups

Recipients:
- Health providers
- Pregnant people

WHAT HAPPENED: a case study of the COVID-19 vaccine in the US

ONGOING ADVOCACY BY OBSTETRIC SOCIETIES

• ACOG also used their media department to reach out, and encouraged all members of Expert Immunization Workgroup to take interviews
  • IMPLICATIONS FOR ME as the ACOG Liaison to CDC: Over 20 different conversations with reporters
  • Liaised with media and University of Washington
• ACOG now recruiting vaccine champions to better equip and create a cadre of spokespersons for local educational and adovacy efforts
ACOG is RECRUITING

COVID-19 Vaccine Confidence Champion Network

On September 29, 2021 CDC issued an urgent health advisory to increase COVID-19 vaccination among people who are pregnant, recently pregnant, who are trying to become pregnant, or who might become pregnant in the future to prevent serious illness, deaths, and adverse pregnancy outcomes. The advisory also calls on health departments and clinicians to educate pregnant people on the benefits of vaccination and the safety of recommended vaccines. ACOG is looking for Champions committed to enthusiastically recommending COVID-19 vaccination and facilitating conversations in an effort to increase confidence in the vaccines, the vaccinator, and the health system.
SOGC Statement on COVID-19 Vaccination in Pregnancy

POLIQUIN, V; CASTILLO, E; BOUCOIRAN, I; WONG, J; WATSON, H; YUDIN, M; MONEY, D; VAN SCHALKWYK, J; ELWOOD, C on behalf of the Infectious Disease Committee of the Society of Obstetricians and Gynaecologists of Canada

Original date: December 18, 2020
Revised and reaffirmed date: May 25th, 2021

Gynecologists and Obstetricians Working Group to Face the COVID-19 Pandemic in Brazil: Successful Experience to be Followed

Silvana Maria Quintana¹  Geraldo Duarte¹

¹ Faculdade de Medicina, Universidade de São Paulo, Ribeirão Preto, SP, Brazil


• Ministry of Health established 17 member speciality working group for Covid-19
• Also developed online surveillance system to track pregnancy morbidity and mortality*

"the partnership with support of the Gynecology and Obstetrics Specialty Societies in the country was essential to broaden the debate and publicize the safety and effectiveness of vaccines during pregnancy and puerperal period”

"the effects of vaccination reflected in the reduction of maternal mortality by ~92% in our country.”

*https://observatorioobstrico.shyinyapps.io/covid_gest_puerp.bv/
Up-to-Date page on Society links to COVID-19 information

The content on the UpToDate website is not intended nor recommended as a substitute for medical advice, diagnosis, or treatment. Always seek the advice of your own physician or other qualified health care professional regarding any medical questions or conditions. The use of UpToDate content is governed by the UpToDate Terms of Use. ©2021 UpToDate, Inc. All rights reserved.

Society guideline links: COVID-19 – Obstetric and neonatal health care

Introduction

This topic includes links to society and government-sponsored guidelines from selected countries and regions around the world. We will update these links periodically; newer versions of some guidelines may be available on each society's website. Some societies may require users to log in to access their guidelines.

Includes links to International Societies (FIGO), and multiple continents/regions: UK, India, S.America, N.America...
Summary: Role of Obstetric Professional Societies

OBSTETRIC PROFESSIONAL SOCIETIES CAN AND DO PLAY AN IMPORTANT ROLE IN SUPPORTING ACCESS OF VACCINES FOR PREGNANT WOMEN

- Established body of experts, experienced with maternal immunization, public health and infectious diseases, and familiar with roll of policy is critical
- Early engagement and cross collaboration across similar societies and pools of expertise
- Point persons for communication and organization critical
- Excellent opportunity for improving international discussion and advocacy

PROACTIVE PLANNING IS CRITICAL
Summary: Role of Obstetric Professional Societies

ACKNOWLEDGEMENTS

- ACOG COVID writing group: Sarah Carroll, ACOG – immense leadership
- Laura Riley, Rich Beigi, Linda O Eckert, Brenna Hughes, Denise Jamieson, Geeta Swamy, Mark Turrentine
- COVID work group at CDC
- Research colleagues: Drs. Alisa Kachikis and Janet Englund at University of Washington
- Media contacts: Jamila Vernon with ACOG, Barbara Clements with UW
QUESTIONS?
Q&A
Session 4
Roundtable Discussion on Pandemic preparedness, Maternal immunization post COVID-19

Moderator
Denise Jamieson, MD MPH
James Robert McCord Professor &
Chair Department of Gynecology & Obstetrics,
Emory University School of Medicine
PANELISTS

Cristiana Toscano MD, PhD,
Professor at the Federal University
Goiás in Brazil and Member of the
PAHO TAG and WHO SAGE working
group on COVID-19 vaccines

Delese Mimi Darko
Chief Executive Officer,
Ghana Food and Drugs Authority

Sami Gottlieb
Medical Officer, World Health
Organization, Dept of Sexual and
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Ruth Karron
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Associate Professor of Clinical Pharmacology at
Eduardo Mondlane University, President of the National
Pharmacovigilance Committee, Member of Technical-
Scientific Committee for the Prevention and Response
to the Covid-19 Pandemic Maputo, Mozambique

Linda Eckert
Professor Obstetrics & Gynecology
Adjunct Professor, Global Health
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<tbody>
<tr>
<td>Cristiana Toscano</td>
<td>1. What data are needed for the next pandemic and what types of surveillance systems (pre and post vaccine roll out) should be set up?</td>
</tr>
<tr>
<td>Delese Mimi Darko</td>
<td>2. What data are needed to characterize 1) the susceptibility and severity of disease in pregnancy and pregnancy outcomes, and 2) the safety and efficacy of potential interventions such as vaccines. How should these data be collected and how could the data collection and sharing be made more efficient?</td>
</tr>
<tr>
<td>Sevene Esperança</td>
<td>3. What lessons learned from COVID-19 can be applied to future vaccines for pregnant women?</td>
</tr>
<tr>
<td>Sami Gottlieb</td>
<td>4. How can we improve communication around maternal vaccination to improve maternal acceptance? (eg. when to share information, what type of information, by whom?) Is knowing results from preclinical studies (e.g. DART) reassuring/sufficient for OB providers and vaccinators when deciding about vaccination of pregnant women?</td>
</tr>
<tr>
<td>Ruth Karron</td>
<td>5. What lessons learned from COVID-19 can be applied to future pandemics in terms of protecting pregnant persons; what else should we do now to prepare for the next pandemic?</td>
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<tr>
<td>Linda Eckert</td>
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Wrap-up

Ajoke Sobanjo-ter Meulen
MD MSc, Senior Program Officer, Global Health, Pneumonia, Bill & Melinda Gates Foundation, USA

Flor Munoz
MD MSc, Associate Professor, Pediatrics-Infectious Disease, Baylor College of Medicine, USA