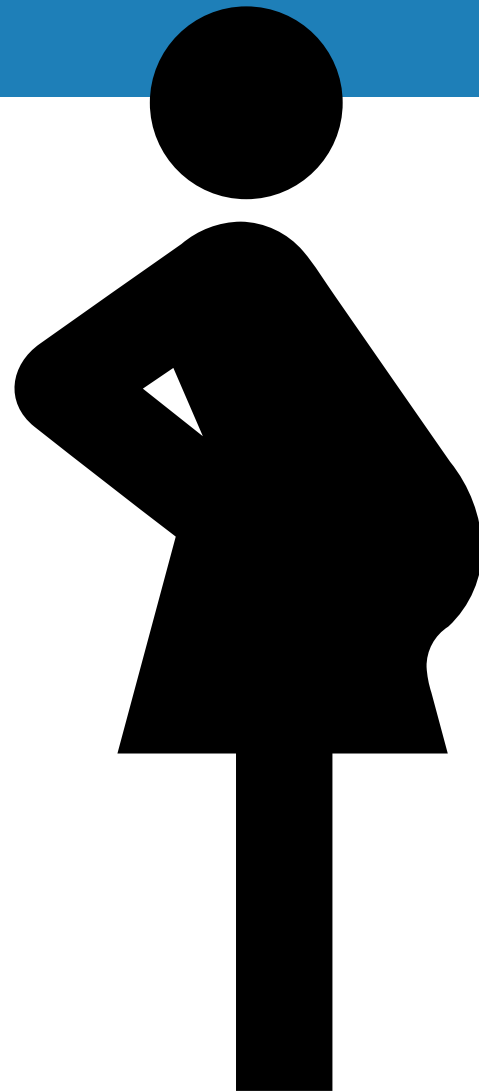


Overview of COVID-19 in pregnancy

Case severity definitions
Impact on pregnancy and perinatal outcomes

Professor Michelle Giles, 11 January 2022



What
might
happen if
I get
COVID?

How will
it affect
me?

How will
it affect
my
baby?

What can
be done to
treat me
during
pregnancy



Step one: Triage of patients with suspected COVID-19 using a standardized tool (WHO/IFRC Interagency Integrated Triage Tool)

- Initial assessment, management and stabilization
- Refer to appropriate COVID-19 care destination (health facility, community facility, home) according to patient's medical needs and established pathways
- For patients with COVID-19 of any severity assessed in a clinic or hospital, include consideration of patients' values and preferences and local and national policy if available, to guide management decisions including admission to hospital and to the ICU

An estimated 75% of pregnant women may be asymptomatic

Symptom	Non-Pregnant	Pregnant
Fever*	83-99%	31-49%
Cough	59-82%	33-50%
Fatigue	44-70%	20-44%
Shortness of breath	31-40%	15-28%
Myalgia*	17- 42%	12-27%

BMJ 2020;370; RCOG Coronavirus (COVID-19) Infection in Pregnancy Version 14.1;
Aust N Z J Obstet Gynaecol 2020

Case Severity Definition: Mild

Symptomatic patients without evidence of viral pneumonia or hypoxia

Mild illness

Person with no features suggesting a complicated clinical course

- No symptoms or only mild upper respiratory tract symptoms
- No new shortness of breath or reduction in oxygen saturation
- Stable clinical picture

Case Severity Definition: Moderate

Adolescent or adult with clinical signs of pneumonia (fever, cough, dyspnoea) but no signs of severe pneumonia, including $\text{SpO}_2 \geq 90\%$ on room air

While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.

Caution: The oxygen saturation threshold of 90% to define severe COVID-19 is arbitrary and should be interpreted cautiously. For example, clinicians must use their judgment to determine whether a low oxygen saturation is a sign of severity or is normal for a given patient with chronic lung disease. Similarly, a saturation $>90\text{-}94\%$ on room air is abnormal (in patient with normal lungs) and can be an early sign of severe disease, or that the patient is on a downward trend. Generally, if there is any doubt, err on the side of considering the illness as severe.

Moderate Illness

Moderate

Stable patient with respiratory and/or systemic symptoms or signs. Able to maintain oxygen saturation above 92% (or above 90% for patients with chronic lung disease; 94% for pregnant women) with up to 4L/min oxygen via nasal prongs, with a respiratory rate <30 breaths per minute

- Clinical or radiological signs of lung involvement
- Fever >38 or persistent cough
- No indicators of severe disease

Case Severity Definition: Severe

Adolescent or adult with clinical signs of pneumonia (fever, cough, dyspnoea) plus one of the following: respiratory rate > 30 breaths/min; severe respiratory distress; or SpO₂ < 90% on room air.

While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.

Severe illness

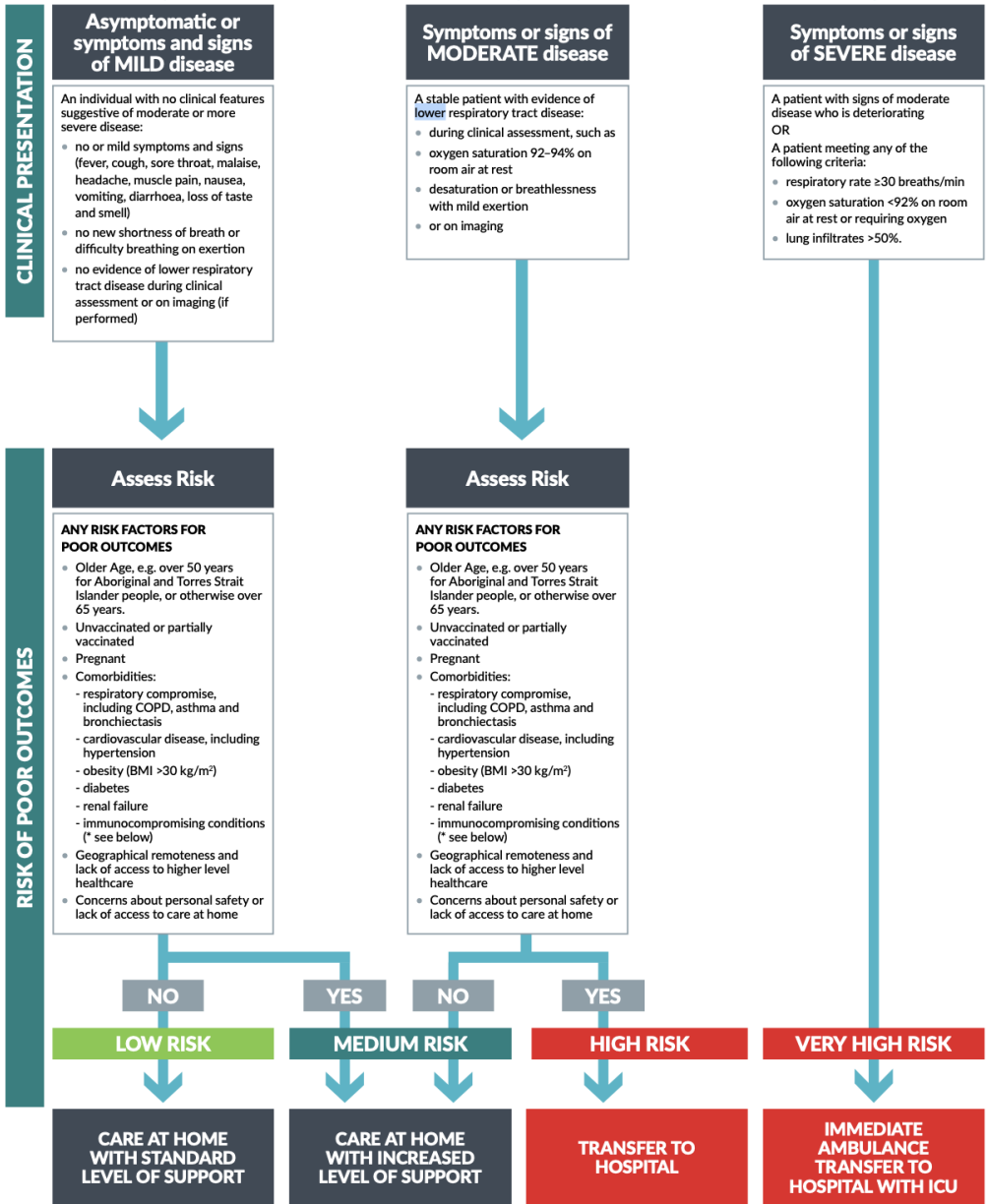
- Respiratory rate >30 breaths per minute
- Oxygen saturation <92% at rest with 4L/min via nasal prongs

Critical Illness

- **Respiratory failure OR**
- **Other signs of significant deterioration**
- **Hypotension or shock**
- **Impairment of consciousness**
- **Other organ failure**



ADULT WITH CONFIRMED OR PRESUMED COVID-19



National COVID-19 Clinical Evidence Taskforce
17 December 2021
www.covid19evidence.net.au

Impact of COVID-19 infection during pregnancy on maternal and perinatal outcomes

- Global meta-analysis of 192 cohort studies (131 comparative, 61 non-comparative):
 - USA (58), China (31), Italy (17), Spain (15), Turkey (8), UK (7), India (7), Brazil (5), France (5), Mexico (5), Iran (3), Portugal (3), Belgium (2), Denmark (2), the Netherlands (2), Peru (2), Sweden (2), Bangladesh (1), Chile (1), Estonia (1), Israel (1), Japan (1), Germany (1), Ireland (1), Kuwait (1), Pakistan (1), Qatar (1), Romania (1), Russia (1), and Switzerland (1)

Pregnant women with COVID-19 vs non-pregnant women with COVID-19:

Maternal outcomes

- Pregnant women with COVID-19:
 - were **more likely to be admitted to ICU** (OR = 2.13; 95% CI 1.54–2.95)
 - had **similar risk of maternal death** (OR = 0.96; 95% CI 0.79–1.18)
 - were **more likely to require invasive ventilation** (OR = 2.59; 95% CI 2.28–2.94)

Perinatal outcomes

- Pregnant women with COVID-19 were at **higher risk of preterm birth** (OR = 1.47; 95% CI 1.14–1.91)
- Pregnant women with COVID-19 were at **higher risk of stillbirth** (OR = 2.84; 95% CI 1.25–6.45)
- Neonates of pregnant women with COVID-19 had **increased risk of being admitted to ICU** (OR = 4.89; 95% CI 1.87–12.81)

Most common symptoms were fever (40%), cough (41%), and dyspnea (21%)

Updated Living Systematic Review

- Submitted for publication (435 studies included)
- The most common clinical manifestations in pregnancy were fever and cough (36%)
- Compared with non-pregnant women pregnant women with covid-19 were less likely to report symptoms of fever (0.66, 0.52 to 0.86), dyspnoea (0.75, 0.59 to 0.97), cough (0.77, 0.65 to 0.91), and myalgia (0.53, 0.36 to 0.78)
- Odds of admission to ICU (odds ratio 2.61, 1.84 to 3.71) and invasive ventilation (2.41, 2.13 to 2.71) higher in pregnant women compared to non pregnant women

Updated Living Systematic Review: Maternal outcomes

- ↑ maternal age, high BMI, non-white ethnicity, pre-existing maternal comorbidity including chronic hypertension and diabetes, and pregnancy specific complications such as gestational diabetes, were associated with serious complications including admission to ICU, invasive ventilation and maternal death.
- Compared to pregnant women without covid-19, those with the disease had increased odds of
 - maternal death (odds ratio 6.09, 1.82 to 20.38)
 - admission to ICU (5.41, 3.59 to 8.14)
 - caesarean section (1.17, 1.01 to 1.36)

Updated Living Systematic Review: Perinatal outcomes

Compared to pregnant women without covid-19, those with the disease had increased odds of

- preterm birth (1.57, 1.36 to 1.81)
- stillbirth (1.81, 1.38 to 2.37)
- admission to the neonatal intensive care unit (2.18, 1.46 to 3.26)

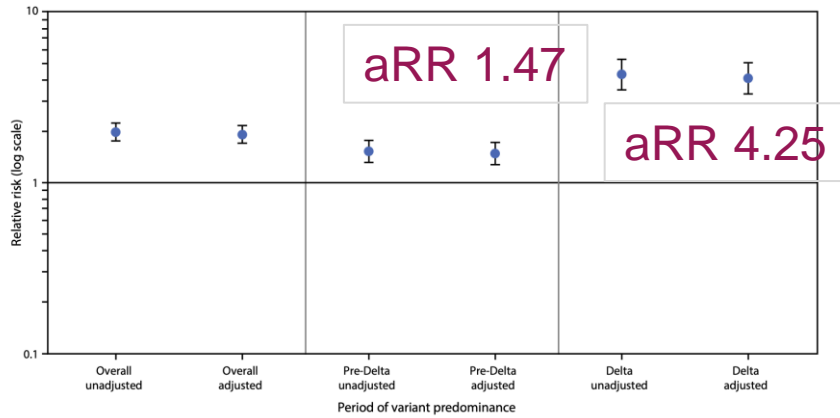
Courtesy of Mercedes BONET SEMENAS

Risk for Stillbirth Among Women With and Without COVID-19 at Delivery Hospitalization — United States, March 2020–September 2021

Carla L. DeSisto, PhD¹; Bailey Wallace, MPH¹; Regina M. Simeone, PhD¹; Kara Polen, MPH¹; Jean Y. Ko, PhD¹; Dana Meaney-Delman, MD¹; Sascha R. Ellington, PhD¹

1,249,634 deliveries

FIGURE. Relative risk for stillbirth among women with COVID-19 at delivery hospitalization compared with those without COVID-19 at delivery hospitalization — Premier Healthcare Database Special COVID-19 Release, United States, March 2020–September 2021^{1,2,5}



Abbreviation: RR = relative risk.
¹ Deliveries with discharge dates during March 2020–June 2021 were considered to have occurred during the period preceding SARS-CoV-2 B.1.617.2 (Delta) variant predominance, whereas those with discharge dates during July–September 2021 were considered to have occurred during the period of Delta predominance.
² Overall: unadjusted RR = 1.96 (95% CI = 1.74–2.21); adjusted RR = 1.90 (95% CI = 1.69–2.15); pre-Delta: unadjusted RR = 1.52 (95% CI = 1.31–1.77); adjusted RR = 1.47 (95% CI = 1.27–1.71); Delta: unadjusted RR = 4.25 (95% CI = 3.46–5.22); adjusted RR = 4.04 (95% CI = 3.28–4.97); p-value for effect modification by period (pre-Delta period versus period of Delta predominance): <0.001.
⁵ Models accounted for within-facility and within-woman correlation, and were adjusted for maternal age, race/ethnicity (Hispanic, non-Hispanic Black, non-Hispanic White, and non-Hispanic other), primary payer (Medicaid, private insurance, and other), obesity, smoking, any diabetes, any hypertension, and multiple-gestation pregnancy.

Rates of stillbirth:
 Pre pandemic 0.59%
 Women without COVID 0.64%
 Pre-delta (with COVID) 0.98%
 Delta (with COVID) 2.7%

Receipt of mRNA Covid-19 Vaccines and Risk of Spontaneous Abortion

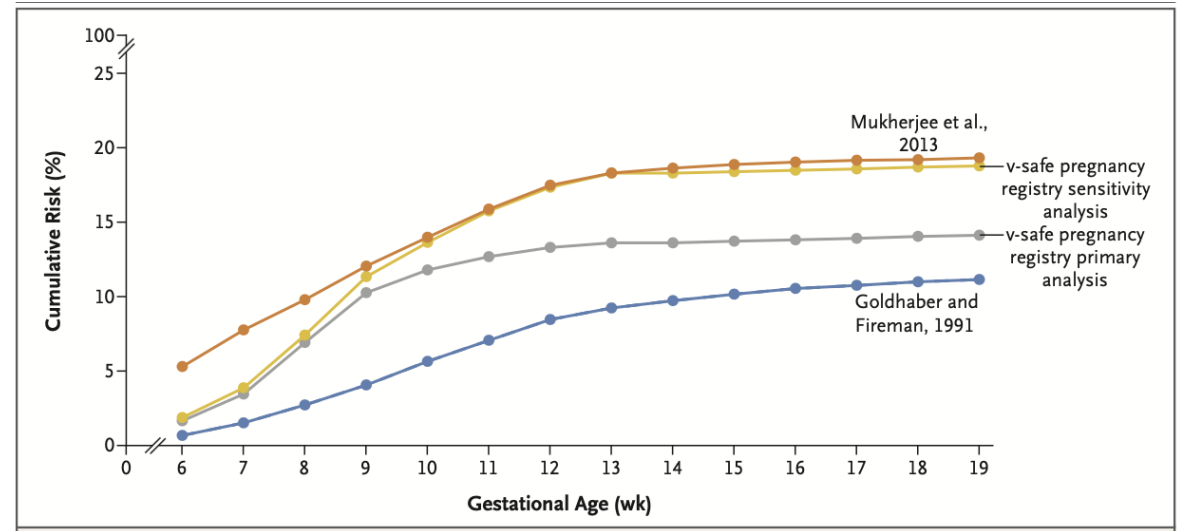


Figure 1. Cumulative Risk of Spontaneous Abortion in the v-safe Covid-19 Vaccine Pregnancy Registry and in Two Historical Cohorts.

Data from Mukherjee² were presented as race-specific rates and are provided here for White women to maximize comparability with the v-safe pregnancy registry.

New Engl J Med Oct 14, 2021

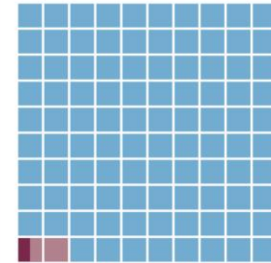
Key information on COVID-19 in pregnancy



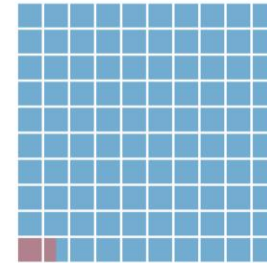
1st February 2021 to 30th September 2021

1714 pregnant women admitted to hospital with symptomatic COVID

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



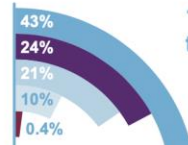
98.1% unvaccinated
1.5% one dose
0.4% two doses



98.7% unvaccinated
1.3% one dose

Outcomes of COVID-19 for pregnant women and their babies after admission to hospital with symptoms

Caesarean birth
Pneumonia
Respiratory support
Intensive care
Died



3371 women admitted

1st March 2020 to 11th July 2021

Premature
Admitted to neonatal unit
Stillborn



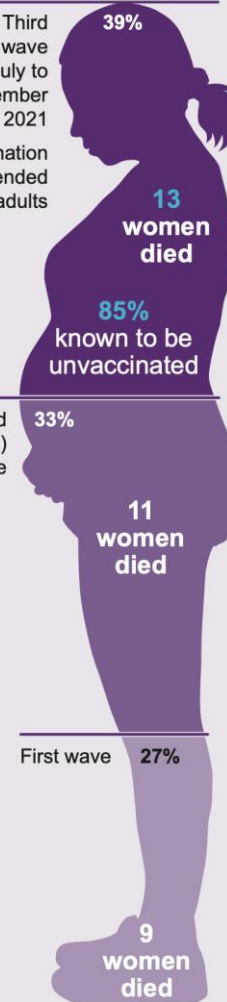
3036 babies born (335 women have not yet given birth)

Deaths of women with COVID-19 during pregnancy or up to six weeks after pregnancy

Third (Delta) wave July to September 2021

Vaccination recommended for all adults

Second (Alpha) wave



Omicron?

Thank you

