

1. Epidemiological and clinical characteristics

The reader may refer to the documents produced by the INSPQ: <https://www.inspq.qc.ca/covid-19> (in French).

COVID-19:Caractéristiques épidémiologiques et cliniques du COVID-19

https://www.inspq.qc.ca/sites/default/files/documents/maladies-infectieuses/2020-02-28_covid-19_fiche_tableau_clinique_inspq.pdf

2. Adverse pregnancy outcomes

There is not much literature currently available on the effects of SARS-CoV-2 infection in pregnant women with respect to adverse pregnancy outcomes.

The currently implicated strain of coronavirus (SARS-CoV-2) is the most recent of seven coronavirus strains that cause disease in humans. Of the remaining six strains, four cause only minor respiratory symptoms, and two have been associated with serious and sometimes fatal illnesses: severe acute respiratory syndrome (SARS) in 2003 and Middle East respiratory syndrome (MERS-CoV) since 2012.¹

There is, however, proximity between the genome of the current SARS-CoV-2 and SARS-CoV-1 (SARS agent).

For SARS-CoV-1, a study published in February 2020 reported on 12 pregnant women infected during the 2002–2003 epidemic (seven women in the first trimester of pregnancy and five women in the second and third trimesters). In the first trimester, four of the seven women experienced spontaneous abortions (SA), and in the second and third trimesters, two of the five women had intrauterine growth retardation and four of the five women delivered prematurely.^{2 3 4}

The CDC⁵ also mentions SA cases observed with SARS-CoV-1 and MERS-CoV.⁶

In a study of nine pregnant women with COVID-19 (between the 36th and 39th week of pregnancy), there were no documented intrauterine infections.⁷ There was also no intrauterine transmission with SARS-CoV-1.

A retrospective study of 10 newborns (including two twins) to mothers who had developed confirmed SARS-CoV-2 pneumonia during pregnancy was conducted between January 20 and February 5, 2020. The pregnant women had symptoms of fever and cough in four of the nine cases before delivery, in two cases at the time of delivery and in three cases after delivery. It should be noted that one pregnant woman also had diarrhea.

Four children were full term and six children were born prematurely; two infants were born with low birth weight (LBW); a number of children were born with respiratory problems (6), fever (2), thrombocytopenia with abnormal liver function (2), tachycardia (1), vomiting (1) and pneumothorax (1). At the time of article publication, on February 10, 2020, five children had been discharged from the hospital, one child had died and four children were still in the

¹ Coronavirus COVID-19 – Professionnels de la santé – MSSS, February 23, 2020.

² Favre, Guillaume et al., *2019-nCoV epidemic: what about pregnancies?* The Lancet, February 6, 2020.

³ Rasmussen, S. et al., *Coronavirus Disease 2019 (COVID-19) and Pregnancy: What obstetricians need to know*, American Journal of Obstetrics & Gynecology, February 18, 2020.

⁴ Qiao, J. *What are the risks of COVID-19 infection in pregnant women*, The Lancet, February 12, 2020.

⁵ CDC: *Centers for Disease Control and Prevention: the primary U.S. federal agency for public health protection.*

⁶ CDC, *Coronavirus Disease 2019 and pregnancy QR*, February 21, 2020.

⁷ Chen, Huijun et al., *Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records*, The Lancet, February 12, 2020.

hospital in stable condition. Causal association is unlikely with LBW but possible for preterm delivery (PTD) and newborn respiratory distress.

The pharyngeal swabs of nine out of the ten children, one to nine days after birth, were negative. The authors concluded that perinatal COVID-19 infection may cause problems in the newborn, but that vertical transmission remained to be confirmed.⁸

A case study⁹ of a pregnant woman who tested positive for SARS-CoV-2 reported that she was symptomatic (fever), travelled to a risk area and delivered a healthy newborn baby prematurely at 30 weeks' gestation. The samples taken from the child and the caregivers remained negative.

A final study reported on 13 pregnant women (maternal age between 22 and 36 years) hospitalized for fever accompanied by fatigue, three of whom had respiratory problems. The gestational age ranged from 28 to 36 weeks.

The clinical presentation of COVID-19 in these pregnant patients ranged from asymptomatic to serious complications including pneumonia requiring intensive care. Adverse pregnancy outcomes were reported: premature rupture of membranes, stillbirth, newborn respiratory distress. However, no serological evidence of vertical transmission of SARS-CoV-2 was documented.¹⁰

Knowledge of the diseases associated with the other two coronaviruses is currently the main source of information on adverse pregnancy outcomes and reports of serious complications: SA, PTD, complications in pregnant women and newborns (disseminated intravascular coagulation, renal failure, secondary bacterial pneumonia, sepsis (SARS), prematurity, intrauterine growth retardation (IUGR) and stillbirth (MERS)).^{11 12}

In addition, vertical transmission is still a subject of study.

3. Risk assessment and prevention and control measures in care settings and the community

The reader may refer to the documents produced by the INSPQ:

<https://www.inspq.qc.ca/covid-19> (in French).

CINQ : 2019-nCoV : Recommandations intérimaires sur les mesures de prévention et de contrôle des infections pour les milieux de soins aigus.

Comité permanent MRSI : COVID-19 (SARS-CoV-19) : Recommandations intérimaires sur les mesures de prévention et contrôle des infections à appliquer en présence d'une personne sous investigation, d'un cas probable ou confirmé ou d'un contact étroit dans la communauté.

CINQ : Évaluation et gestion du risque : Avis du CINQ : Gestion du risque pour la protection respiratoire en milieux de soins aigus.

⁸ Zhu, H. et al., Clinical analysis of 10 neonates born to mothers with 2019-n-CoV pneumonia, *Translational Pediatrics*, February 6, 2020.

⁹ Wang, X. et al., A case of 2019 novel coronavirus in a pregnant woman with preterm delivery, Department of Hepatology and Gastroenterology, Soochow University, China, February 2020.

¹⁰ Liu Y. et al., Clinical manifestations and outcome of SARS-CoV-2 infection during pregnancy, *Journal of Infection*, February 27, 2020.

¹¹ Rasmussen, S. et al., Coronavirus disease 2019 (COVID-19) and pregnancy: What obstetricians need to know, *American Journal of Obstetrics & Gynecology*, February 18, 2020.

¹² Favre, G. et al., Guidelines for pregnant women with suspected SARS-CoV-2 infection, *The Lancet*, March 3, 2020.

4. Recommendations for pregnant workers

In Québec, pregnant or nursing workers can take advantage of preventive reassignment under the “Pour une maternité sans danger program” provided for under the Act respecting occupational health and safety (AOHS)¹³.

The following recommendations are made in this legal context and are based on the following considerations:

In the current context of early case identification, containment and lack of community transmission:

Whereas:

During pregnancy, immunity is reduced¹⁴ and physiological and immunological changes make pregnant women more vulnerable to respiratory infections, including COVID-19;¹⁵

SARS-CoV-1 and MERS-CoV are associated with adverse pregnancy outcomes, and SARS-CoV-2 is related to SARS-CoV-1 and MERS-CoV in its genome, raising concerns that it may also be the cause of adverse pregnancy outcomes;¹⁶

Currently available knowledge on COVID-19 and pregnancy is limited to infections acquired in late pregnancy and is insufficient to suggest the absence of adverse pregnancy outcomes;

There is uncertainty about the impact of infection with SARS-CoV-2 in the early months of pregnancy;

There is a relatively rapid deterioration in some more vulnerable patients with respiratory problems in the course of an infection with SARS-CoV-2;¹⁷

The current assessment of risk to the pregnant woman and the fetus is based on previous experience with SARS and MERS, the studies available since the beginning of the SARS-CoV-2 outbreak, and the risk assessments issued by various national and international authorities;

Preventing the infection from being transmitted to others by a person under investigation for COVID-19, or by a probable or confirmed case of COVID-19 requires the implementation of administrative measures (e.g. triage and pre-triage, reduction in the number of personnel assigned to patient care), group protective measures (e.g. respiratory etiquette, isolation of cases), and protective measures such as adherence to basic practices and additional precautions, as well as the wearing of recommended personal protective equipment depending on the mode of transmission of infection;

No specific vaccine or treatment is currently available.

The precautionary principle¹⁸ must therefore guide the current recommendations.

¹³ An Act respecting occupational health and safety CQLR c S-2.1, sections 40 and 46.

¹⁴ Blackburn S., *Maternal, Fetal, & Neonatal Physiology*, Elsevier, 5th edition, 2017.

¹⁵ CDC, *Coronavirus Disease 2019 and pregnancy QR*, February 21, 2020.

¹⁶ SOGC, <https://www.sogc.org/en?> January 28, 2020.

¹⁷ CDC, *Interim Considerations for Infection Prevention and Control of Coronavirus Disease 2019 (COVID-19) in Inpatient Obstetric Healthcare Settings*, March 2020.

¹⁸ La prudence se traduit par la précaution dans le cas des risques potentiels et par la prévention dans le cas des risques avérés (INSPQ, *Gestion des risques en santé publique au Québec : cadre de référence*, 2016).

