



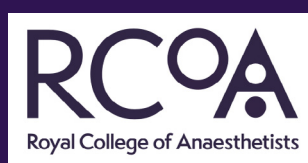
Royal College of  
Obstetricians &  
Gynaecologists

# Coronavirus (COVID-19) Infection in Pregnancy

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Information for healthcare professionals

Version 12: Published Wednesday 14 October 2020



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# Summary of updates

Previous updates have been summarised in Appendix I. New updates for this version of the guideline are summarised here.

Version	Date	Summary of changes
<b>12</b>	14.10.20	<b>Throughout:</b> Comprehensive editorial review resulting in rewording and minor changes which do not affect meaning. Any changes to meaning and recommendations are detailed elsewhere in this table of changes
<b>12</b>	14.10.20	<b>1.2-1.7 Summary of evidence:</b> Comprehensively updated and rewritten to incorporate changes to evidence base, in particular the MBRACE Rapid Report and recent systematic reviews
<b>12</b>	14.10.20	<p><b>1.4 Antenatal care:</b></p> <p><b>Recommendations added:</b></p> <ul style="list-style-type: none"> <li>• The NICE recommended schedule of antenatal care should be offered in full wherever possible. These appointments should be offered in-person as far as possible, with particular attention to those from BAME communities or those living with medical, social or psychological conditions that make them higher risk.</li> <li>• Appropriate screening for diabetes in pregnancy should be provided, following NICE guidance as far as possible, with awareness that changes in screening provision may be associated with a reduction in the detection of milder cases of gestational diabetes.</li> <li>• Open access for pregnant women to day assessment and triage services should be maintained. Women should be actively encouraged to attend if they have concerns about their or their baby's wellbeing.</li> <li>• Continuity of carer should be maintained wherever possible, particularly where this is offered to women from vulnerable groups who may also be at greater risk from COVID-19.</li> </ul>
<b>12</b>	14.10.20	<b>2.2:</b> Title changed for 'what are the considerations for antenatal appointments?' to 'what are the considerations for antenatal appointments and advice for pregnant women?'
<b>12</b>	14.10.20	<p><b>2.2 Recommendations added:</b></p> <ul style="list-style-type: none"> <li>• Women should be advised that vaccination against influenza is safe at all gestations of pregnancy and is recommended to protect both the woman and baby from the adverse effects of becoming seriously ill with flu during pregnancy. During the COVID-19 pandemic, it is particularly important that pregnant women take up the influenza vaccine to reduce their risk of contracting flu.</li> </ul>

		<ul style="list-style-type: none"> <li>• Appointments where physical examination is not required and where there are no additional risk factors are most appropriate to be conducted by virtual means.</li> <li>• Services should establish triage processes to ensure that women with mental health concerns can be appropriately assessed.</li> </ul> <p><b>Recommendations removed</b></p> <ul style="list-style-type: none"> <li>• Virtual consultations should be encouraged where appropriate to minimise contact in person, however traditional in-person appointments may be more effective, especially when interpreters are required.</li> </ul> <p>Supporting statement updated with evidence from MBRRACE UK Rapid Report and survey studies regarding modifications to care during the pandemic.</p>
<b>12</b>	14.10.20	<b>3.1 Thromboembolism:</b> Supporting statement updated with reference to MBRRACE rapid report.
<b>12</b>	14.10.20	<b>4.1 Labour and birth:</b> Recommendations updated to reflect national policy change to 10 days isolation following a positive test for COVID-19.
<b>12</b>	14.10.20	<p><b>4.4 Birth partners. Recommendations revised to:</b></p> <ul style="list-style-type: none"> <li>• On attendance at the maternity unit, all birth partners should be asked whether they have experienced any symptoms suggestive of COVID-19 in the preceding 14 days, e.g. fever, acute persistent cough, changes in or loss of sense of smell (anosmia) or taste. <ul style="list-style-type: none"> <li>○ If they have had symptoms within the last 10 days, they should be asked to leave the maternity unit immediately and self-isolate at home, unless they have had a negative test result for coronavirus since symptom onset</li> <li>○ If they have had a fever within the last 48 hours, they should be asked to leave the maternity unit immediately and self-isolate at home, regardless of their test result.</li> <li>○ Guidance about testing of women and their birth partners is discussed in the RCOG document <a href="#">Principles for the testing and triage of women seeking maternity care in hospital settings, during the COVID-19 pandemic</a>.</li> <li>○ Asymptomatic birth partners, not otherwise advised to be self-isolating, should be permitted to stay with the woman throughout labour and birth, unless the birth occurs under general anaesthetic. Further guidance about access to maternity services for birth partners and other supportive adults has been published by the NHS, and should be followed as far as possible.</li> </ul> </li> </ul>

<b>I2</b>	14.10.20	<b>4.6 Water birth:</b> Supporting statement updated to reflect evidence review by the UK Infection Prevention and Control Cell.
<b>I2</b>	14.10.20	<b>6.3 Postnatal care:</b> Recommendation revised to clarify that postnatal women who have tested positive for COVID-19, while required to isolate along with their households for 14 days, should still receive necessary in-person postnatal care.
<b>I2</b>	14.10.20	<b>Appendix II:</b> updated to reflect updates to document



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# I. Purpose and scope

# I.0 Purpose and scope

This document aims to provide guidance to healthcare professionals who care for pregnant women during the COVID-19 pandemic. It is not intended to replace existing clinical guidelines, but to act as a supplement with additional advice on how to implement standard practice during this time.

The advice in this document is provided as a resource for UK healthcare professionals based on a combination of available evidence, good practice and expert consensus opinion. The priorities are:

- (i) The reduction of transmission of SARS-CoV-2 to pregnant women.
- (ii) The provision of safe, personalised and woman-centred care during pregnancy, birth and the early postnatal period, during the COVID-19 pandemic.
- (iii) The provision of safe, personalised and woman-centred care to pregnant and postnatal women with suspected/confirmed COVID-19.

This is very much an evolving situation requiring this guidance to be a living document that is under regular review and updated as new information and evidence emerges. It is, therefore, suggested that you visit this web page frequently for current advice. If you would like to suggest additional areas for this guidance to cover, require any clarifications or wish to submit new evidence for consideration, please email [COVID-19@rcog.org.uk](mailto:COVID-19@rcog.org.uk). Please note, individual clinical advice or information for specific organisational requirements cannot be given via this email address.

[Information for pregnant women and their families](#) is available in question and answer format, with accompanying videos in some cases, on the [Royal College of Obstetricians and Gynaecologists \(RCOG\)](#) and [Royal College of Midwives \(RCM\)](#) COVID-19 hubs.

## I.1 Identification and assessment of evidence

This guidance has been developed by a multidisciplinary group using the best available evidence, retrieved by weekly literature reviews undertaken by a member of the RCOG Library team.

Owing to the relatively recent emergence of COVID-19 and the rapidly evolving nature of the pandemic, there is a lack of high-quality evidence. Using a conventional grading system for guideline development, such as SIGN,<sup>1</sup> many of the studies would be classed as level 3 or 4 (non-analytical studies, e.g. case series/reports), with a few studies being classed as level 2 (systematic reviews of cohort studies). Much of the advice based on this evidence would therefore be graded D, and in some cases, graded as good practice points based on expert opinion. Healthcare providers, women and their families are advised to be aware of the low-quality evidence on which the advice is given when using this guidance to assist decision making.

For a more detailed description of the methods used to develop this guidance please see Appendix III.

## 1.2 Epidemiology

SARS-CoV-2 is the strain of coronavirus which causes COVID-19. It was first identified in Wuhan City, China, towards the end of 2019.<sup>2</sup> Other human coronavirus (HCoV) infections include HCoV 229E, NL63, OC43 and HKU1, which usually cause mild to moderate upper respiratory tract illnesses, like the common cold, Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV).<sup>3</sup>

The World Health Organization (WHO) publishes a daily [international situation report](#) with an additional [Situation Dashboard](#) to provide information for individual countries. The total number of confirmed cases in the UK is published by the Department of Health and Social Care (DHSC), and is available in a [visual dashboard](#).

For the most up-to-date advice please refer to health protection agency websites: for [England](#), [Wales](#), [Scotland](#) and [Northern Ireland](#). Public Health England (PHE) and Public Health Scotland (PHS) have been cited throughout this document; specific guidance from the other areas of the UK will be updated as they become available. At the time of writing, Public Health Wales (PHW) are aligning with PHE on case definitions, assessment, infection prevention and control and testing. This document will be updated if this situation changes.

## 1.3 Transmission

Most global cases of COVID-19 have evidence of human-to-human transmission. This virus can be readily isolated from respiratory droplets or secretions, faeces and fomites (objects). Transmission of the virus is known to occur most often through close contact with an infected person or from contaminated surfaces.

With regard to vertical transmission (transmission from a woman to her baby antenatally or intrapartum), evidence now suggests that if vertical transmission does occur, it is uncommon. If it does occur, it appears to not be affected by mode of birth, method of feeding or whether the woman and baby stay together (rooming in).<sup>4,5</sup>

## 1.4 Effect of COVID-19 on pregnant women

Pregnant women do not appear more likely to contract the infection than the general population.<sup>6</sup>

### 1.4.1 Symptoms of COVID-19 in pregnant women

Most pregnant women who are infected with SARS-CoV-2 will experience only mild or moderate cold/flu-like symptoms.<sup>7</sup> The PregCOV-19 Living Systematic Review has so far included over 11 000 currently and recently pregnant women worldwide with suspected or confirmed COVID-19 (reported prior to 26 June 2020).<sup>8</sup> In this review, the most common symptoms of COVID-19 in pregnant women were fever (40%) and cough (39%). Less frequent symptoms were dyspnoea, myalgia, loss of sense of taste and diarrhoea, each present in more than 10% of women. Pregnant women with COVID-19 were less likely to have fever or myalgia than non-pregnant women of the same age.



A significant proportion of pregnant women with COVID-19 may be asymptomatic: an estimated 74% (95% CI 51–93) are asymptomatic based on studies that reported universal screening for a total of 162 pregnant women.<sup>8</sup>

#### 1.4.2 Severe illness in pregnant women

Severe symptoms, suggesting pneumonia and marked hypoxia, are more common in older people, the immunosuppressed and those with chronic conditions, such as diabetes, cancer or chronic lung disease.<sup>9</sup> Severe illness, such as that requiring intensive care unit (ICU) admission, is relatively uncommon in young women of reproductive age. In the UK Intensive Care National Audit and Research Centre report of patients admitted since the first reported case in the UK until 31 August 2020, a total of 70 women who were either currently or recently (within 6 weeks) pregnant had been admitted to intensive care, representing 8.9% of all the 785 women admitted between age 16–49 years.<sup>10</sup>

An interim report from the UK Obstetric Surveillance System (UKOSS) on pregnant women admitted to hospital with confirmed COVID-19 in the UK was published on 8 June 2020.<sup>11</sup> This reported on 427 pregnant women admitted to UK hospitals with confirmed SARS-CoV-2 infection between 1 March and 14 April 2020. During this time, public health recommendations were to test only individuals admitted to hospital with symptoms of COVID-19. Of the 427 pregnant women, 38 women (9%) required level 3 critical care; four women (less than 1%) received extracorporeal membrane oxygenation (ECMO). These data are expected to be updated in the future.

Severe illness appears to be more common in later pregnancy. In the UKOSS study, most women were hospitalised in their third trimester or peripartum (n = 342, 81%). The median gestational age at hospital admission was 34<sup>+0</sup> weeks of gestation (interquartile range [IQR] 29–38 weeks of gestation).<sup>11</sup> Similarly, an analysis of women in French hospitals showed that those in the second half of pregnancy, from 20 weeks of gestation, were five times more likely to be admitted to ICU than those in the first half of pregnancy.<sup>12</sup>

Intensive care admission may be more common in pregnant women with COVID-19 than in non-pregnant women of the same age. The PregCOV-19 Living Systematic Review Consortium analysis concluded that pregnant women are more likely than non-pregnant women to require admission to intensive care (OR 1.62, 95% CI 1.33–1.96) and invasive ventilation (OR 1.88, 95% CI 1.36–2.60).<sup>8</sup> However, this finding is based overwhelmingly on a single study published by the US Centers for Disease Control and Prevention; in this study two major limitations of the results are acknowledged.<sup>13</sup> The first is that admissions for indications related to pregnancy and those for COVID-19 could not be distinguished. The second is pregnancy status was missing for three-quarters of the women of reproductive age; a pregnancy rate of 9% was identified – higher than the expected 5%. This could account for significant bias in the results. The PregCOV-19 systematic review scored the quality of the study as low in all but two domains of the quality assessment – and low overall. This finding should therefore be interpreted with caution. There is no good quality evidence comparing the risk of severe COVID-19 infection in pregnant women and non-pregnant women of the same age.<sup>10 11</sup>

There have also been case reports and case series of women with severe COVID-19 infection at the time of birth who have required ventilation and ECMO,<sup>14</sup> and of maternal death.<sup>15</sup> In the PregCOV-19 Living Systematic Review Consortium analysis, 73/11 580 women with confirmed COVID-19 were recorded as having died of any cause, and 16/1935 women required ECMO.<sup>8</sup>

The MBRRACE-UK consortium published a rapid report on maternal deaths in the UK between March and May 2020. During that period, nine women died during pregnancy or the immediate postpartum period (6 weeks postnatal), and one woman died during the extended postpartum period (up to 1 year).<sup>16</sup> Of these ten women, seven died of COVID-19, in one the cause of death was undetermined but was considered to be probably related to COVID-19, and two died of unrelated causes. It is, at this time, unclear whether the pandemic will result in a statistically significant impact on the overall rate of maternal death in the UK. Key lessons from the report of these deaths have been incorporated into this guidance.

### **1.4.3 Effect on pregnancy**

Maternal COVID-19 is associated with an approximately three times greater risk of preterm birth. A systematic review estimated the risk at approximately 17%.<sup>8</sup> Most of these preterm births (94%) were iatrogenic. In the UKOSS study, 58% of women gave birth during the data collection period; the median gestational age at birth was 38 weeks (IQR 36–39 weeks). Of the women who gave birth, 27% had preterm births: 47% of these were iatrogenic for maternal compromise and 15% were iatrogenic for fetal compromise.<sup>11</sup>

Maternal COVID-19 is also associated with an increased rate of caesarean birth. Again, from the UKOSS study, 59% of women had caesarean births; approximately half of these were because of maternal or fetal compromise. The remainder were for obstetric reasons (e.g. progress in labour; previous caesarean birth) or maternal request (6%). Of the women having a caesarean birth, 20% required general anaesthesia (GA) because of severe COVID-19 symptoms or urgency of birth.<sup>11</sup>

## **1.5 Risk factors for hospital admission with COVID-19 infection in pregnancy**

Risk factors that appear to be associated both with being infected and being admitted to hospital with COVID-19 include:

1. Black, Asian and minority ethnic (BAME) background
2. Being overweight (BMI 25–29 kg/m<sup>2</sup>) or obese (BMI 30 kg/m<sup>2</sup> or more)
3. Pre-pregnancy co-morbidity, such as pre-existing diabetes and chronic hypertension
4. Maternal age 35 years or older<sup>8 11</sup>
5. Living in areas or households of increased socioeconomic deprivation.<sup>17</sup>

In addition to these, the risk of becoming infected with COVID-19 is more common in individuals who are more exposed by, for example, working in healthcare or other public-facing occupations.

In the PregCOV-19 Living Systematic Review, the estimates of association were: for age 35 years and older, OR 1.78 (95% CI 1.25–2.55); for BMI 30 kg/m<sup>2</sup> and above, OR 2.38 (95% CI 1.67–3.39); for chronic hypertension, OR 2.0 (95% CI 1.14–3.48); and for pre-existing diabetes, OR 2.51 (95% CI 1.31–4.80).<sup>8</sup>

In the UKOSS study, the association with BAME background is especially apparent (adjusted OR [aOR] 4.49, 95% CI 3.37–6.00),<sup>11</sup> and echoes previous findings that UK BAME pregnant women generally have worse outcomes in pregnancy and birth.<sup>18</sup>

The association between BAME background and severe COVID-19 or death from COVID-19 is not confined to pregnant women. In the UK, 13% of the total population identify as being from a BAME background, but 55% of all individuals admitted to UK critical care for COVID-19 were from BAME backgrounds, and individuals from BAME backgrounds were more likely to die from COVID-19.<sup>10 19</sup> In the case of COVID-19, it has been postulated that this association may be related to socioeconomic or genetic factors, or differences in response to infection; however, further research is needed.<sup>11 20</sup>

One possible contributing factor to the observed association between severe illness and BAME background is vitamin D deficiency. It is reported that as many as 94% of the South Asian population in the UK are diagnosed with vitamin D deficiency in the winter.<sup>21</sup> Vitamin D deficiency is associated with acute respiratory distress syndrome, which is seen in COVID-19 infection.<sup>22 23</sup> People of BAME background with melanin-pigmented skin are at increased risk of developing vitamin D deficiency. UK advice recommends vitamin D supplementation to all pregnant women and individuals of BAME background, regardless of the COVID-19 pandemic.<sup>25</sup>

Other studies of non-pregnant populations have also shown a similar trend of poorer outcomes and increased risk of death for individuals with BMI above 25 kg/m<sup>2</sup>, and for individuals with pre-existing diabetes and chronic hypertension.<sup>10 17</sup>

Lifestyle measures, such as regular exercise and a healthy diet, are recommended in pregnancy and throughout life to maintain a healthy BMI (18.5–24.9 kg/m<sup>2</sup>) and prevent the development of obesity and type 2 diabetes mellitus.

## 1.6 Effect of COVID-19 on the fetus

It is reassuring that, despite over 31 million confirmed COVID-19 infections, there has been no significant reported increase in the incidence of congenital abnormalities. In the PregCOV-19 Living Systematic Review, there was no evidence of an increase in stillbirth or neonatal death among women with COVID-19, although there was insufficient available evidence to comment on the risk of miscarriage.<sup>8</sup>

There has also been no evidence to date that fetal growth restriction (FGR) is a consequence of COVID-19; however, this is considered a theoretical possibility as two-thirds of pregnancies with SARS were affected by FGR.<sup>28 29</sup>

For babies born to women with COVID-19, the overall outcomes are positive, with over 95% of newborns included in a systematic review reported as being born in good condition.<sup>8</sup> In the UKOSS study, 10% of term babies born in the UK to COVID-19 positive women were admitted to the neonatal unit. Six (2.5% of total) babies had a positive test for SARS-CoV-2 during the first 12 hours after birth; three of these babies were born by pre-labour caesarean birth, one required admission to a neonatal unit.<sup>11</sup> A large study from New York also reported reassuring neonatal outcomes during the pandemic.<sup>5</sup> Of 1481 births overall, 116 (8%) mothers (giving birth to 120 neonates) tested positive for SARS-CoV-2. All 120 neonates were tested at 24 hours of life and none were positive for SARS-CoV-2. Of 79 neonates who had a repeat SARS-CoV-2 polymerase chain reaction test at age 5–7 days (66% follow-up rate), all tested negative; 72 neonates were also tested at 14 days of life and again, none were positive. None of the neonates had signs of COVID-19.

## **1.7 Effect of service modifications during the COVID-19 pandemic maternal and perinatal experience and outcomes**

During the first wave of the COVID-19 pandemic, sizeable changes were made to the provision of maternity services, the unintended consequences of service modifications during the pandemic have yet to be determined.

In the UK, two survey studies have demonstrated that during April 2020, the majority of units reduced antenatal and postnatal appointments, restricted access to midwifery-led birth settings or home birth, and changed methods of screening for FGR and gestational diabetes.<sup>30 31</sup> It is not yet fully understood what impact these service changes have had on maternal and perinatal outcomes or the experience of women and their families.

A single-centre study comparing the incidence of stillbirths in a London hospital in the pre-pandemic (1 October 2019–31 January 2020) and pandemic (1 February 2020–14 June 2020) periods showed an increase in the stillbirth rate during the pandemic ( $n = 16$ , 9.31 per 1000 births) compared with pre-pandemic ( $n = 4$ , 2.38 per 1000 births;  $P = 0.01$ ). None of the women had symptoms suggestive of COVID-19, nor did the placental examination or postmortem suggest SARS-CoV-2 infection.<sup>32</sup> Further research is required to determine whether an increase in stillbirth rates is seen nationally.

The MBRRACE-UK rapid report highlighted two instances where women died by suicide, where referrals to perinatal mental health teams were refused or delayed because of restrictions related to COVID-19.<sup>16</sup>



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## 2. Antenatal care during the COVID-19 pandemic

## 2.1 What are the considerations for organisation of antenatal care?

### Advice

- Women should be advised to continue their routine antenatal care, although it may be modified, unless they meet self-isolation criteria for individuals or households (including social bubbles) with suspected or confirmed COVID-19.
- Service modifications are required to assist women practising social distancing measures, to reduce the risk of transmission between women, staff and other clinic/hospital visitors, and to provide care to women who are self-isolating for suspected/confirmed COVID-19 for whom a hospital attendance is essential.
- The NICE recommended schedule of antenatal care should be offered in full wherever possible. Ideally and where safe, these appointments should be offered in-person, particularly to those from BAME communities, those with communication difficulties or those living with medical, social or psychological conditions that put them at higher risk of complications, or adverse outcomes, during pregnancy.
- Maternity staff should be aware that for some women with hearing or communication difficulties, mask wearing may prevent lip reading.
- Basic assessments such as blood pressure and urine testing, and assessment of fundal height in women not receiving serial fetal growth ultrasound scans, are still required. Trusts and health boards should plan local strategies to ensure women are able to receive this monitoring, even where antenatal care is provided virtually.
- Where it is considered that some appointments can most appropriately be conducted by virtual means, for example during periods of 'local lockdown' instigated because of high risk of community-acquired SARS-CoV-2, units should employ teleconferencing and videoconferencing.
  - The limitations of virtual consultation methods should be recognised, including being aware that some women will not have sufficient internet access on their mobile devices or other computer hardware.
  - It should be acknowledged that virtual appointments, particularly by telephone, may cause new challenges in relationship-building between women and healthcare professionals, especially among socially vulnerable groups, women for whom English is not their first language or women who are hearing impaired.
  - Healthcare professionals should be aware that the women may have unvoiced concerns regarding their care if they have less contact in person.

- When in-person appointments are required (e.g. for blood tests, maternal examination or ultrasound scans) these should be arranged alongside other in-person maternity appointments to limit repeated clinic attendance.
- Appropriate screening for diabetes in pregnancy should still be provided, following NICE guidance as far as possible, with awareness that modifications to screening protocols may be associated with a reduction in the detection of cases of gestational diabetes at the lowest risk of complications.
- Particular consideration should be given to pregnant women who have comorbidities which make them extremely vulnerable (previously advised to 'shield') to the effects of COVID-19. Shared waiting areas should be avoided.
  - If women who are in this group attend hospital, where possible, they should be cared for in single rooms.
- Women should be able to notify the unit regarding non-attendance owing to self-isolation for COVID-19 using standard telephone numbers that are already available to them.
  - There should be a system in place to identify, support and follow up women who have missed appointments.
  - Units should appoint a named midwife or consultant to coordinate care for women unable to attend appointments owing to self-isolation or a positive test. Missed appointments should be reviewed and either rescheduled if an in-person review is necessary or converted to a virtual appointment.
- For women receiving antenatal care across different sites, units must ensure that there are clear pathways for communication via handheld notes, electronic records and correspondence to general practitioners.
- Open access to day assessment and maternity triage services should be maintained. Women should be actively encouraged to attend if they have concerns about their or their baby's wellbeing.
- Continuity of care should be maintained wherever possible, particularly for women from vulnerable groups who may also be at greater risk from COVID-19.
- Healthcare providers should be aware of specific changes to services which have been suggested through regularly updated subspecialty service guidance available via the RCOG website.

## Summary of evidence and rationale for guidance

Antenatal and postnatal care should be regarded as essential and women encouraged to attend, while observing social distancing and infection prevention measures, as recommended by the [UK Government](#).<sup>34</sup> Studies in the UK and internationally have shown that women who do not attend antenatal services are at increased risk of maternal death, stillbirth and other adverse perinatal outcomes.<sup>35 36</sup> NICE guidance on antenatal care, including the schedule of antenatal appointments recommended for women with uncomplicated pregnancies, is well-established in the UK.<sup>37</sup>

The UK Government has published a [list of conditions](#) that make an individual extremely vulnerable to the severe effects of COVID-19, along with guidance on how best to protect these individuals.

A small study in Massachusetts, USA, conducted in spring 2020 (during the pandemic) showed that there was no relationship between the number of in-person antenatal visits and the risk of developing COVID-19 for pregnant women, suggesting that nosocomial transmission could be minimised.<sup>38</sup> No similar evidence exists for the UK.

Another small survey study from the USA found that the offer of virtual appointments to pregnant women at high risk of obstetric complications reduced the rate at which women 'did not attend' their appointments, and that 86.9% of women were satisfied with the care received.<sup>39</sup> Again, a similar study has not been conducted in the UK, nor were subgroups of women identified with social vulnerability or communication difficulties.

NHS England has issued [guidance](#) on the adoption of virtual consultations in secondary care in order to minimise hospital visits.<sup>40 41</sup> Data directly comparing telephone/video appointments with in-person appointments are not available; until these are, healthcare providers should follow locally agreed protocols for antenatal care provision.

During the pandemic, modifications to NICE recommended screening for gestational diabetes was recommended to reduce the risk of pregnant women being infected with SARS-CoV-2 during hospital visits.<sup>42</sup> While the number of cases of COVID-19 avoided using this strategy is unknown, evidence has quantified the reduction in diagnoses of gestational diabetes.<sup>43-45</sup> The rationale for the modified testing strategy is described in the Appendix of the RCOG document [Guidance for maternal medicine services in the evolving coronavirus \(COVID-19\) pandemic](#).

The care of pregnant women with complex healthcare needs is challenging during a pandemic. To support healthcare providers caring for these women, guidance documents to assist maternity units with changes to services were developed and can be found on the [RCOG](#) and [RCM](#) websites.



## 2.2 What are the considerations for antenatal appointments and advice for pregnant women?

### Advice

- Staff members should ensure adequate personal protective equipment (PPE) is used for in-person visits.
- Information and guidance should be available in languages spoken in the local communities served by the maternity unit.
- All women and any accompanying visitors (where permitted) should be advised to wear face masks or face coverings in line with guidance from national authorities.
- Evidence suggests that individuals of BAME background are at higher risk of developing severe complications of COVID-19; this also applies for pregnant women. Therefore, it is advised that:
  - Women of BAME background are encouraged to seek advice without delay if they are concerned about their health.
  - Healthcare providers 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.
- It is advisable to conduct appointments by virtual means only when physical examination is not required and there are no additional risk factors.
- Healthcare professionals should proactively advise all pregnant women to contact emergency antenatal services if they have any concern about their or their baby's wellbeing.
- Carbon monoxide testing of pregnant women has been paused during this period.
  - Midwives and doctors should still ask about, and document, smoking status at booking and at 36 weeks, provide brief advice and refer women who smoke to specialist stop-smoking support on an opt-out basis.
  - This is currently under review by NHS bodies and the [RCOG website](#) will be updated if this changes.

- Women should continue to take folic acid and vitamin D supplements as per national recommendations.
- Advise women that influenza vaccination is still safe at all gestations of pregnancy and is recommended to protect both the woman and baby from the adverse effects of becoming seriously ill with flu during pregnancy.
- Pregnant women will continue to need at least as much support, advice, care and guidance in relation to pregnancy, childbirth and early parenthood as before the pandemic, especially women living with adversity (including poverty, homelessness, substance misuse, being an asylum seeker, experiencing domestic abuse and mental health problems).
  - Midwifery, obstetric and support staff should remain aware of the support needs for all women, acknowledging local and national restrictions on visitors and accompanying persons may affect the amount of support that women require.
- Healthcare providers should be aware of the increased risk of domestic abuse in pregnancy, which has escalated during this pandemic. Women should be encouraged to share any concerns at every opportunity and be provided with advice and support on how to access the appropriate services if required.
- Healthcare providers should maintain in-person appointments with women when there are safeguarding concerns, in order to provide extra support.
- Women should be asked about their mental health at every contact. Women who require further support should be signposted to resources and local services, which may be provided by virtual means. These include:
  - [Sources of self-help for anxiety and stress.](#)
  - When necessary, women in England can self-refer to local IAPT (Improving Access to Psychological Therapies) services. In Scotland, advice is available from [Parentclub](#) and [NHS Inform](#). Further information is available from the [RCM](#) and [Royal College of Psychiatrists](#) websites.
  - Women who express concern about their mental health or 'red flag' symptoms, such as suicidal thoughts or sudden mood changes, or where their families express these concerns on their behalf, should be supported to access urgent care either through appropriate signposting or, when required in severe cases, by immediate referral.
  - Services should establish triage processes to ensure that women with mental health concerns can be appropriately assessed.

## Summary of evidence and rationale for guidance

The appropriate use of PPE is an evolving area. Units should follow the regularly updated [public health guidance](#) issued jointly by the DHSC, PHW, Public Health Agency (PHA) Northern Ireland, HPS/National Services Scotland, PHE and NHS England (published by PHE on their behalf), and review this in collaboration with their local guidance and infection control teams.<sup>46</sup> There are also clear guidelines on PPE from the [RCM](#).

The UK Government has issued guidelines on the use of face coverings within enclosed spaces in England; these are applicable to women attending outpatient maternity appointments (including scans) and to hospital visitors.<sup>47</sup> [Scotland](#), [Northern Ireland](#) and [Wales](#) have issued similar guidance.

Before this pandemic, there was already extensive evidence of the inequality of experience and outcomes for BAME women giving birth in the UK.<sup>48-50</sup> The increased risk of COVID-19 among BAME people is likely to result from a number of factors such as socioeconomic disadvantage, and the fact that they are more likely to work in key worker roles, including health and social care. BAME women who are living with socioeconomic deprivation and/or in crowded conditions, those who were born outside the UK and whose first language is not English, and those with a high BMI and/or underlying medical conditions appear to be at particularly high risk.

The RCOG Race Equality Taskforce has launched a joint campaign with [FiveXMore](#) that aims to help communication with BAME women, with five easy to remember steps.

There is currently an absence of accurate information about the additional risk of smoking and severe COVID-19 infection.<sup>51</sup> The risks of smoking during pregnancy are well-established. The [UK National Centre for Smoking Cessation and Training](#) has recommended that carbon monoxide testing during pregnancy be paused. This recommendation is currently under review in October 2020. Recommendations on smoking screening and cessation support are based on previous evidence on the effectiveness of these interventions. Further guidance is available in [Saving Babies' Lives Care Bundle Appendix H](#).<sup>52</sup>

Pregnancy is a risk factor for hospital admission with influenza.<sup>53</sup> Influenza vaccination is safe and effective for pregnant women, who are always included in the annual NHS flu campaign.<sup>54</sup> It is possible to be co-infected with influenza and SARS-CoV-2.<sup>55</sup> The impact of co-infection is not known. In addition, influenza symptoms are difficult to distinguish from COVID-19 symptoms.

This pandemic has resulted in an increased level of anxiety and other mental health problems in the general population.<sup>56 57</sup> This has had a larger impact on women than on men.<sup>58</sup> There is increasing evidence that this is likely to be even greater for pregnant women, as pregnancy represents a period of additional uncertainty.<sup>59-61</sup> Specifically, these anxieties are likely to revolve around: a) COVID-19 itself, b) the impact of social isolation resulting in reduced support from wider family and friends, c) the potential of reduced household finances and d)

major changes in antenatal and other NHS care, including some appointments being changed from in person to telephone contact.<sup>62</sup>

Isolation, bereavement, financial difficulties, insecurity and inability to access support systems are all widely recognised risk factors for mental ill health and are expected to affect individuals more than usual during the pandemic.<sup>59</sup> Access to mental health services has also been constrained and delays to accessing care were evident in two maternal deaths by suicide that occurred during the spring of 2020.<sup>16</sup>

The [Royal College of Psychiatrists](#), in collaboration with NHS England and NHS Improvement, have developed recommendations on mental wellbeing during the COVID-19 pandemic.

The coronavirus pandemic has increased the incidence of domestic abuse.<sup>63 64</sup> Additional advice regarding support for victims of domestic abuse during the pandemic is available from the [UK government](#). In addition, [Women's Aid, Save Lives](#) and [Refuge](#) have updated guidance for people experiencing domestic abuse during the COVID-19 outbreak.

## 2.3 How should women with suspected or confirmed COVID-19 needing hospital attendance or advice be cared for?

### Advice

For women who telephone maternity services:

- If women report symptoms attributed to COVID-19 on the phone to maternity services, consider differential diagnoses for fever, cough, change or loss of sense of smell/taste, or shortness of breath. This includes, but is not limited to urinary tract infection, chorioamnionitis and pulmonary embolism.
- If women have symptoms suggestive of COVID-19, they can self-refer to national services for SARS-CoV-2 testing.

For women with possible or confirmed COVID-19, for whom hospital attendance is required or who self-present (this includes women who live with an individual who has possible or confirmed COVID-19):

- Advise women to attend via private transport where possible.
- If an ambulance is required, the call handler should be alerted if the woman, or a member of her household, is symptomatic of COVID-19.
- Ask women to alert a member of maternity staff by mobile telephone to their attendance on arrival at the hospital entrance prior to entering any of the buildings.
- Meet women at the maternity unit entrance by staff wearing appropriate PPE to

provide the woman with a fluid-resistant surgical mask.

- Staff providing care should take PPE precautions as per UK health protection guidance.
- Women should immediately be escorted to an isolation room or cohort bay/ward, suitable for the majority of care during their hospital visit or stay.
  - Isolation rooms or ward bays should ideally have a defined area for staff to put on and remove PPE, and suitable bathroom facilities.
- The woman's face mask should not be removed until she is isolated in a suitable room or cohort bay.
- Only essential staff should enter the isolation room or cohort bay.
- Keep visitors to isolation rooms or cohort bays/ward to a minimum and follow local hospital visitor policies.
- All non-essential items from the isolation rooms should be removed prior to the woman's arrival (this includes other rooms in which the woman spends time during her hospital attendance [e.g. scan rooms when bedside scans are not appropriate]).
- All clinical areas must be cleaned following use, according to specific COVID-19 UK-wide public health guidance.

### Summary of evidence and rationale for guidance

Availability of resources, provision of services and local prevalence of COVID-19 will vary across geographical regions, and will determine how women requiring hospital admission with confirmed or suspected COVID-19 are cared for. Advice on care in isolation rooms and COVID-19 cohort bays is available from PHE, having been issued on behalf of the four nations of the UK.<sup>46</sup> This advice may change frequently and it is vital that healthcare providers stay abreast of the latest developments.

As above, units should follow the regularly updated advice on PPE, in conjunction with guidance from the RCM and their local guidance and infection control teams.<sup>46 65</sup>

Guidance on cleaning clinical areas used to provide care to women with suspected or confirmed COVID-19 is available from PHE.<sup>46</sup>

## 2.4 What are the considerations for antenatal care for women who have recovered from COVID-19?

### Advice

- For women who have recovered from COVID-19 with mild, moderate or no symptoms, without requiring admission to hospital, antenatal care should remain unchanged.

- Services should ensure that women who have missed antenatal appointments because of self-isolation are seen as early as is practical after the period of self-isolation ends.
- For women who have recovered from a period of serious or critical illness with COVID-19 requiring admission to hospital for supportive therapy, ongoing antenatal care should be planned together with a consultant obstetrician prior to hospital discharge.
- In the first instance, offer a fetal growth scan approximately 14 days following recovery from their illness to women who have been seriously or critically unwell, unless there is a pre-existing clinical reason for an earlier scan.

### Summary of evidence and rationale for guidance

To date, there is an absence of evidence to guide the care for women recovering from mild or moderate symptoms of COVID-19. Women who have recovered should be encouraged to attend antenatal appointments in line with advice statements outlined above.

Although there is no evidence yet that FGR is a consequence of COVID-19, two-thirds of pregnancies with SARS were affected by FGR, so ultrasound follow-up (as advised above) seems prudent and has been adopted internationally.<sup>28</sup>

Guidance on fetal growth surveillance following COVID-19 was developed along with the NHS England and NHS Improvement [Saving Babies' Lives Care Bundle Appendix G](#). This recommends a single fetal growth ultrasound scan a minimum of 14 days following resolution from acute illness of COVID-19 that required hospitalisation.



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# 3. Venous thromboembolism prevention

### 3.1 How should venous thromboembolism be prevented during the COVID-19 pandemic?

#### Advice

- Women who are self-isolating at home should stay well hydrated and mobile throughout isolation.
- Women should have a venous thromboembolism (VTE) risk assessment performed during their pregnancy as per RCOG Green-top Guideline No 37a. Consider infection with SARS-CoV-2 as a transient risk factor and trigger reassessment.
- Where normally indicated, thromboprophylaxis should still be offered and administered as prescribed during the COVID-19 pandemic.
- If healthcare professionals are concerned about the risk of VTE during a period of self-isolation, a clinical VTE risk assessment (in person or by virtual means) should be performed, and thromboprophylaxis considered and prescribed on a case-by-case basis.
- Follow local procedures to ensure women are supplied with low molecular weight heparin (LMWH), particularly where they cannot attend hospital during periods of self-isolation.
- Continue thromboprophylaxis commenced for pregnant women who are self-isolating until they have recovered from the acute illness (between 7 and 14 days). Seek advice from a clinician with expertise in VTE for women with ongoing morbidity and limited mobility.
- All pregnant women admitted with confirmed or suspected COVID-19 should be offered prophylactic LMWH, unless birth is expected within 12 hours.
- For women with severe complications of COVID-19, discuss the appropriate dosing regimen of LMWH with a multidisciplinary team (MDT), including a senior obstetrician or clinician with expertise in managing VTE in pregnancy.
- All pregnant women who have been hospitalised and have had confirmed COVID-19 should be offered thromboprophylaxis for 10 days following hospital discharge. Consider a longer duration of thromboprophylaxis for women with persistent morbidity.
- If women are admitted with confirmed or suspected COVID-19 within 6 weeks postpartum, they should be offered thromboprophylaxis for the duration of their admission and for at least 10 days after discharge. Consider extending this until 6 weeks postpartum for women with significant ongoing morbidity.



## Summary of evidence and rationale for guidance

Pregnancy is widely recognised as a hypercoagulable state.<sup>66</sup> The existing RCOG Green-top Guidelines No. 37a and 37b on VTE prevention and management should continue to support decision making during the COVID-19 pandemic.<sup>67 68</sup>

There is emerging evidence suggesting that individuals admitted to hospital with COVID-19 are also hypercoagulable.<sup>69 70</sup> Infection with SARS-CoV-2 is likely to be associated with an increased risk of maternal VTE. This is likely to be multifactorial, including the reduced mobility resulting from self-isolation at home or hospital admission, and other associated obstetric or maternal morbidity. Consequently, the cumulative risk is difficult to quantify. In the MBRRACE Rapid Report, one woman died from a confirmed thromboembolic event and a second woman experienced a sudden deterioration that may be attributed to a thromboembolic event.<sup>16</sup>

The statements above were developed following expert consensus discussion to determine what increased risk COVID-19 may pose to pregnant women. VTE prevention for the unwell woman with COVID-19 is considered in section 5.2.



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# 4. Labour and birth during the COVID-19 pandemic

## 4.1 What are the considerations for labour and birth in asymptomatic women who test or have tested positive for SARS-CoV-2?

### Advice

- For otherwise low risk women who test positive for SARS-CoV-2 within 10 days prior to birth but are asymptomatic and wish to give birth at home or in a midwifery-led unit, it is recommended that an informed discussion around place of birth takes place with the midwife.
- For asymptomatic women who test positive for SARS-CoV-2 on admission, continuous electronic fetal monitoring (CEFM) during labour using cardiotocography (CTG) is not recommended solely due to the positive test, and should only be used if it is required for another reason.
  - Discuss fetal monitoring options with the woman, acknowledging the current uncertainties in women who are asymptomatic with a positive test for SARS-CoV-2.

### Summary of evidence and rationale for guidance

While fetal compromise in women who are symptomatic of COVID-19 has been reported by some case series,<sup>71 72</sup> the need for CEFM for women who are asymptomatic of COVID-19 and otherwise low risk for labour (e.g. CEFM would not otherwise be indicated by NICE Clinical Guideline [CG190] on Intrapartum care for healthy women and babies)<sup>73</sup> is an area of clinical uncertainty because of the lack of robust evidence. There is currently no evidence linking asymptomatic COVID-19 infection to abnormalities in continuous fetal monitoring or fetal compromise. While it is reassuring that there is no clear evidence to date of increased rates of fetal compromise in the asymptomatic population, women should continue to have the risks and benefits of CEFM discussed with them.

In the absence of other evidence, NICE Clinical guidance [CG190] Intrapartum care for healthy women and babies, should be followed.<sup>73</sup>

## 4.2 How should a woman with suspected/confirmed COVID-19 be cared for in labour if they are symptomatic?

### Advice

- Women with mild COVID-19 symptoms can be encouraged to remain at home (self-isolating) in early (latent phase) labour consistent with routine care.
- Offer a test to women who have symptoms suggestive of COVID-19.
- If there are no concerns regarding the health of either the woman or baby, women who attend the maternity unit and would usually be advised to return home until

labour is more established can still be advised to do so, unless private transport is not available.

- Provide women with the usual advice regarding signs and symptoms of labour; but also inform them about symptoms that might suggest deterioration related to COVID-19 and advise them to call back if concerned.
- Advice on PPE is available in section 4.8.
- Advise women with symptomatic confirmed or suspected COVID-19 to labour and give birth in an obstetric unit.
- On admission, undertake a full maternal and fetal assessment, including:
  - Assessment of the severity of COVID-19 symptoms by the most senior available clinician.
  - Maternal observations including temperature, respiratory rate and oxygen saturation.
  - Confirmation of the onset of labour, as per standard care.
  - CEFM using CTG.
- Inform the following members of the multidisciplinary team (MDT) of the admission of the woman: consultant obstetrician, consultant anaesthetist, midwife-in-charge, consultant neonatologist, neonatal nurse-in-charge, intensivist responsible for obstetric care and the infection control team.
- Perform standard hourly maternal observations and assessment (as per the recommendations in NICE CG190, Intrapartum care for healthy women and babies), with the addition of hourly oxygen saturation monitoring. Oxygen therapy should be titrated to aim for saturation above 94%.
- Offer CEFM to women with symptomatic confirmed or suspected COVID-19 during labour and vaginal birth.
- There are no contraindications to performing a fetal blood sample or using fetal scalp electrodes.
- Minimise the number of staff members entering the room, and units should develop a local policy specifying essential personnel for emergency scenarios.

## Summary of evidence and rationale for guidance

NHS England has produced clinical guidance on the temporary reorganisation of intrapartum maternity care during the coronavirus pandemic.<sup>4</sup>

COVID-19 infection and control guidance issued by [PHE](#), on behalf of the four nations of the UK, gives advice about avoiding disease transmission.<sup>46</sup>

[WHO](#) has produced guidance on clinical management of COVID-19.<sup>75</sup>

In women with symptomatic COVID-19, there may be an increased risk of fetal compromise in active labour.<sup>71 72 76 77</sup> Although the data in this area are poor, it appears prudent to use continuous electronic fetal monitoring for maternal systemic infection including COVID-19.

### 4.3 What are the considerations for labour and birth for women who have recovered from COVID-19?

#### Advice

- For women who have recovered from antenatal COVID-19, without requiring admission to hospital, and who have completed self-isolation in line with public health guidance, there should be no change to planned care during labour and birth.
- For women who have recovered following a hospital admission for serious or critical COVID-19 illness needing supportive therapy, discuss and plan place of birth with the woman and her family, if she wishes. While making a personalised assessment, consider both the growth of the fetus and the woman's choices.
- When participating in informed discussions with women about fetal monitoring, acknowledge that evidence of fetal distress is based on small numbers of babies born to women symptomatic of COVID-19 and theoretical risks extrapolated from pregnancies affected by FGR in women with other coronaviruses.

## Summary of evidence and rationale for guidance

There is an absence of evidence for this situation. The above is based on expert consensus.

### 4.4 What are the considerations for birth partners during the COVID-19 pandemic?

#### Advice

- Support and encourage women to have birth partners present with them during active labour and birth if they wish to do so, in accordance with local or national hospital policies.

- Inform birth partners who are symptomatic or in a period of self-isolation for confirmed SARS-CoV-2 infection, that they should remain in self-isolation at home and not attend the unit.
- On attendance at the maternity unit, ask all birth partners whether they have experienced any symptoms suggestive of COVID-19 in the preceding 10 days, e.g. fever, acute persistent cough, changes in or loss of sense of smell (anosmia) or taste.
  - If they have had symptoms within the last 10 days, ask the birth partner to leave the maternity unit immediately and self-isolate at home, unless they have had a negative test result for coronavirus since symptom onset.
  - If they have had a fever within the last 48 hours, ask birth partners to leave the maternity unit immediately and self-isolate at home, regardless of their test result.
  - Guidance about testing of women and their birth partners is discussed in the RCOG document [Principles for the testing and triage of women seeking maternity care in hospital settings, during the COVID-19 pandemic](#).
- Permit asymptomatic birth partners, not otherwise advised to be self-isolating, to stay with the woman through labour and birth, unless the birth occurs under general anaesthetic. Further guidance about access to maternity services for birth partners and other supportive adults has been published by the NHS and should be followed as far as possible.
- Ask birth partners to wear a face covering, remain by the woman's bedside, not to walk around the ward/hospital and wash their hands frequently.
- Restrictions on visitors should follow local hospital policy.

### Summary of evidence and rationale for guidance

Having a trusted birth partner present throughout labour is known to make a significant difference to the safety and well-being of women in childbirth.<sup>78-80</sup>

UK-wide PHE guidance, local hospital infection control and visitor policies should be adhered to.<sup>46 81</sup>

The NHS has produced guidance to support the access of birth partners and other supportive adults to maternity services in [England](#) and [Scotland](#).<sup>82 83</sup>

## 4.5 What informed discussions should take place with women regarding timing and mode of birth during the COVID-19 pandemic?

### Advice

- Discuss information regarding mode of birth during the COVID-19 pandemic with the woman and her family. Take into consideration her preferences and any obstetric or fetal indications for intervention.
- Guidance on offering to test all women attending maternity services is summarised in the RCOG document [Principles for the testing and triage of women seeking maternity care in hospital settings, during the COVID-19 pandemic](#).
- Make a personalised assessment to determine whether it is beneficial overall to delay elective caesarean birth or induction of labour (IOL), and any associated appointments, for women who are self-isolating because of suspected COVID-19 in themselves or in a household contact.
  - Take into account the urgency of the birth and the risk of infectious transmission to other women, healthcare workers and, postnatally, to her baby.
  - If a planned caesarean birth or IOL cannot be delayed, follow the advice for services providing care to women admitted with suspected/confirmed COVID-19.
- In women with symptoms, who are becoming exhausted or hypoxic, offer the woman personalised information so that she can make an informed decision about an option to shorten the length of the second stage of labour with instrumental birth.
- Seek senior obstetric and medical input when urgent birth of the baby is required to aid supportive care of a woman with severe or critical COVID-19 and vaginal birth is not imminent. Consider whether the benefits of an urgent caesarean birth outweigh any risks to the woman.
- Follow the advice in section 4.8 on PPE for caesarean birth.
- Inform women and their families that donning PPE for emergency caesarean births is time-consuming but essential, and that this may impact on the time it takes to assist in the birth of the baby. Consider this during decision making and, where possible, discuss during birth planning.

### Summary of evidence and rationale for guidance

There is no evidence to favour one mode of birth over another in women with COVID-19. In the UKOSS study, 12 (5%) babies tested positive for SARS-CoV-2 infection; six within the first 12 hours (two were born by unassisted vaginal birth and four by caesarean birth) and six after

12 hours (two born vaginally and four by caesarean birth).<sup>11</sup> The rate of neonatal COVID-19 infection is no greater when the baby is born vaginally, breastfed or stays with the woman after birth.<sup>4</sup>

Donning PPE is expected to lengthen the decision to birth interval because of the additional action required before commencing surgery, however, there is no evidence of this within the UK setting. A single centre cohort study demonstrated a possible longer time to birth in urgent caesarean births for women with confirmed or suspected COVID-19 (25.5 minutes [95% CI 17.5–31.75] versus 18.0 minutes [95% CI 10.0–26.25];  $P = 0.113$ ). This did not reach statistical significance, which may be explained by the study sample size which was not chosen to power for the outcome.<sup>84</sup>

## 4.6 What are the considerations for water birth?

### Advice

- Water birth is not contraindicated for women who are asymptomatic of COVID-19 and presumed or confirmed SARS-CoV-2 swab negative, providing adequate PPE can be worn by those providing care.
- For women who are symptomatic of COVID-19 with a cough, fever or feeling unwell, labour and birth in water is not recommended.
- For women who are asymptomatic of COVID-19 but test positive for SARS-CoV-2, there is inadequate evidence about the risk of transmission of the virus in water.
- Healthcare providers should be aware that the integrity of PPE, such as a face mask, could be compromised when it becomes wet.

### Summary of evidence and rationale for guidance

Labour and birth in water may confer benefits to women at low risk of complications during birth.

A lack of evidence about the risks of transmission of the virus in water exists. There is evidence that COVID-19 RNA may be present in faeces, but no evidence to support that this has resulted in faecal–oral spread.<sup>85 86</sup> However, there is a small theoretical risk that water contaminated with faeces or other maternal secretions could pose an infection risk to the baby or the staff caring for a woman birthing in water. There is, therefore, insufficient evidence for or against the use of water in labour or birth for asymptomatic women and staff caring for them; this risk also applies when caring for a woman during labour out of water.

The RCOG and RCM have sought advice from the UK Infection Prevention and Control Cell about this issue, who have reviewed the evidence and recommend that women who, within 10 days of birth, test positive for, or have symptoms of, COVID-19 should not be offered to birth in water.



It is recommended that women with pyrexia should not labour or birth in water.<sup>73</sup> Women with a cough or breathing difficulties, or those who feel unwell, should be closely monitored for their oxygen saturations and other vital signs and may require oxygen support. This care is better provided out of water to enable more effective monitoring.

#### 4.7 What are the specific considerations for labour analgesia or anaesthesia?

##### Advice

- Entonox can be safely offered with a standard single-patient microbiological filter.
- Discuss the option of epidural analgesia with women with symptomatic or confirmed COVID-19 when they are in early labour so they can make informed decisions regarding use or type of labour analgesia. The use of epidural analgesia may circumvent the need for GA in some cases, and the associated additional risks in this scenario.

##### Summary of evidence and rationale for guidance

Advice published on the considerations for [labour analgesia or anaesthesia](#) is based on expert opinion following consultation with the Obstetric Anaesthetists Association (OAA).

There is no evidence that the use of Entonox is an aerosol-generating procedure (AGP).

There is no evidence that [epidural or spinal analgesia or anaesthesia](#) is contraindicated in the presence of coronaviruses.<sup>87</sup>

Intubation, required for GA, is an AGP. This significantly increases the risk of transmission of SARS-CoV-2 to the attending staff.

#### 4.8 What personal protective equipment is recommended when caring for women during labour and birth?

##### Advice

- Healthcare professionals should follow national recommendations on the use of PPE in clinical settings.
- Owing to the differing levels of PPE required for caesarean birth, hold a multidisciplinary discussion about the likelihood of a woman requiring a GA.
- For caesarean births where GA is planned from the outset all staff in theatre should wear PPE, including an FFP3 mask and visor. Don PPE prior to commencing the GA.
- Develop local standard operative procedures to determine the type of PPE required in cases where regional anaesthesia for caesarean birth cannot be administered, or is ineffective.

## Summary of evidence and rationale for guidance

General advice from [PHE](#), issued on behalf of the four nations of the UK, on type and specification of PPE is available.<sup>46</sup> The [RCM](#) and the [OAA](#) have provided specific advice on the type and specification of PPE for maternity care and obstetric anaesthesia.

The level of PPE required by healthcare professionals caring for a woman with COVID-19 who is undergoing a caesarean birth should be determined on the basis of the risk of her requiring a GA.<sup>88</sup> Intubation is an AGP. This significantly increases the risk of transmission of SARS-CoV-2 to the attending staff.

Siting regional anaesthesia (spinal, epidural or combined spinal epidural [CSE]) is not an AGP. The chance of requiring conversion to a GA during a caesarean birth commenced under regional anaesthesia is small, but this chance increases with the urgency of caesarean birth. In situations where there are risk factors that make conversion to a GA more likely, the decision on what type of PPE to wear should be based on the individual circumstances. If the risk of requiring conversion to a GA is considered significant (e.g. 'top-up' of a suboptimal epidural from labour), the theatre team should wear PPE appropriate to a GA in readiness.

### 4.9 How should obstetric theatres be managed during the COVID-19 pandemic?

#### Advice

- Schedule elective obstetric procedures (e.g. cervical cerclage or caesarean birth) planned for women with suspected/confirmed COVID-19 at the end of the operating list.
- Conduct emergency procedures for women with suspected/confirmed COVID-19 in a second obstetric theatre where available, allowing time for a full postoperative theatre clean as per national health protection guidance.
- Keep the number of staff in the operating theatre to a minimum. All colleagues must wear appropriate PPE.
- Provide anaesthetic care for women with suspected or confirmed COVID-19 with reference to guidance from Royal College of Anaesthetists (RCoA)/OAA.
- Use operating theatre checklists to aid closed loop communication when communication is difficult because staff are wearing PPE.

## Summary of evidence and rationale for guidance

The advice above is based on UK government advice on infection prevention and control,<sup>46</sup> guidance from the [RCoA](#) and [OAA](#), and expert consensus.<sup>88</sup>

The use of PPE causes communication difficulties in obstetric theatres.<sup>88</sup>

Advice on testing women receiving elective or urgent inpatient maternity care are available from the RCOG document [Principles for the testing and triage of women seeking maternity care in hospital settings during the COVID-19 pandemic](#).

#### 4.10 What are the considerations for bereavement care during the COVID-19 pandemic?

##### Advice

- Maternity services should ensure that bereavement care remains of a high standard during the COVID-19 pandemic, with continued provision of appropriate intrapartum and postnatal care, including all appropriate investigations and postnatal appointments.

##### Summary of evidence and rationale for guidance

Sands and the RCM have provided further guidance on bereavement care during the pandemic in their briefing [Bereavement Care in Maternity Services During COVID-19 pandemic](#). [Sands](#) have also produced information for bereaved families about care during the pandemic.



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# 5. Managing clinical deterioration during the COVID-19 pandemic

## 5.1 How should a pregnant woman requiring hospital admission with symptoms suggestive of COVID-19 be investigated?

### Advice

- If the woman attends with a fever, investigate and treat as per RCOG Green-top Guideline No. 64a Bacterial Sepsis in Pregnancy. Testing for COVID-19 should be offered in addition to blood cultures.
- While pyrexia may suggest COVID-19, do not assume that all pyrexia is because of COVID-19. Consider the possibility of bacterial infection and perform full sepsis screening in line with the [UK Sepsis Trust Sepsis Screening and Action Tool](#) and administer intravenous antibiotics when appropriate.
- Consider bacterial (rather than viral) infection if the white blood cell count is raised (lymphocytes are usually normal or low with COVID-19) and commence antibiotics.
- Offer testing for COVID-19 to women if they meet the national inpatient or community public health criteria.
  - Inpatient case criteria (correct as of 30 September 2020) are individuals who are being/are admitted to hospital with one of the following:
    - A loss of, or change in, sense of taste or smell (anosmia) in isolation or in combination with any other symptoms of COVID-19.
    - Clinical/radiological evidence of pneumonia.
    - Acute respiratory distress syndrome.
    - Fever of 37.8°C or more AND at least one of the following: acute persistent cough, hoarseness, nasal discharge/congestion, shortness of breath, sore throat, wheezing or sneezing.
- Perform radiographic investigations as for the non-pregnant adult; this includes chest X-ray and computerised tomography (CT) of the chest.
  - Chest imaging is essential for the evaluation of the unwell woman with COVID-19 and should be performed when indicated, and not delayed because of concerns of possible maternal and fetal exposure to radiation, as maternal wellbeing is paramount.
- Consider a diagnosis of pulmonary embolism or heart failure for women presenting with chest pain, worsening hypoxia or a respiratory rate more than 22 breaths/min (particularly if there is a sudden increase in oxygen requirements), or in women whose breathlessness persists or worsens after expected recovery from COVID-19.

- Consider additional tests to investigate for possible differential diagnoses, e.g. electrocardiogram, CT pulmonary angiogram, echocardiogram, etc.

## Summary of evidence and rationale for guidance

The clinical symptoms of COVID-19 overlap with those of a variety of other clinical conditions. Healthcare providers should consider all differential diagnoses for women who present with a fever in pregnancy and follow the advice and guidance of the [RCOG Green-top Guideline No. 64a: Bacterial Sepsis in Pregnancy](#).<sup>89</sup>

NHS guidance on sampling and testing for suspected COVID-19 recommends offering testing for SARS-CoV-2 to all hospital inpatients in England,<sup>90</sup> and the [RCOG](#) has produced a supplementary framework on how this may need to be modified for maternity services.

This is, however, a rapidly evolving area of policy and will likely have local variations on implementation, so healthcare providers should also liaise with their local infection control and testing teams.

Several studies have shown decreased lymphocyte counts in the general population affected by COVID-19.<sup>91</sup> One systematic review noted decreased lymphocyte counts in pregnant women.<sup>92</sup>

## 5.2 How should a pregnant woman with suspected/confirmed COVID-19 who is clinically deteriorating be cared for?

### Advice

- Obstetricians should be familiar with local protocols for the initial investigation and care of women presenting to medical teams with possible COVID-19. Follow these protocols for pregnant women as far as possible (including initial investigations, management of fluid balance and escalation of care to involve the critical care team).
- The priority for medical care should be to stabilise the woman's condition with standard therapies.
- Monitor both the absolute values and trends of the hourly observations, including respiratory rate and oxygen saturation.
- Be aware that young, fit women can compensate for a deterioration in respiratory function and are able to maintain normal oxygen saturations until sudden decompensation.
- Escalate urgently if any of the following signs of decompensation develop:
  - increase in oxygen requirements or fraction of inspired oxygen (FiO<sub>2</sub>) above 40%,

- increasing respiratory rate despite oxygen therapy or respiratory rate more than 30 breaths/min,
- reduction in urine output,
- acute kidney injury,
- drowsiness, even if the oxygen saturations are normal.
- Titrate oxygen flow to maintain saturations above 94%.
- Apply caution with intravenous fluid management:
  - Monitor women with moderate-to-severe symptoms of COVID-19 using hourly fluid input/output charts.
  - Aim towards maintenance of neutral fluid balance in labour.
  - Try boluses in volumes of 250–500 ml and then assess for fluid overload before proceeding with further fluid resuscitation.
- Have a low threshold to start antibiotics at presentation, with early review and rationalisation of antibiotics if COVID-19 is confirmed. Even when COVID-19 is confirmed, remain open to the possibility of another co-existing condition.
  - Do not delay administration of therapy that would usually be given (e.g. intravenous antibiotics in woman with fever and prolonged rupture of membranes) in women with suspected COVID-19.
- Until test results are available, treat a woman with suspected COVID-19 as though it is confirmed.
- Arrange an urgent MDT planning meeting for any unwell woman with suspected/confirmed COVID-19. This should ideally involve a consultant obstetrician, consultant anaesthetist, midwife-in-charge, consultant neonatologist, neonatal nurse-in-charge, intensivist responsible for obstetric care, and the infection control team. The discussion should be shared with the woman, and her family if she chooses. Consider the following:
  - Key priorities for medical care of the woman and her baby, and her birth preferences.
  - Most appropriate location of care (e.g. intensive care unit, isolation room in infectious disease ward or other suitable isolation room) and lead specialty.

- Concerns among the team regarding special considerations in pregnancy, particularly the health of the baby.
- Review all pregnant women with suspected/confirmed COVID-19 who are in hospital with a consultant obstetrician, even if they are not admitted to the maternity unit.
- A designated team member should be responsible for regularly updating the woman's family about her health, and that of the baby.
- Assess all pregnant women for risk of VTE and prescribe prophylactic dose thromboprophylaxis. If there is a suspicion of a VTE, prescribe therapeutic dose thromboprophylaxis.
- Thrombocytopenia is associated with severe COVID-19. For women with thrombocytopenia (platelets less than  $50 \times 10^9/l$ ) stop aspirin prophylaxis and thromboprophylaxis and seek haematology advice.
- Consider using mechanical aids (such as intermittent calf compressors) if thromboprophylaxis is paused secondary to thrombocytopenia.
- Be aware of possible myocardial injury as the symptoms are similar to those of respiratory complications of COVID-19.
- Be aware of the interim government guidance based on the results of the RECOVERY trial, which states that steroid therapy should be considered for 10 days or to hospital discharge, whichever is sooner, for adults unwell with COVID-19 and requiring oxygen (in pregnant adults, use oral prednisolone 40 mg once daily or intravenous hydrocortisone 80 mg twice daily).
- Consider the use of antiviral medications that have been shown to be potentially beneficial in COVID-19, and enrolment in clinical trials for which pregnant women are eligible.
- If there is clinical uncertainty about whether to offer a therapy to a pregnant woman, seek advice through maternal medicine networks.
- Consider the frequency and suitability of fetal heart rate monitoring on an individual basis, accounting for the gestational age and the maternal condition.
- Make an individualised assessment of the woman with the MDT to decide whether emergency caesarean birth or IOL is indicated, either to assist efforts in maternal resuscitation or where there are serious concerns regarding the fetal condition. Give the wellbeing of the woman highest priority. In the assessment, consider:
  - Maternal condition – changes in oxygen saturations, radiological changes and respiratory rate.



- Fetal condition – potential for improvement or deterioration following iatrogenic birth and the gestation.
- If maternal stabilisation is required before intervention for birth, this is the priority, as it is in other maternity emergencies.
- If urgent intervention for birth is indicated for fetal reasons, expedite birth as for normal obstetric indications, as long as the maternal condition is stable.
- With the multidisciplinary team, including both obstetric and medical clinicians, consider the benefit of the administration of antenatal steroids for fetal lung maturation and magnesium sulfate for fetal neuroprotection, where indicated by NICE or RCOG guidance, together with the possible risks of administration in a woman who is severely unwell with COVID-19. Do not delay urgent intervention for birth for their administration.

### Summary of evidence and rationale for guidance

A useful summary on supportive care for adults diagnosed with COVID-19 has been published by [WHO](#).<sup>93</sup>

Specific guidance on the management of patients with COVID-19 who are admitted to critical care has now been published by [NICE](#) and [SIGN](#).<sup>94 95</sup>

Severe COVID-19 may be associated with thrombocytopenia. When aspirin has been prescribed as prophylaxis for pre-eclampsia, it should be discontinued as this may increase the bleeding risk in thrombocytopenic patients.<sup>96</sup>

Myocardial injury and its complications were observed in 9.5% of all patients who died in Italy up to 13 April 2020.<sup>97</sup> Early involvement of multidisciplinary colleagues to investigate for potential myocardial injury is essential if this is suspected.<sup>98</sup> Further details of investigation and management is available in the [NICE rapid guideline](#) on diagnosing myocardial injury in patients with suspected or confirmed COVID-19.<sup>98</sup>

Antenatal corticosteroids are well established as being beneficial in threatened preterm labour, or if iatrogenic preterm birth is anticipated.<sup>99</sup> There is no evidence that steroids in the doses prescribed for fetal lung maturation cause any harm in the context of COVID-19, but there is also no evidence of safety, and the unknown effect on maternal outcome should be weighed against the neonatal benefit particularly at later preterm gestations.<sup>100</sup>

Magnesium sulfate is recommended for fetal neuroprotection in preterm babies as per NICE guideline (NG25): Preterm labour and birth.<sup>99- 100</sup>

For non-specialist anaesthetists and physicians involved in the care of pregnant women with COVID-19 and other medical conditions, useful information is available from the RCoA guideline [Care of the critically ill woman in childbirth: enhanced maternal care](#) and the

The interim results of the RECOVERY trial demonstrated a significant reduction in 28-day mortality for individuals with COVID-19 requiring oxygen who were given steroid therapy (age-adjusted rate ratio 0.83; 95% CI 0.75–0.93;  $P < 0.001$ ),<sup>103</sup> and this has been recommended for use in the NHS.<sup>104</sup> The RECOVERY trial protocol for pregnancy recommends prednisolone 40 mg orally once daily, and, in women unable to take oral medicine, hydrocortisone 80 mg intravenously twice daily instead of dexamethasone treatment.<sup>16 105 106</sup>

Remdesivir is currently subject to a therapeutic alert for pregnancy; it should be avoided unless benefits outweigh risks, following multidisciplinary discussion.<sup>107</sup> Remdesivir is an antiviral medication which has been shown to be associated with a reduction in time to clinical improvement in individuals with severe COVID-19, median 11 versus 15 days, rate ratio 1.32 (95% CI 1.12–1.55).<sup>108</sup>

Pregnant women can be enrolled in the RECOVERY trial.

Where therapies or participation in trials are offered, they should also be considered for and offered to pregnant women.



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## 6. Postnatal care

Routine postnatal care for women in accordance with national guidelines and the RCOG guidance for maternity service organisation in areas of high-risk prevalence/local lockdown during the COVID-19 pandemic should be followed. As prevalence subsides, strategies will be needed to ensure that previous evidence-based services that have been put on hold or amended are reinstated.

## 6.1 How should neonatal care for the baby be provided during the COVID-19 pandemic?

### Advice

- Keep women and their healthy babies together in the immediate postpartum period, if they do not otherwise require maternal critical care or neonatal care.
- Support women with suspected or confirmed COVID-19 to remain together with their baby and to practice skin-to-skin/kangaroo care, if the newborn does not require additional medical care at this time.
- Adopt a precautionary approach for a woman who has suspected or confirmed COVID-19 and whose baby needs to be cared for on the neonatal unit, to minimise any risk of women-to-infant transmission; at the same time, involve parents in decisions, mitigating potential problems for the baby's health and wellbeing and for breastfeeding, bonding and attachment.
- Support women who choose to breastfeed, even if they have probable or confirmed COVID-19.
- Hold a risk and benefits discussion with neonatologists and families to individualise care in babies who may be more susceptible.
- Care for all babies born to SARS-CoV-2-positive women as per guidance from the [Royal College of Paediatrics and Child Health \(RCPCH\)](#).
- Specific guidance on neonatal resuscitation during the COVID-19 pandemic is available from the [Resuscitation Council](#).

### Summary of evidence and rationale for guidance

There are limited data to guide the neonatal care of babies of women who tested positive for SARS-CoV-2 in the third trimester.<sup>109</sup>

The RCPCH and the RCM have provided separate guidance on this topic,<sup>110 111</sup> and the [Resuscitation Council](#) has produced various COVID-19 resources on newborn life support.

## 6.2 What should women and families be advised regarding infant feeding during the COVID-19 pandemic?

### Advice

- Recommend breastfeeding to all women, where safe and feasible to do so.
- Offer support, advice and guidance on breastfeeding to all women who wish to breastfeed.
- Inform families that infection with COVID-19 is not a contraindication to breastfeeding.
- Support families in their feeding choices and inform them of the risks and benefits of feeding the baby in close proximity to individuals with suspected or confirmed COVID-19.
- When a woman is not well enough to care for her own infant or where direct breastfeeding is not possible, support her to express her breastmilk by hand or using a breast pump, and/or offer access to donor breast milk.
- The following [RCPCH](#) precautions should be taken to limit viral spread to the baby:
  - Consider asking someone who is well to feed the baby.
  - Wash hands before touching the baby, breast pump or bottles.
  - Avoid coughing or sneezing on the baby while feeding.
  - Consider wearing a face covering or fluid-resistant face mask while feeding or caring for the baby.
- Babies should not wear masks or other face coverings as they may risk suffocation.
- When women are expressing breastmilk in hospital, a dedicated breast pump should be used.
  - Adhere to recommendations for pump cleaning after each use.
- Adhere strictly to sterilisation guidance for babies who are bottle-fed with formula or expressed milk.

### Summary of evidence and rationale for guidance

The long-term well established benefits of breastfeeding are highly likely to outweigh any potential risks of transmission of the virus through breastmilk.<sup>112</sup> A systematic review found

that in 24 cases breastmilk tested negative for COVID-19; however, given the small number of cases, this evidence should be interpreted with caution.<sup>113</sup> The main risk of breastfeeding is the close contact between the baby and the woman, who is likely to share infective respiratory droplets.

In light of the evidence to date, the benefits of breastfeeding outweigh any potential risks of transmission of the virus through breastmilk,<sup>114</sup> and this is a view supported by the [UNICEF UK Baby Friendly Initiative](#), which has been widely implemented in the UK.<sup>115</sup>

Specific recommendations on minimising the risk of COVID-19 transmission when feeding babies has been developed by the RCPCH and RCM.<sup>110 111</sup> The [NHS has general guidance](#) on sterilising bottles in order to protect babies against infections.

Face coverings are not appropriate for babies. The UK government advice for using face coverings is directed towards adults and children aged 11 and over.<sup>116</sup>

### 6.3 What are the considerations for postnatal care for women and babies following admission with COVID-19?

#### Advice

- Advise all households to self-isolate at home for 14 days after birth of a baby to a woman with COVID-19.
- Emphasise usual advice about safe sleeping and a smoke-free environment, along with provision of clear advice about careful hand hygiene and infection control measures when caring for and feeding the baby.
- Provide families with guidance about how to identify signs of illness in their newborn or worsening of the woman's symptoms, and provide them with appropriate contact details if they have concerns or questions about their baby's wellbeing. NHS leaflets, providing this information, are [available here](#).
- Advise any women or babies requiring readmission for postnatal obstetric or neonatal care during a period of self-isolation for suspected or confirmed COVID-19 to telephone their local unit ahead of arrival.
- Women who have recently given birth who have tested positive for COVID-19 still require all recommended advice, guidance and support in relation to their postnatal physical and mental health and wellbeing and care of their newborn baby. This includes necessary in-person assessments using appropriate PPE.
- Provide postnatal care as per NICE Clinical guideline (CG37) Postnatal care up to 8 weeks after birth.

- Offer in-person home or clinic appointments to allow an overall assessment of the physical and psychological health and wellbeing of the woman and her baby.
- In some areas, and where appropriate, some postnatal care will need to be via telephone or video link because of local infection rates and staff absence, but considerations need to be made upon individual circumstances. Communicate this to women and families.

### **Summary of evidence and rationale for guidance**

The RCPCH has published guidance on the neonatal care of babies born to women with COVID-19.<sup>110</sup> The advice for households to isolate for 14 days after the birth of a baby born to a woman who is infected with SARS-CoV-2 is to ensure a full period of isolation in case of incubation of the virus in the baby. These advice statements have been extrapolated from the RCPCH guidance and expert consensus opinion.

Recommendations on postnatal care should be maintained as per the NICE Clinical guideline [CG37] Postnatal care up to 8 weeks after birth.<sup>117</sup>

# Acknowledgments

## **The RCOG COVID-19 guidance cell is comprised of:**

Dr Edward Morris (President, RCOG), Professor Tim Draycott (Vice President for Clinical Quality, RCOG), Dr Pat O'Brien (Vice President for Membership, RCOG), Anita Powell (Senior Director for Clinical Quality, RCOG), Dr Mary Ross-Davie (Director for Scotland, RCM), Dr Jennifer Jardine (Clinical Fellow, RCOG), Dr Sophie Relph (Clinical Fellow, RCOG), Gemma Thurston (Business Manager, RCOG), Louise Thomas (Head of Quality Improvement, RCOG), Emma Gilgunn-Jones (Director of Media and PR, RCOG), Jenny Priest (Director of Policy and Public Affairs, RCOG), Michelle Sadler (Guidance Editorial Manager, RCOG) and Stephen Hall (Political Advisor to the President, RCOG).

These individuals were, but are not currently, members of the guidance cell and have contributed to earlier versions of this document: Dr Jahnavi Daru (Honorary Clinical Fellow, RCOG), Dr Christine Ekechi (Honorary Clinical Fellow, RCOG), Dr Gemma Goodyear (Clinical Fellow, RCOG), Dr Anushka Tirlapur (Honorary Clinical Fellow, RCOG) and Gozde Zorlu (Media and PR Manager, RCOG).

The following external subject experts contributed to the section on VTE:

Professor Beverley Hunt, Professor Catherine Nelson-Piercy, Professor Rezan Abdulkadir, Dr Peter MacCallum, Dr Louise Bowles and Dr Shohreh Beski; and to the section on Managing Clinical Deterioration of COVID-19: Professor Catherine Nelson-Piercy, Dr Margaret Blott, Dr Arlene Wise and Professor Lucy Chappell.

## **We also wish to acknowledge the contributions of:**

Professor Russell Viner and Dr David Evans on behalf of the Royal College of Paediatrics and Child Health, Dr Fiona Donald and Dr Nuala Lucas on behalf of the Obstetric Anaesthetists Association and Royal College of Anaesthetists, Dr Giles Berrisford on behalf of the Royal College of Psychiatrists, Professor Asma Khalil, Dr Lucy Mackillop, Dr Charlotte Frise, Dr Toni Hazell, Dr Ed Mullins, Dr Benjamin Black, Zeenath Uddin, and colleagues from the RCOG Digital, External Affairs and Clinical Quality teams.

## **Finally, we wish to acknowledge the rapid peer review by the following individuals and organisations:**

Dr Matthew Jolly and colleagues at NHS England, Dr Corinne Love and colleagues at the Scottish Government, Emma Crookes (RCOG Women's Voices), British Intrapartum Care Society, British Association of Perinatal Medicine, British Maternal and Fetal Medicine Society, Dr Andrew Thomson and members of the RCOG Guidelines Committee.





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# Appendices

## Appendix I: Summary of previous updates

Version	Date	Summary of changes
<b>2</b>	12.3.20	<b>1.2:</b> At the time of writing, Public Health Wales are aligning with Public Health England on case definitions, assessment, infection prevention and control and testing. We will update <a href="#">this guidance</a> if this changes.
<b>2</b>	13.3.20	<b>2.2:</b> Updated to reflect PHE and health protection advice as per 13.03.20, in particular to use online symptom checkers and to treat all individuals with symptoms as possibly having COVID-19.
<b>2</b>	13.3.20	<b>3.2:</b> Sentence on who to test updated to reflect advice to test women with symptoms suggestive of COVID-19 who require admission.
<b>2</b>	13.3.20	<b>3.6.4 and 3.6.5:</b> Updated to suggest considering delay of elective caesarean birth or induction for women with symptoms suggestive of COVID-19 as well as those with confirmed COVID-19.
<b>2</b>	13.3.20	<b>3.8:</b> Infant feeding modified from recommendation to wear a face mask to try and avoid coughing or sneezing on the baby, and consider wearing face mask where available.
<b>2</b>	13.3.20	<b>4:</b> New section added for antenatal care for pregnant women following self-isolation for symptoms suggestive of COVID-19.
<b>2</b>	13.3.20	<b>5 (new).</b> New section - Advice for pregnant healthcare professionals.
<b>2</b>	13.3.20	<b>Appendix I:</b> Flow chart amended to reflect modified PHE guidance.
<b>2</b>	13.3.20	<b>References: 19:</b> NHS Staff Council Statement on Covid-19 2020 [Available from: <a href="https://www.nhsemployers.org/-/media/Employers/Documents/Pay-and-reward/NHS-Staff-Council---Guidance-for-Covid-19-Feb-20.pdf?la=en&amp;hash=70C909DA995280B9FAE4BF6AF291F4340890445C">https://www.nhsemployers.org/-/media/Employers/Documents/Pay-and-reward/NHS-Staff-Council---Guidance-for-Covid-19-Feb-20.pdf?la=en&amp;hash=70C909DA995280B9FAE4BF6AF291F4340890445C</a> ] accessed 12 March 2020.
<b>3</b>	17.3.20	<b>2:</b> Advice for Health Professionals to share with Pregnant Women updated to reflect current guidelines.
<b>3</b>	17.3.20	<b>3:</b> New section added on Advice for all midwifery and obstetric services.
<b>3</b>	17.3.20	<b>4.1:</b> General advice to services providing care to pregnant women updated to reflect advice from chief medical officer on 16/3/20.
<b>3</b>	14.3.20	<b>4.1:</b> Advice on cleaning ultrasound equipment added, and reference added.
<b>3</b>	17.3.20	<b>4.5:</b> Linked to new national guidance on the actions required when a COVID-19 case was not diagnosed on admission .
<b>3</b>	17.3.20	<b>4.6.2:</b> Recommendations added: There is evidence of household clustering and household co-infection. Asymptomatic birth partners should be treated as possibly infected and asked to wear a mask and wash their hands frequently. If symptomatic, birth partners should remain in isolation and not attend the unit.  The use of birthing pools in hospital should be avoided in suspected or confirmed cases, given evidence of transmission in faeces and the inability to use adequate protection equipment for healthcare staff during water birth.

<b>3</b>	17.3.20	<b>4.6.2:</b> Advice about Entonox changed to  There is no evidence that the use of Entonox is an aerosol-prone procedure  Entonox should be used with a single-patient microbiological filter. This is standard issue throughout maternity units in the UK.
<b>3</b>	17.3.20	<b>4.6.4:</b> Anaesthetic management for women with symptoms or confirmed COVID-19, which was previously in this guidance, has been removed and external links provided
<b>3</b>	17.3.20	<b>4.7.1:</b> Statement inserted 'Chest imaging, especially CT chest, is essential for the evaluation of the unwell patient with COVID-19 and should be performed when indicated and not delayed due to fetal concerns.'
<b>3</b>	17.3.20	Updated to reflect current public health guidance on self-isolation and social distancing.
<b>3</b>	17.3.20	<b>4.7.1:</b> Advice on neonatal management and testing has been removed. Please refer to <a href="#">RCPCH guidance</a> .
<b>3</b>	17.3.20	<b>6:</b> Advice for healthcare professionals updated in line with Chief Medical Officer statement on Monday 16 March.
<b>4</b>	21.3.20	<b>6:</b> Section on 'Occupational health advice for employers and pregnant women during the COVID-19 pandemic' added, replacing the previous section 6 on 'Information for Healthcare Professionals'. Section includes specific recommendations for healthcare professionals.
<b>4</b>	21.3.20	<b>1.3-1.4:</b> Additional information added on the susceptibility of pregnant women to COVID-19 infection.
<b>4</b>	21.3.20	<b>2:</b> Additional information on social distancing for pregnant women added, particularly specifying stringent adherence to recommendations for women >28 weeks gestation.
<b>4</b>	21.3.20	<b>4.7:</b> New section added on specific recommendations for PPE during labour and birth.
<b>4</b>	21.3.20	<b>1:</b> Addition of information and links for the UKOSS reporting system.
<b>4</b>	21.3.20	<b>All:</b> General proofread and editorial changes.
<b>4</b>	21.3.20	<b>6:</b> Page 36 title changed to 'Occupational health advice for employers and pregnant women during the COVID-19 pandemic'.
<b>4.1</b>	26.3.20	<b>Chapter 6:</b> 'Occupational health advice for employees and pregnant women during the COVID-19 pandemic' has been removed from this general guidance on pregnancy and COVID-19 infection, and published as a separate document given the distinct audience for the occupational health advice.
<b>4.1</b>	26.3.20	<b>4.7.3:</b> On Personal Protective Equipment updated in line with NHS England guidance.

<b>5</b>	28.3.20	<b>1.3:</b> Section updated to include new evidence on possible vertical transmission.
<b>5</b>	28.3.20	<b>2.2:</b> Sentence added on the major new measures announced by government for pregnant women with co-existing significant congenital or acquired heart disease.
<b>5</b>	28.3.20	<b>2.3:</b> Section updated to emphasise the need to attend maternity care.
<b>5</b>	28.3.20	<b>3:</b> General advice for antenatal care extended to include considerations for vulnerable women. Section also added on general advice regarding intrapartum services.
<b>5</b>	28.3.20	<b>3.1:</b> Specific advice added regarding the cessation of carbon monoxide monitoring in pregnancy, following advice from the National Centre for Smoking Cessation and Training.
<b>5</b>	28.3.20	<b>4:</b> Scotland specific links to Health Protection Scotland removed after confirmation from the Scottish government that National links from gov.uk should be used.
<b>5</b>	28.3.20	<b>4.3.6:</b> Scotland specific links to Health Protection Scotland removed after confirmation from the Scottish government that National links from gov.uk should be used.
<b>5</b>	28.3.20	<b>4.7.3 and 4.76:</b> Advice on PPE considerations for caesarean birth and general advice for obstetric theatres moved to new section 'Specific peri-operative advice for pregnant women with suspected/confirmed COVID-19 requiring surgical intervention'.
<b>5</b>	28.3.20	<b>4.8.1:</b> Reference made to new guidance published by NICE on the management of patients with COVID-19 in critical care.
<b>5</b>	28.3.20	<b>4.8.1:</b> Additional recommendations made for the management of women admitted during pregnancy with suspected/confirmed COVID-19.
<b>5</b>	28.3.20	<b>4.9.2:</b> Section edited to make infant feeding recommendations to any caregiver; not just to the mother.
<b>5</b>	28.3.20	<b>4.10:</b> New section on 'Specific peri-operative advice for pregnant women with suspected/confirmed COVID-19 requiring surgical intervention'.
<b>5</b>	28.3.20	<b>5.1:</b> Correction of an error in the title to clarify that this section refers to the care of women recovering from suspected (not confirmed) COVID-19 for which hospitalisation was not required.
<b>6</b>	3.4.20	<b>Throughout:</b> References to the new RCOG guidance on (1) antenatal and postnatal services (2) antenatal screening (3) fetal medicine services (4) maternal medicine services and (5) self-monitoring of blood pressure, have been added throughout the document.
<b>6</b>	3.4.20	<b>1.2:</b> New resources signposted on current UK and international disease incidence.
<b>6</b>	3.4.20	<b>1.4:</b> Sentence reporting that there are 'no reported maternal deaths from COVID-19' removed because there was recently a possible maternal death reported in tabloid media. There is not any robust evidence to amend this statement or report confidently in the guideline.
<b>6</b>	3.4.20	<b>3.2:</b> Addition of new advice on screening birth partners for recent possible symptoms of COVID-19 when they attend the maternity unit. In addition, suggestion of information to give the birth partner about what is expected of them whilst they are in the hospital, to assist staff in reducing the risk of infection transmission and to assist with communication when birth partners accompany women into operating theatres.
<b>6</b>	3.4.20	<b>3.4:</b> Moved to section 3.2.
<b>6</b>	3.4.20	<b>3.5:</b> New section on maternal mental wellbeing during the pandemic.
<b>6</b>	3.4.20	<b>4.1</b> The previous section 4.2 was repetitive of section 3.1 and so has been removed. Sections 4.2 onwards have been re-numbered.

<b>6</b>	3.4.20	<b>4.3:</b> Inclusion of the PHE case definition for COVID-19 testing, rather than referring readers to this through the link.
<b>6</b>	3.4.20	<b>4.9:</b> Updates to advice on PPE for caesarean birth, to ensure that these are consistent with new PHE advice.
<b>7</b>	9.4.20	<b>1.4:</b> Update to data from ICNARC and inclusion of a report of 43 pregnant women with COVID-19 from New York.
<b>7</b>	9.4.20	<b>1.4:</b> New comment on risk of venous thromboembolism from COVID-19.
<b>7</b>	9.4.20	<b>2.3:</b> Advice for pregnant women added – if they are advised to attend a face-to-face antenatal appointment, this is because the appointment is important and the benefit of attending is perceived to be greater than the possible risk of infection with COVID-19 caused by leaving home. Added also emphasised advice to contact maternity services if concerns during pregnancy.
<b>7</b>	9.4.20	<b>3.1:</b> New section of reducing the risk to women of new infection caused by attending maternity settings. All other subsections in section 3 have been re-numbered.
<b>7</b>	9.4.20	<b>3.2:</b> New comment on visitor restrictions in maternity settings.
<b>7</b>	9.4.20	<b>3.2:</b> List of risk factors which contribute to mental ill health in pregnant women, and acknowledgement of the risk of increasing domestic violence with policy for social distancing, moved to section 3.6 on maternal mental wellbeing.
<b>7</b>	9.4.20	<b>3.3:</b> Advice about induction of labour changed to reference update to Saving Babies' Lives Care Bundle.
<b>7</b>	9.4.20	<b>4.2</b> Section 4.2 renamed 'Women with unconfirmed COVID-19 but symptoms suggestive of possible infection' to allow for inclusion of new recommendations on women who call the maternity unit with possible COVID-19 infection (not just attend in person).
<b>7</b>	9.4.20	<b>4.2:</b> Additional recommendations made to consider usual differential diagnoses in women who call the maternity unit to report a new fever/cough/respiratory symptoms.
<b>7</b>	9.4.20	<b>4.3.1:</b> New subsection added on the care of pregnant women who are self-isolating at home with suspected COVID-19.
<b>7</b>	9.4.20	<b>4.4:</b> Changed to subsection 4.3.3 (subsequent subsections re-numbered).
<b>7</b>	9.4.20	<b>4.6.1:</b> New recommendations re. prophylactic low molecular weight heparin to reduce risk of venous thromboembolism with COVID-19 infection in pregnancy, and to consider pulmonary embolism if women with COVID-19 suddenly deteriorate.
<b>7</b>	9.4.20	<b>4.7.2:</b> Statement on calling neonatal team early to inform them of imminent birth of a baby to a woman with COVID-19 moved to section 4.5, because it applies to all cases of COVID-19, not just in women with severe disease.

<b>8</b>	17.4.20	<b>1:</b> New paragraph on the quality of the available evidence and resultant classification of the advice.
<b>8</b>	17.4.20	<b>1.4:</b> New evidence included on the risk of COVID-19 in the woman, including a case series of pregnant women attending two maternity units in New York, who were screened for COVID-19 on arrival, the inclusion of the first report of maternal death directly attributed to COVID-19 in scientific literature and an update to the ICNARC data.
<b>8</b>	17.4.20	<b>4.2, 4.5.2 &amp; 4.6.2:</b> Restructured, including some new subtitles to organise and break up the text.
<b>8</b>	17.4.20	<b>4.3.1:</b> Renamed 'risk of venous thromboembolism'.
<b>8</b>	17.4.20	<b>4.6:</b> Section restructured for clarity.
<b>8</b>	17.4.20	<b>4.7 and 4.8:</b> Re-ordered the two sections within the text so that considerations for birth are written before considerations for neonatal and postnatal care.
<b>8</b>	17.4.20	<b>5.3:</b> Section re-structured. Also includes clarification that the recommendation for 10 days postnatal LMWH is regardless of mode of birth.
<b>8</b>	17.4.20	<b>Appendix 2:</b> Table of previous updates moved to appendix 3.
<b>8</b>	17.4.20	<b>Appendix 3:</b> New information on considerations when caring for women with suspected/confirmed COVID-19 during labour and birth.
<b>9</b>	13.5.20	<b>1:</b> Aims updated to include: The provision of safe, woman-centred care to women who are pregnant, give birth or are in the early postnatal period during the COVID-19 pandemic.
<b>9</b>	13.5.20	<b>1:</b> Findings of UKOSS data included in the summaries on viral transmission, effects on the woman and effects on the fetus/neonate. Where this supersedes existing references because of higher quality research or larger numbers, it has been used to replace it.
<b>9</b>	13.5.20	<b>1.3:</b> Updated information on possibility of vertical transmission to state that there are serious limitations to the available evidence.
<b>9</b>	13.5.20	<b>1.4:</b> Updated with emerging evidence on increased risk from COVID-19 to individuals with black, Asian and minority ethnic (BAME) background.
<b>9</b>	13.5.20	<b>2:</b> Information to share with pregnant women and their families has been removed from the guidance. All this information is also available in the RCOG information for pregnant women and their families in the COVID-19 hub. All subsequent sections have been renumbered.
<b>9</b>	13.5.20	<b>3.1 (Now 2.1):</b> Added paragraph about reducing transmission between staff.
<b>9</b>	13.5.20	<b>3.2 (Now 2.2):</b> Statement and recommendations added:  Emerging evidence suggests that individuals of black and minority ethnic (BAME) background may be at higher risk of developing severe complications of COVID-19. This may equally apply to pregnant women. We therefore advise:  <ul style="list-style-type: none"> <li>• Women of BAME background should be opportunistically advised that they may be at higher risk of complications of COVID-19, and advised to seek help early if they are concerned about their health.</li> <li>• Clinicians should be aware of this increased risk, and have a lower threshold to review, admit and consider multidisciplinary escalation in women of BAME background.</li> </ul>

9	13.5.20	<b>2.2:</b> Removed statement that further guidance on remote consultations will be published soon, and provided reference to RCM/RCOG guidance on antenatal and postnatal care.
9	13.5.20	<b>2.3:</b> Changed the statement that units should consider reducing provision of induction of labour for indications that are not 'strictly necessary', to units should consider reducing induction of labour where this is not 'medically indicated'.
9	13.5.20	<b>3.3 (Now 2.3):</b> Reference to NHS England 'Clinical guide for the temporary reorganisation of intrapartum maternity care during the coronavirus pandemic' added.
9	13.5.20	<b>3.3 (Now 2.3):</b> Statement added: 'Care should be taken to maintain safe services which continue to offer women support and choice as far as possible at this time. In particular, women should continue to be encouraged to contact their maternity unit with concerns about their or their baby's wellbeing. Justification should be provided for any service rationalisation required.'
9	13.5.20	<b>3.3 (Now 2.3):</b> Statement added: 'When reorganising services, maternity units should be particularly cognisant of emerging evidence that black, Asian and minority ethnic group (BAME) individuals are at particular risk of developing severe and life-threatening COVID-19. There is already extensive evidence on the inequality of experience and outcomes for BAME women during pregnancy and birth in the UK. Particular consideration should be given to the experience of women of BAME background and of lower socioeconomic status, when evaluating the potential or actual impact of any service change.'
9	13.5.20	<b>4.6 (Now 3.6):</b> Recommendation to be aware that myocardial injury is common among individuals with COVID-19, and reference added to <a href="#">NICE Guidance on diagnosis of myocardial injury in patients with suspected or confirmed COVID-19</a> .
9	13.5.20	<b>4.8.1 (Now 3.8.1):</b> Reference added to <a href="#">Resuscitation Council guidance</a> on neonatal life support during the COVID-19 pandemic.
9	13.5.20	<b>4.5.2 (Now 3.5.2):</b> Care in labour: Risk of venous thromboembolism. Clarification added that all women with suspected or confirmed COVID-19 should be discharged with 10 days' supply of prophylactic LMWH.
9	13.5.20	<b>4.4 (Now 3.4):</b> Women who develop new symptoms of COVID-19 during admission: Statement added that prophylaxis for venous thromboembolism should be considered and prescribed unless contraindicated.
9	13.5.20	<b>4.6 (Now 3.6):</b> Title change from 'Additional considerations in women with moderate/severe symptoms' to 'Women with suspected or confirmed COVID-19 and moderate/severe symptoms', to reflect that this includes information relevant to pregnant women admitted with COVID-19 outside of obstetric services.
9	13.5.20	<b>4.6 (Now 3.6):</b> Recommendation added: 'Prophylaxis for venous thromboembolism should be prescribed during admission unless contraindicated. At the time of discharge from hospital following a period of care for confirmed COVID-19 infection, all women should be prescribed at least 10 days of prophylactic LMWH.' This is consistent with recommendations already made elsewhere in previous versions of this document.
9		<b>4.6 (Now 3.6):</b> Changed statement 'Consider bacterial infection if the white blood cell count is raised (lymphocytes usually normal or low with COVID-19) and commence antibiotics' to 'Bacterial infection is an important differential diagnosis to COVID-19 infection. We advise blood cultures and a low threshold for antibiotics at presentation, with early review and rationalisation of antibiotics if COVID-19 is confirmed.'

## Summary of updates - Version 10

The following Version 10 summary of changes includes an additional column to reflect significant restructure changes between version 9 and 10 of this guidance.

Date	Summary of changes		
	Summary of changes	Section content from v9	Location in v10 update
4.6.20	<b>Introduction</b>		Now incorporates the following sections from v9: <ul style="list-style-type: none"> <li>• Purpose and scope</li> <li>• Identification and assessment of evidence</li> <li>• Epidemiology</li> <li>• Transmission</li> <li>• Effect of COVID-19 on pregnant women</li> <li>• Risk factors for hospital admission with COVID-19</li> <li>• Effect of COVID-19 on the fetus</li> </ul>
4.6.20	<b>Antenatal care during the COVID-19 pandemic</b>	<b>2.2.</b> General advice regarding the continued provision of antenatal and postnatal services	<b>2.1</b> What are the considerations for organisation of antenatal care during the COVID-19 pandemic?
4.6.20	<b>Antenatal care during the COVID-19 pandemic</b>	<b>2.3</b> General advice regarding possible service modifications during COVID-19	<b>2.2</b> What are the considerations for antenatal appointments?
4.6.20	<b>Antenatal care during the COVID-19 pandemic</b>	<b>2.6</b> Smoking cessation and carbon monoxide monitoring in pregnancy	<b>2.3</b> What are the considerations for antenatal appointments?
4.6.20	<b>Antenatal care during the COVID-19 pandemic</b>	<b>2.5</b> Maternal mental wellbeing	<b>2.2</b> What are the considerations for antenatal appointments?
4.6.20	<b>Antenatal care during the COVID-19 pandemic</b>	<b>3.1</b> General advice for services providing care to pregnant women with suspected or confirmed COVID-19, where hospital attendance is necessary	<b>2.3</b> How should women with suspected or confirmed COVID-19 needing hospital attendance or advice be cared for?



4.6.20	<b>Antenatal care during the COVID-19 pandemic</b>	<b>3.2</b> Women with unconfirmed COVID-19 but symptoms suggestive of possible infection	<b>2.3</b> How should women with suspected or confirmed COVID-19 needing hospital attendance or advice be cared for?
4.6.20	<b>Antenatal care during the COVID-19 pandemic</b>	<b>3.3.3</b> Attendance for unscheduled/urgent antenatal care in women with suspected or confirmed COVID-19	<b>2.3</b> How should women with suspected or confirmed COVID-19 needing hospital attendance or advice be cared for?
4.6.20	<b>Antenatal care during the COVID-19 pandemic</b>	<b>4.1</b> Antenatal care for pregnant women following self-isolation for symptoms suggestive of COVID-19	<b>2.4</b> What are the considerations for antenatal care for women who have recovered from COVID-19?
4.6.20	<b>Antenatal care during the COVID-19 pandemic</b>	<b>4.2</b> Antenatal care for pregnant women following hospitalisation for confirmed COVID-19 illness	<b>2.4</b> What are the considerations for antenatal care for women who have recovered from COVID-19?
4.6.20	<b>Venous thromboembolism prevention</b>	<b>3.3.1</b> Risk of venous-thromboembolism	<b>3.1</b> How should prevention of venous thromboembolism during the COVID-19 pandemic be addressed?
4.6.20	<b>Venous thromboembolism prevention</b>	<b>3.4</b> Women who develop new symptoms of COVID-19 during admission (antenatal, intrapartum or postnatal)  Sentence on thromboprophylaxis	<b>3.1</b> How should prevention of venous thromboembolism during the COVID-19 pandemic be addressed?
4.6.20	<b>Labour and birth</b>	<b>2.4</b> General advice regarding intrapartum services	<b>4.4</b> What about birth partners during the COVID-19 pandemic?
4.6.20	<b>Labour and birth</b>	Not in version 9	<b>New section in version 10: 4.1</b> What are the considerations for labour and birth in asymptomatic women who test or have tested positive for SARS-CoV-2?

4.6.20	<b>Labour and birth</b>	<b>3.5</b> Women attending for intrapartum care with suspected or confirmed COVID-19	<b>4.2</b> How should a woman with suspected/confirmed COVID-19 be looked after in labour if they are symptomatic?  <b>4.5</b> What informed discussions should take place with women regarding timing and mode of birth during the COVID-19 pandemic?  <b>4.6</b> What are the specific considerations for labour analgesia or anaesthesia?
4.6.20	<b>Labour and birth</b>	<b>3.7</b> Specific peri-operative advice for healthcare professionals caring for pregnant women with suspected/confirmed COVID-19 who require surgical intervention	<b>4.8</b> How should obstetric theatres be managed during the COVID-19 pandemic?  <b>4.7</b> What personal protective equipment is recommended when caring for women during labour and birth?
4.6.20	<b>Postnatal</b>	<b>3.8</b> Neonatal care	<b>6.1</b> How should neonatal care for the baby be provided during the COVID-19 pandemic?  <b>6.2</b> What should parents/carers be advised regarding infant feeding during the COVID-19 pandemic?
4.6.20	<b>Postnatal</b>	<b>4.3</b> Postnatal care for pregnant women immediately following hospitalisation for confirmed COVID-19 illness	<b>6.3</b> What are the considerations for postnatal care for women and babies following admission with COVID-19?

<b>10.1</b>	19.6.20	<b>1.1:</b> Removal of 'MERS, Middle East Respiratory Syndrome' from the literature search strategy since it has not resulted in any new references since the first search.
<b>10.1</b>	19.6.20	<b>1.4:</b> UKOSS reference changed to the published article in <i>The BMJ</i> .
<b>10.1</b>	19.6.20	<b>2.2:</b> Advice on face masks changed to reflect national guidance from NHS England.
<b>10.1</b>	19.6.20	<b>4.4:</b> Advice on number of visitors and/or birth partners for hospital inpatients changed to reflect national guidance from NHS England.
<b>10.1</b>	19.6.20	<b>5.2:</b> Advice for women who are clinically deteriorating modified to include government recommendations based on the interim results of the RECOVERY trial.
<b>10.1</b>	19.6.20	<b>6.2:</b> Specified that babies should not be advised to wear face masks because of the risk of suffocation.

Version	Date	Summary of changes
II	24.7.20	<b>1.1:</b> Updated methodology about search strategies and the review process.
II	24.7.20	<b>1.3:</b> Updated evidence that there is a low rate of vertical transmission and possible transplacental transmission.
II	24.7.20	<b>1.4:</b> Updated evidence that pregnant women are not necessarily more susceptible to SARS-CoV-2 than the general population.
II	24.7.20	<b>1.5:</b> Updated evidence identifying the risk factors of Black, Asian and minority ethnicity (BAME), obesity and comorbidities in pregnant women admitted with COVID-19.
II	24.7.20	<b>1.6:</b> Updated evidence on possible fetal growth restriction associated with COVID-19.
II	24.7.20	<p><b>2.1:</b> Updated advice:</p> <ul style="list-style-type: none"> <li>Units should employ teleconferencing and videoconferencing where possible and consider which appointments can be most appropriately conducted remotely, especially in areas of local lockdown to minimise hospital attendance.</li> <li>Particular consideration should be given to pregnant women who are 'shielding' or have been 'shielding'. Shared waiting areas should be avoided.</li> <li>Units should appoint a named midwife or consultant to coordinate care for women forced to miss appointments due to self-isolation or a positive test.</li> </ul> <p>Missed appointments should be reviewed and either rescheduled if a face-to-face review is necessary or converted to a remote appointment.</p> <p>Evidence added on the possible increased incidence of stillbirths in women without symptoms suggestive of COVID-19 in the pandemic compared to pre-pandemic periods.</p>

Version	Date	Summary of changes
II	24.7.20	<p><b>2.2:</b> Updated advice:</p> <ul style="list-style-type: none"> <li>• Evidence suggests that individuals of BAME background are at higher risk of developing severe complications of COVID-19. This also applies for pregnant women. We therefore advise that: <ul style="list-style-type: none"> <li>○ Women of BAME background should be advised that they may be at higher risk of complications of COVID-19; and encouraged to seek advice without delay if they are concerned about their health.</li> </ul> </li> <li>• Clinicians should maintain face-to-face appointments with women when there are safeguarding concerns in order to provide extra support.</li> <li>• It is recommended that women should continue to take folic acid and vitamin D supplements as per national recommendations.</li> <li>• If women or their families express concerns about their mental health or 'red flag' symptoms such as suicidal thoughts or sudden mood changes they should be supported to access urgent care by healthcare providers signposting or referring appropriately.</li> </ul>
II	24.7.20	<p><b>2.3:</b> Amended advice:</p> <ul style="list-style-type: none"> <li>• Visitors to isolation rooms or ward cohort bays should be kept to a minimum and follow local hospital visitor policies.</li> </ul>
II	24.7.20	<p><b>4.1:</b> Amended advice:</p> <ul style="list-style-type: none"> <li>• For asymptomatic women who test positive for SARS-CoV-2 on admission, continuous electronic fetal monitoring (CEFM) during labour using cardiotocography (CTG) is not recommended solely for this reason, and should only be used if it is required for another reason (e.g. previous caesarean birth). <ul style="list-style-type: none"> <li>○ Fetal monitoring options should be discussed with the woman, acknowledging the current uncertainties in the care of women who are asymptomatic with a positive test for SARS-CoV2.</li> </ul> </li> </ul>
II	24.7.20	<p><b>4.2:</b> Additional advice:</p> <ul style="list-style-type: none"> <li>• There are no contraindications to performing a fetal blood sample or using fetal scalp electrodes.</li> </ul> <p>Advice on waterbirths has been revised and moved to (new) section 4.6.</p>
II	24.7.20	<p><b>4.3:</b> Amended advice:</p> <ul style="list-style-type: none"> <li>• Informed discussions with women about fetal monitoring should acknowledge that evidence of fetal distress is based on small numbers of babies born to women symptomatic of COVID-19 and theoretical risks extrapolated from pregnancies affected by fetal growth restriction in women with other coronaviruses.</li> </ul>

Version	Date	Summary of changes
II	24.7.20	<p><b>4.4:</b> Amended advice:</p> <ul style="list-style-type: none"> <li>If birth partners are symptomatic or in a period of self-isolation for confirmed SARS-CoV-2 infection, they should remain in self-isolation at home and not attend the unit.</li> </ul> <p>Advice removed: on birth partners being asked to remain by the woman's bedside and not to walk around the ward/hospital.</p>
II	24.7.20	<p><b>4.5:</b> Amended advice:</p> <ul style="list-style-type: none"> <li>Women and their families should be aware that donning PPE for emergency caesarean births is time-consuming but essential, and that this may impact on the time it takes to assist in the birth of the baby and potentially result in an adverse outcome. This should be taken into account during decision-making and ideally discussed during birth planning</li> </ul> <p>Removed advice on the use of birthing pools in hospital for women with suspected or confirmed cases of COVID-19.</p> <p>Updated evidence about vertical transmission and data about donning PPE.</p>
II	24.7.20	<b>4.6:</b> New section on 'What are the considerations regarding waterbirth?'
II	24.7.20	<p><b>4.8:</b> Amended advice:</p> <ul style="list-style-type: none"> <li>Healthcare professionals are advised to follow national recommendations on the use of personal protective equipment in clinical settings.</li> </ul>
II	24.7.20	<b>4.10:</b> New section 'What are the considerations for bereavement care during the COVID-19 pandemic?'
II	24.7.20	<p><b>5.1:</b> Amended advice:</p> <ul style="list-style-type: none"> <li>Women should be offered testing for COVID-19 if they meet the inpatient or community PHE criteria.</li> </ul>
II	24.7.20	<p><b>5.2:</b> Updated advice:</p> <ul style="list-style-type: none"> <li>A designated team member should be responsible for regularly updating the woman's family about her progress, utilising interpreting services where necessary.</li> <li>Thrombocytopenia is associated with severe COVID-19. For women with thrombocytopenia (platelets <math>&lt;50 \times 10^9/L</math>) stop aspirin prophylaxis and thromboprophylaxis and seek haematology advice.</li> <li>Consider using mechanical aids (such as intermittent calf compressors) if thromboprophylaxis is paused secondary to thrombocytopenia</li> <li>Consider the use of antiviral medications, such as remdesivir, that have been shown to be potentially beneficial in COVID-19.</li> <li>If there is clinical uncertainty in whether to offer a therapy to a pregnant woman, seek advice through maternal medicine networks.</li> </ul>

Version	Date	Summary of changes
II	24.7.20	<p><b>6.1:</b> Added advice:</p> <ul style="list-style-type: none"> <li>• Women with suspected or confirmed COVID-19 should be supported and enabled to remain together with their babies when the woman is well enough, and to practice skin-to-skin/kangaroo care, if the newborn baby does not require additional medical care at this time.</li> <li>• For a woman who has suspected or confirmed COVID-19 and whose baby needs to be cared for on the neonatal unit, a precautionary approach should be adopted to minimise any risk of women-to-infant transmission; at the same time, steps should be taken to involve parents in decisions, mitigating potential problems for the baby's health and well-being and for breastfeeding and attachment.</li> <li>• Women who have suspected, probable or confirmed COVID-19 should be enabled and supported to breastfeed, if this is what they choose.</li> </ul>
II	24.7.20	<p><b>6.2:</b> Title amended to: What should women and families be advised regarding infant feeding during the COVID-19 pandemic?</p> <p>Added advice</p> <ul style="list-style-type: none"> <li>• Breastfeeding is recommended for all women and newborn infants.</li> <li>• Support, advice and guidance on breastfeeding should be provided to all women who choose to breastfeed</li> <li>• When a woman is not well enough to care for her own infant or where direct breastfeeding is not possible, she should be supported to express her breastmilk by hand expression or by pump, and/or be offered access to donor breast milk.</li> </ul>
II	24.7.20	<p><b>6.3:</b> Added advice:</p> <ul style="list-style-type: none"> <li>• New mothers with COVID-19 still require all recommended advice, guidance and support in relation to their postnatal physical and mental health and wellbeing and care of their newborn.</li> <li>• Postnatal care should be provided as per national guidance. Face-to-face home or clinic appointments are required to provide physical checks and the offer of screening, including any wound examinations from caesarean births/assisted births, the newborn blood spot test and checking the weight of the baby. In some areas, and where appropriate, some postnatal care will need to be via virtual appointments using telephone or video link due to local infection rates and staff absence but considerations need to be made upon individual circumstances. This needs to be communicated to women and families.</li> </ul>

## Appendix II: Key considerations when caring for symptomatic women with suspected/confirmed COVID-19

<b>Consideration:</b>	
<b>Setting for birth</b>	<p>If homebirth or birth in a midwifery-led unit is planned, a discussion should be initiated with the woman regarding the potentially increased risk of fetal compromise in active phase of labour if symptomatic with SARS-CoV-2.<sup>71</sup> Attending an obstetric unit, where the baby can be monitored using continuous electronic fetal monitoring (EFM), should be recommended for birth.</p>
<b>Timing for birth</b>	<p>A positive COVID-19 result in an otherwise well woman, when there is also no evidence of fetal compromise, is not an indication to expedite birth.</p> <p>Induction of labour (IOL) is associated with longer periods of inpatient stay than for spontaneous onset of labour.</p> <p>Review the indication for IOL and consider whether the likely benefits outweigh possible risks. Where possible, review the provision and possibility of outpatient IOL.</p> <p>For women who are currently in a period of self-isolation because of suspected COVID-19 in themselves or a household contact, an individual assessment should be made to determine whether it is safe to delay scheduled appointments for preoperative care and elective caesarean birth or IOL if planned to occur during their period of self-isolation.</p> <p>The individualised assessment should consider the urgency of the birth and the risk of infectious transmission to other women, healthcare workers and, postnatally, to her baby.</p>
<b>Mode of birth</b>	<p>There is currently no evidence to favour one mode of birth over another in women who are SARS-CoV-2 positive, so mode of birth should be discussed with the woman, taking into consideration her preferences and any obstetric indications for intervention.</p> <p>Mode of birth should not be influenced by the presence of COVID-19, unless the woman's respiratory condition demands urgent intervention for birth.</p> <p>Water birth is not contraindicated for women who are asymptomatic of COVID-19 and presumed or confirmed SARS-CoV-2 negative, providing adequate PPE can be worn by those providing care. For women who are symptomatic of COVID-19 with a cough, fever or feeling unwell, labour and birth in water is not recommended.</p>

	<p>For women who are asymptomatic of COVID-19 but test positive for SARS-CoV-2, there is inadequate evidence about the risk of transmission. Advice should be sought from infection prevention and control authorities.</p> <p>An individualised informed discussion and decision should be made regarding shortening the length of the second stage of labour with instrumental birth in a symptomatic woman who is becoming exhausted or hypoxic.</p> <p>In case of deterioration in the woman's symptoms, an individual assessment should be made regarding the risks and benefits of continuing the labour versus proceeding to emergency caesarean birth, if this is likely to assist efforts to resuscitate the woman.</p> <p>Donning PPE is time-consuming. For emergency caesarean births, this may impact on the decision to birth interval but it must be done. Women and their families should be told early about this possible delay.</p>
<p><b>Birth partners</b></p>	<p>Women should be supported and encouraged to have a birth partner present with them during their labour and birth. Having a trusted birth partner present throughout labour and birth is known to make a significant difference to the safety and well-being of women in childbirth.</p> <p>At a minimum, one asymptomatic birth partner should be permitted to stay with the woman through labour and birth, unless the birth occurs under general anaesthetic.</p> <p>When a woman contacts the maternity unit in early labour, she should be asked whether she or her birth partner have had any symptoms which could suggest COVID-19 in the preceding 14 days. If her partner has had onset of symptoms in the last 14 days, and has not had a negative test, the woman should be advised that her partner should not attend the unit with her and she should consider bringing another birth partner who is symptom-free. Explain the need to protect maternity staff and other women and families from the risk of infection.</p> <p>On attendance to the maternity unit, all birth partners should also be asked whether they have had any symptoms that could suggest COVID-19 in the preceding 14 days. If the onset of these symptoms was within the last 14 days, and they have not had a negative test, or symptoms are still present (other than persistent cough), they should be asked to leave the maternity unit immediately and self-isolate at home.</p> <p>Birth partners should be asked to remain by the woman's bedside, to not walk around the ward/hospital and to wash their hands frequently.</p> <p>We recommend that birth partners be given clear advance guidance on what is expected of them should they need to accompany the woman to the operating theatre, e.g. for caesarean birth. This is particularly important given the challenges of staff communication when wearing full PPE.</p> <p>Restrictions on other visitors should follow hospital policy.</p>



<b>Respect and consent</b>	Women must still be able to make decisions about the care they receive in line with the principles of informed consent.
<b>Fetal surveillance</b>	<p>Discuss with women the options for fetal surveillance in labour in accordance with existing NICE guidelines.</p> <p>Recommend continuous EFM for women who are symptomatic of COVID-19.</p> <p>Current infection with SARS-CoV-2 is not a contraindication for application of a fetal scalp electrode or for fetal blood sampling.</p>
<b>Pain relief</b>	<p>There is no evidence that epidural or spinal analgesia or anaesthesia is contraindicated in the presence of coronaviruses.</p> <p>Epidural analgesia should therefore be recommended in labour to women with suspected or confirmed COVID-19 to minimise the need for general anaesthesia if urgent intervention for birth is needed</p> <p>Entonox should be used with a single-patient microbiological filter. This is standard issue throughout maternity units in the UK.</p> <p>There is no evidence that the use of Entonox is an aerosol-generating procedure.</p>
<b>Intrapartum care</b>	<p>When a woman with confirmed or suspected COVID-19 is admitted to the maternity suite, the following members of the multidisciplinary team should be informed: consultant obstetrician, consultant anaesthetist, midwife-in-charge, consultant neonatologist, neonatal nurse in charge, intensivist for obstetric care, and the infection control team.</p> <p>Maternal observations and assessment should be continued as per standard practice, with the addition of hourly oxygen saturations.</p> <p>Aim to keep oxygen saturation above 94%, titrating oxygen therapy accordingly.</p> <p>If the woman develops a fever; investigate and treat as per RCOG guidance on sepsis in pregnancy, but also consider active COVID-19 as a cause of sepsis and investigate according to Public Health England (PHE) guidance.</p> <p>Apply caution with intravenous fluid management. Given the association of COVID-19 with acute respiratory distress syndrome, women with moderate-to-severe symptoms of COVID-19 should be monitored using hourly fluid input/output charts.</p> <p>Efforts should be targeted towards achieving neutral fluid balance in labour; in order to avoid the risk of fluid overload.</p>

## Appendix III: Full description of guidance development methods

The development methods have evolved over the lifetime of this guidance. This version of the guidance was developed by a multidisciplinary group of authors listed in acknowledgments. Specific sections of the guidance were contributed by subject experts also listed in acknowledgments.

Weekly literature reviews are generated using the following search terms, MeSH headings and associated synonyms: pregnancy, coronavirus, SARS, severe acute respiratory syndrome, infant, newborn and breastfeeding. The search results are published weekly on the RCOG website.<sup>118</sup> Populations of interest include pregnant women, those recently given birth, partners, neonates. Studies of other populations are included where necessary, in order to understand population risk, asymptomatic carriage of coronavirus and antibody results where we believe these findings can be extrapolated to pregnant women. The retrieved evidence is reviewed by clinically trained members of the guidance team for inclusion. The criteria for including evidence has evolved as the evidence base has matured. For each section of the guidance, the best available evidence is included. The guidance also includes reference to 'grey' literature such as registry studies, reports from national organisations and non-peer reviewed content. Where there is a need to change practice and where published alternatives are not available, 'preprints' are discussed within the core guidance team and considered for inclusion.

For this guidance, good practice points are based on expert consensus of the multidisciplinary guidance group comprising healthcare providers across a variety of disciplines reviewing the available evidence and from their own expertise and experience within clinical practice. Appreciating the paucity of high-quality evidence in this area, this guidance is reviewed regularly to ensure the advice remains up-to-date and relevant.

While this document has not been subject to an open peer review or formal stakeholder consultation process, specific individuals and groups were asked to review its content prior to publication. These are listed in acknowledgments and include a wide range of external stakeholders including lay representatives, other Royal Colleges and professional associations and representatives from the governments across England and the devolved nations. Feedback on this guidance sent to the dedicated COVID-19 inbox is also considered.

No external funding was received in order to develop this guidance.



Royal College of  
Obstetricians &  
Gynaecologists

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DISCLAIMER: The Royal College of Obstetricians and Gynaecologists (RCOG) has produced this guidance as an aid to good clinical practice and clinical decision-making. This guidance is based on the best evidence available at the time of writing, and the guidance will be kept under regular review as new evidence emerges. This guidance is not intended to replace clinical diagnostics, procedures or treatment plans made by a clinician or other healthcare professional and RCOG accepts no liability for the use of its guidance in a clinical setting. Please be aware that the evidence base for COVID-19 and its impact on pregnancy and related healthcare services is developing rapidly and the latest data or best practice may not yet be incorporated into the current version of this document. RCOG recommends that any departures from local clinical protocols or guidelines should be fully documented in the patient's case notes at the time the relevant decision is taken.

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