

# Managing COVID-19 in OBGYN and MFM settings

## Critical Summary

- Pregnant women may be at greater risk from complications should they acquire COVID-19, caused by the enveloped virus SARS-CoV-2.
- SARS-CoV-2 can survive on surfaces for days, and one study has reported survival in aerosols for >3 hours.
- It is imperative infection prevention efforts are maximised in the OB/GYN and MFM setting to mitigate transmission risk to pregnant patients.
- Guidance from professional societies provide advice on infection prevention strategies, including ultrasound equipment disinfection, to minimize infection risks.



## Pregnancy and COVID-19 infection

The COVID-19 pandemic is caused by SARS-CoV-2, a novel enveloped virus.<sup>1</sup> According to the World Health Organization (WHO), COVID-19 can cause mild illness (fever, cough, headache), pneumonia, severe pneumonia and may develop into acute respiratory distress syndrome (ARDS) or sepsis.<sup>2</sup> Pregnant women may be considered a high-risk population due to the negative outcomes reported for COVID-19 during pregnancy.

An analysis from the US Centers for Disease Control and Prevention (CDC) COVID-19 suggests that pregnant women are at increased risk of severe illness compared with non-pregnant women. Specifically, the report shows an increased risk of an ICU admission (1 in 68 of pregnant versus 1 in 110 non-pregnant women, crude risk ratio 1.6, 95% CI 1.3-1.9) and mechanical ventilation (1 in 195 of pregnant versus 1 in 370 non-pregnant women, crude risk ratio 1.9, 95% CI 1.4-2.6). There was no noted increase in the rate of mortality (1 in 513 of pregnant versus 1 in 400 of non-pregnant women, crude risk ratio 0.8, 95% CI 0.5-1.3).<sup>3</sup>

Additionally, a systematic review of early reports showed that the most common adverse maternal-fetal outcome during COVID-19 infection with pneumonia was preterm birth <37 weeks (41%; 14/32 pregnancies across 6 studies).<sup>4</sup> Perinatal death was reported in 7% of cases including one stillbirth and one neonatal death (2/41; 5 studies). These increased rates of negative outcomes are broadly consistent with previous reports of other coronavirus infections (SARS-CoV or MERS-CoV) with pneumonia during pregnancy.<sup>4</sup> COVID-19 outcomes for the mother (0% fatality) were however more positive compared to SARS (29% fatality) and MERS (26% fatality).<sup>4</sup>

Immunological and physiological changes during pregnancy may impact COVID-19 vulnerability. During pregnancy, the anti-inflammatory T-helper 2 system tends to dominate over the microbicidal T-helper 1 system to protect the fetus.<sup>5,6</sup> This may increase susceptibility to viral infection and pregnant women are generally considered more susceptible to respiratory infection, although it is not yet clear whether this is the case with SARS-CoV-2.<sup>6,7</sup>

A range of immune responses have been described in COVID-19, which could impact pregnancy.<sup>6,7</sup> A positive nasopharyngeal swab of a neonate 16 hours after birth in a COVID-19 mother has been reported, though vertical transmission was not confirmed and remains to be shown. The full impact of COVID-19 on maternal-fetal health is difficult to estimate as with other emerging pathogens, and data continues to be gathered. With knowledge of coronavirus infection risks over the last 2 decades from SARS and MERS, it is imperative OB/GYN and MFM settings upscale infection prevention efforts to hinder the spread of SARS-CoV-2.

A number of key organisations have released guidance to support healthcare navigate this difficult time. This crosswalk of COVID-19 measures from the World Health

Organisation (WHO) followed by guidance specific to the practice of OB/GYN and MFM released by international professional societies, supports the need for more stringent infection prevention measures.



## COVID-19 precautions for healthcare settings

Table 1 summarises strategies from the World Health Organisation (WHO) for infection prevention during the pandemic.<sup>8</sup> All measures detailed in the table apply. Ensure local authorities are also consulted for variations in recommendations based on local epidemiology. The WHO guidance may be consulted for detailed recommendations on the strategies in Table 1 as well as additional information on administrative, environmental and engineering controls.

**Table 1.** COVID-19 infection prevention strategies from WHO.

Strategy	Purpose	Considerations
Patient isolation	Separate suspected or confirmed COVID-19 patients from the general patient population (source control).	Single patient rooms or dedicated wards: <ul style="list-style-type: none"> <li>• Standard precautions (hand and respiratory hygiene, use of PPE, injection safety practices, safe waste management, proper linens, environmental and medical device disinfection/sterilization) plus contact and droplet precautions (see below).</li> </ul>
Contact and droplet precautions	Protects healthcare workers and visitors from hospital-acquired COVID-19 transmitted through contact and respiratory droplets.	As per patient isolation, plus: <ul style="list-style-type: none"> <li>• Adequate ventilation</li> <li>• Dedicated staff, limited visitors and limited patient transport</li> <li>• PPE (medical mask, goggles/face shield, long-sleeved gown, gloves) as well as donning, doffing and disposal procedures</li> <li>• Medical equipment single-use or dedicated.</li> <li>• Reusable medical equipment thoroughly cleaned and disinfected if shared between patients.</li> <li>• Routine environmental cleaning and disinfection.</li> </ul>
Airborne precautions	Protects healthcare workers performing aerosolizing procedures from hospital-acquired COVID-19.	As per contact and droplet precautions, plus: <ul style="list-style-type: none"> <li>• Additional fluid-resistant gown or apron</li> <li>• Particulate respirator. Minimum specifications: US National Institute for Occupational Safety and Health (NIOSH)-certified N95, European Union (EU) standard FFP2, or equivalent.</li> </ul>

## Additional guidance specific to OB/GYN and MFM practice

Table 2 summarises considerations unique to the practice of OB/GYN and MFM from international professional societies. These sources can be consulted for detailed recommendations along with local authorities for variations in recommendations based on local epidemiology.

**Table 2.** COVID-19 prevention strategies from international OB/GYN and MFM professional societies.

Strategy	Considerations	Organisation(s)
Separation of newborns from infected mothers to mitigate SARS-CoV-2 transmission risk. <sup>9-12</sup>	Evaluate need on a case-by-case basis, since separation may be distressing for mothers in the postpartum period.	ISUOG, ACOG, SMFM, CDC
Respirators must be prioritized for and worn anywhere an aerosolizing procedure will/will likely be performed on a suspected or confirmed COVID-19 patient. <sup>9-12</sup>	ACOG recommends all medical staff caring for suspected or confirmed COVID-19 patients should use respirators. If universal testing is not in place and resources permit, respirators are recommended until the patient's status is known. <sup>10</sup>	ISUOG, ACOG, SMFM, CDC
Delay assisted reproduction treatments help avoid complications and mitigate unknown risks to maternal fetal health from SARS-CoV-2 transmission. <sup>13</sup>	Consult local recommendations for advice based on local epidemiology.	ESHRE
Minimise in-person consultations for normal pregnancies to prevent transmission risk. <sup>9,14</sup>	Changes to routine clinical practices should be informed by local requirements. <sup>9</sup>	SMFM
Minimise visitors to prevent transmission risk. <sup>9</sup>		
Limit consultations for higher risk pregnancies to once a week. <sup>14</sup>	Assess on case by case basis, twice weekly examinations may be needed. <sup>14</sup>	SMFM

ACOG: American College of Obstetricians and Gynecologists; CDC: US Centers for Disease Control and Prevention; ESHRE: European Society of Human Reproduction and Embryology; SMFM: Society for Maternal-Fetal Medicine; ISUOG: International Society of Ultrasound in Obstetrics & Gynecology.

## Ultrasound Infection Prevention

Ultrasound is a cornerstone of maternal-fetal care, and the ultrasound environment and equipment could become contaminated with SARS-CoV-2 during routine use. Recent studies show SARS-CoV-2 can persist on hard surfaces for several days and can persist in the air for up to 3 hours after aerosolization, highlighting the importance of disinfection to mitigate transmission risks.<sup>15,16</sup> The International Society of Ultrasound in Obstetrics & Gynecology (ISUOG), World Federation of Ultrasound in Medicine and Biology (WFUMB) and Society for Maternal-Fetal Medicine (SMFM) have released guidance on the disinfection of the ultrasound environment and equipment during the COVID-19 pandemic.<sup>14,17,18</sup>

The Spaulding classification continues to apply to ultrasound probes during the COVID-19 pandemic.<sup>17-19</sup> The Spaulding Classification is the universal framework for reprocessing

medical devices and forms the basis of international ultrasound probe reprocessing guidelines. The level of disinfection required before use is based on the patient contact site.

Low level disinfection (LLD) should be limited to probes scanning intact, healthy skin.<sup>19,20</sup> LLD inactivates enveloped viruses (e.g. SARS-CoV-2), the most susceptible group of pathogens to disinfection. It is important to apply the specified contact time to all probe surfaces, as with all manual processes. The US Environmental Protection Agency (EPA) has published a list of disinfectants for use against SARS-CoV-2.<sup>21</sup> The European Centers for Disease Control and Prevention (ECDC) advises disinfectants with virucidal activity authorised under the Biocidal Products Regulation can be used for SARS-CoV-2 disinfection.<sup>22</sup>

Transvaginal ultrasound probes must undergo high level disinfection (HLD) as they contact mucous membranes, and should be additionally be used with a sheath.<sup>14,17,18</sup> HLD inactivates all microbial life, except for some bacterial spores, within a standard cycle.<sup>20</sup> This efficacy spectrum includes enveloped viruses, as well as more difficult to kill pathogen groups such as vegetative bacteria, non-enveloped viruses, fungi and mycobacteria.<sup>19,20</sup> Automated, validated HLD ensures the critical parameters (e.g., contact time, temperature, concentration) are met every time on all surfaces of the probe head and handle.

During the COVID-19 outbreak, facilities may decide to perform universal HLD for all ultrasound probes, including surface probes. This extra margin of safety can provide peace of mind for facilities scanning patients, some of whom may not be infected or may be asymptomatic. ISUOG and the College of Intensive Care Medicine of Australia and New Zealand have suggested considering additional HLD of ultrasound equipment during the pandemic.<sup>17,23</sup>



## Conclusion

As the full impacts of COVID-19 emerge, OB/GYN and MFM settings continue to evaluate their infection prevention practices to protect maternal and fetal health, as well as the health of their healthcare workers. Disinfection of the ultrasound environment and equipment is an important part of infection prevention, and facilities may consider more frequent HLD as part of the fight against SARS-CoV-2.

Contact us today for your specific needs on point-of-care reprocessing, understanding when to HLD or for an educational session at your facility.

**nanosonics**  
Infection Prevention. For Life.

**References** 1. World Health Organization (WHO). Naming the coronavirus disease (COVID-19) and the virus that causes it. Date accessed: 30/03/2020. Accessible here: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it). 2. World Health Organization (WHO). Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected: Interim guidance V 1.2. Date accessed: 30/03/2020. Accessible here: <https://apps.who.int/iris/bitstream/handle/10665/331446/WHO-2019-nCoV-clinical-2020.4-eng.pdf?sequence=1&isAllowed=y>. 3. CDC. Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status. United States, January 22–June 7, 2020. Date accessed: 27/07/2020. Available at: [https://www.cdc.gov/mmwr/volumes/69/wr/mm6925a1.htm?s\\_cid=mm6925a1\\_w](https://www.cdc.gov/mmwr/volumes/69/wr/mm6925a1.htm?s_cid=mm6925a1_w). 4. Di Mascio D, Khalil A, Saccone G, Rizzo G, Buca D, Liberati M, et al. Outcome of Coronavirus spectrum infections (SARS, MERS, COVID-19) during pregnancy: a systematic review and meta-analysis. *Am J Obstet Gynecol* 2020;100:107. 5. Sykes L, MacIntyre DA, Yap XJ, Teoh TG, Bennett PR. The Th1:Th2 dichotomy of pregnancy and preterm labour. *Mediators Inflamm*. 2012;2012:967629. doi:10.1155/2012/967629. 6. Dashraath P et al. Coronavirus Disease 2019 (COVID-19) Pandemic and Pregnancy. *American Journal of Obstetrics and Gynecology*. (2020). doi: <https://doi.org/10.1016/j.ajog.2020.03.021>. 7. Liu H et al. Why are pregnant women susceptible to COVID-19? An immunological viewpoint. *Journal of Reproductive Immunology*. 139 (2020) 103122. 8. World Health Organization (WHO). Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected. 19 March 2020. WHO/2019-nCoV/IPC/2020.3. Accessible at: [https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-\(ncov\)-infection-is-suspected-20200125](https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125). 9. SMFM & SOAP 2020. Society for Maternal-Fetal Medicine and Society for Obstetric and Anesthesia and Perinatology Labor and Delivery COVID-19 Considerations. Accessed 6 April 2020. Available at: [https://s3.amazonaws.com/cdn.smfm.org/media/2277/SMFM-SOAP\\_COVID\\_LD\\_Considerations\\_3-27-20\\_\(final\)\\_PDF.pdf](https://s3.amazonaws.com/cdn.smfm.org/media/2277/SMFM-SOAP_COVID_LD_Considerations_3-27-20_(final)_PDF.pdf). 10. ACOG 2020. Practice Advisory. Novel Coronavirus 2019 (COVID-19). Accessed 6 April 2020. Available at: <https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2020/03/novel-coronavirus-2019>. 11. ISUOG 2020. ISUOG Interim Guidance on 2019 novel coronavirus infection during pregnancy and puerperium: information for healthcare professionals. <https://obgyn.onlinelibrary.wiley.com/doi/epdf/10.1002/uog.22013>. 12. CDC 2020. Interim Considerations for Infection Prevention and Control of Coronavirus Disease 2019 (COVID-19) in Inpatient Obstetric Healthcare Settings. Accessed 6 April 2020. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/inpatient-obstetric-healthcare-guidance.html>. 13. European Society of Human Reproduction and Embryology (ESHRE) 2020. Assisted reproduction and COVID-19. [https://www.eshre.eu/Press-Room/ESHRE-News#COVID19\\_April2](https://www.eshre.eu/Press-Room/ESHRE-News#COVID19_April2). 14. SMFM 2020. The Society for Maternal-Fetal Medicine COVID-19 Ultrasound Practice Suggestions. March 2020. [https://s3.amazonaws.com/cdn.smfm.org/media/2272/Ultrasound\\_Covid19\\_Suggestions\\_\(final\)\\_03-24-20\\_\(2\)\\_PDF.pdf](https://s3.amazonaws.com/cdn.smfm.org/media/2272/Ultrasound_Covid19_Suggestions_(final)_03-24-20_(2)_PDF.pdf). 15. van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, et al. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *The New England journal of medicine*. 2020;382(16):1564-7. 16. Chin A W H, Chu J T S, Perera M R A, et al. (2020). Stability of SARS-CoV-2 in different environmental conditions. *Lancet Microbe*. [https://doi.org/10.1016/S2666-5247\(20\)30003-3](https://doi.org/10.1016/S2666-5247(20)30003-3). 17. ISUOG Safety Committee Position Statement: safe performance of obstetric and gynecological scans and equipment cleaning in the context of COVID-19. March 2020. <https://www.isuog.org/uploads/assets/d03798de-11ff-4037-beecc9c1495d9572/e6f65fb1-f6af-4d94-beb02bb4ea78c0cc/ISUOG-Safety-Committee-statement-COVID19.pdf>. 18. WFUMB 2020. WFUMB Position Statement: How to perform a safe ultrasound examination and clean equipment in the context of COVID-19. [https://wfumb.info/wp-content/uploads/2020/03/WFUMB-covid19-document\\_FINAL2.pdf](https://wfumb.info/wp-content/uploads/2020/03/WFUMB-covid19-document_FINAL2.pdf). 19. Spaulding EH. Chemical disinfection of medical and surgical materials. In: Lawrence C, Block SS, editor. *Disinfection, sterilization, and preservation*. Philadelphia (PA): Lea & Febiger; 1968. p. 517-31. 20. Centre for Disease Control and Prevention (CDC) 2008. *Guideline for Disinfection and Sterilization in Healthcare Facilities*. 21. US EPA. List N: Disinfectants for Use Against SARS-CoV-2. <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>. 22. European Centre for Disease Prevention and Control (ECDC). Disinfection of environments in healthcare and nonhealthcare settings potentially contaminated with SARS-CoV-2. March 2020. [https://www.ecdc.europa.eu/sites/default/files/documents/Environmental-persistence-of-SARS-CoV-2-virus-Options-for-cleaning2020-03-26\\_0.pdf](https://www.ecdc.europa.eu/sites/default/files/documents/Environmental-persistence-of-SARS-CoV-2-virus-Options-for-cleaning2020-03-26_0.pdf). 23. Costello C et al. Prevention of pathogen transmission during ultrasound use in the Intensive Care Unit: Recommendations from the College of Intensive Care Medicine Ultrasound Special Interest Group (USIG). Published online 26 March 2020. DOI: <https://doi.org/10.1002/ajum.12205>.

**Nanosonics Limited** 14 Mars Road, Lane Cove, NSW 2066, Australia, T: +61 2 8063 1600 E: [info@nanosonics.com.au](mailto:info@nanosonics.com.au) [www.nanosonics.com.au](http://www.nanosonics.com.au)  
**USA & Canada. Nanosonics Inc.** 7205 E 87th Street, Indianapolis, IN 46256, USA T: 1-844-TROPHON 1-844-876-7466 E: [info@trophon.com](mailto:info@trophon.com) W: [www.trophon.com](http://www.trophon.com)  
**Nanosonics Europe Limited** Unit 2, Linfit Court, Colliers Way, Clayton West, Huddersfield, HD8 9WL, United Kingdom, T: 01484 860581 E: [ukinfo@nanosonics.co.uk](mailto:ukinfo@nanosonics.co.uk) W: [www.nanosonics.co.uk](http://www.nanosonics.co.uk)  
**Nanosonics Europe GmbH (EU Representative)** Poppenbütteler Bogen 66, 22399 Hamburg, Germany, T: +49 40 46856885 E: [info@nanosonics.eu](mailto:info@nanosonics.eu) W: [www.nanosonics.eu](http://www.nanosonics.eu)  
**Nanosonics Japan** 8F Yamato Building, 5-27-3 Sendagaya, Shibuya-ku, Tokyo, 151-0051 Japan, T: +81 (3) 6865 6648, E: [info@nanosonics.jp](mailto:info@nanosonics.jp) W: [www.nanosonics.jp](http://www.nanosonics.jp)