



Royal College of
Obstetricians &
Gynaecologists

Coronavirus (COVID-19) Infection in Pregnancy

Information for healthcare professionals

Version 3: Published Wednesday 18 March 2020



Table of contents

Summary of updates	3-5
1. Introduction	6-8
2. Advice for health professionals to share with pregnant women	9-11
3. Advice for all midwifery and obstetric services caring for pregnant women	12-14
4. Advice for services caring for women with suspected or confirmed COVID-19	15-28
5. Advice for services caring for women following recovery from confirmed COVID-19	29
6. Advice for pregnant healthcare professionals	29-30
Acknowledgements	31
Flow chart to assess COVID-19 risk in maternity unit attendees	32
References	33-35

Summary of updates

Version	Date	Summary of changes
2	13.3.20	1.2: 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 this guidance if this changes.
2	13.3.20	2.2: 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
2	13.3.20	3.2: Sentence on who to test updated to reflect advice to test women with symptoms suggestive of COVID-19 who require admission
2	13.3.20	3.6.4 and 3.6.5: 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
2	13.3.20	3.8: 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
2	13.3.20	4: New section added for antenatal care for pregnant women following self-isolation for symptoms suggestive of COVID-19
2	13.3.20	5 (new). New section - Advice for pregnant healthcare professionals
2	13.3.20	Appendix 1: Flow chart amended to reflect modified PHE guidance

2	13.3.20	References: 19. NHS Staff Council Statement on Covid-19 2020 [Available from: https://www.nhsemployers.org/-/media/Employers/Documents/Pay-and-reward/NHS-Staff-Council---Guidance-for-Covid-19-Feb-20.pdf?la=en&hash=70C909DA995280B9FAE4BF6AF291F4340890445C] accessed 12 March 2020
3	17.3.20	2: Advice for Health Professionals to share with Pregnant Women updated to reflect current guidelines
3	17.3.20	3: New section added on Advice for all midwifery and obstetric services
3	17.3.20	4.1: General advice to services providing care to pregnant women updated to reflect advice from chief medical officer on 16/3/20
3	14.3.20	4.1: Advice on cleaning ultrasound equipment added, and reference added
3	17.3.20	4.5: Linked to new national guidance on the actions required when a COVID-19 case was not diagnosed on admission
3	17.3.20	4.6.2: 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.

3	17.3.20	<p>4.6.2: Advice about Entonox changed to</p> <p>There is no evidence that the use of Entonox is an aerosol-prone procedure</p> <p>Entonox should be used with a single-patient microbiological filter. This is standard issue throughout maternity units in the UK.</p>
3	17.3.20	<p>4.6.4: Anaesthetic management for women with symptoms or confirmed COVID-19, which was previously in this guidance, has been removed and external links provided</p>
3	17.3.20	<p>4.7.1: 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.'</p>
3	17.3.20	<p>Updated to reflect current public health guidance on self-isolation and social distancing</p>
3	17.3.20	<p>4.7.1: Advice on neonatal management and testing has been removed. Please refer to RCPCH guidance</p>

I. Introduction

The following advice is provided as a resource for UK Healthcare Professionals based on a combination of available evidence, good practice and expert advice. The priorities are (i) the reduction of transmission of COVID-19 to pregnant women and (ii) the provision of safe care to women with suspected/confirmed COVID-19. Please be aware that this is very much an evolving situation and this guidance is a living document that may be updated if or when new information becomes available. We therefore suggest that you visit this page regularly for updates.

This guidance will be kept under regular review as new evidence emerges. If you would like to suggest additional areas for this guidance to cover, any clarifications required or to submit new evidence for consideration, please email COVID-19@rcog.org.uk. Please note, we will not be able to give individual clinical advice or information for specific organisational requirements via this email address.

I.1 The virus

Novel coronavirus (SARS-CoV-2) is a new strain of coronavirus causing COVID-19, first identified in Wuhan City, China. Other coronavirus infections include the common cold (HCoV 229E, NL63, OC43 and HKU1), Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV).

I.2 Epidemiology

The virus appears to have originated in Hubei Province in China towards the end of 2019. Since then China has remained the country with the highest number of infected individuals. Within Europe, Italy is the country currently most affected.

This situation is naturally changing rapidly and for the most up to date advice please consult local Health Protection advice. Health Protection is a devolved matter and links to local guidance are available for [England](#), [Wales](#), [Scotland](#) and [Northern Ireland](#). Public Health England (PHE) and Health Protection Scotland (HPS) have been cited throughout this document; specific guidance from the other areas of the United Kingdom will be updated as they become available. 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 this guidance if this changes.

Pregnant women themselves do not appear to be more susceptible to the consequences of infection with COVID-19 than the general population. Data is limited but special consideration should be given to pregnant women with concomitant medical illnesses who could be infected with COVID-19 until the evidence base provides clearer information. There are no reported deaths in pregnant women at the moment.

I.3 Transmission

Most cases of COVID-19 globally have evidence of human to human transmission. However, recent cases have appeared where there is no evidence of contact with infected people. This virus appears to spread readily, through respiratory, fomite or faecal methods. Healthcare providers are recommended to employ strict infection prevention and control (IPC) measures; guidance is available as per local Health Protection guidance.

Two cases of possible vertical transmission (transmission from mother to baby antenatally or intrapartum) have been reported.^{1,2} In both cases, it remains unclear whether transmission was prior to or soon after birth. Expert opinion is that the fetus is unlikely to be exposed during pregnancy. A case series published by Chen et al tested amniotic fluid, cord blood, neonatal throat swabs and breastmilk samples from COVID-19 infected mothers and all samples tested negative for the virus.³ Furthermore, in a different paper by Chen et al, three placentas of infected mothers were swabbed and tested negative for the virus⁴; and in another case series by the same team, of three infants born to symptomatic mothers tested for the coronavirus, none had positive tests⁵.

Transmission is therefore most likely to be as a neonate and in another case series by the same team, of three infants born to symptomatic mothers tested for the coronavirus, none had positive tests⁶. There is currently no evidence concerning transmission through genital fluids⁷. The management of the neonate during early bonding and feeding are discussed below in Section 4.8.

I.4 Effect on the mother/symptoms

The large majority of women will experience only mild or moderate cold/flu like symptoms. Cough, fever and shortness of breath are other relevant symptoms. More severe symptoms such as pneumonia and marked hypoxia are widely described with COVID-19 in older people, the immunosuppressed and those with long-term conditions such as diabetes, cancer and chronic lung disease. These symptoms could occur in pregnant women so should be identified and treated promptly. At present there is one reported case of a woman with COVID-19 who was admitted to hospital at 34 weeks' gestation, had an emergency Caesarean section for a stillborn baby and was admitted to the intensive care unit with multiple organ dysfunction and acute respiratory distress syndrome, requiring extracorporeal membrane oxygenation.⁸ Within the general population there

is evolving evidence that there could be a cohort of asymptomatic individuals or those with very minor symptoms that are carrying the virus, although the incidence is unknown.

I.5 Effect on the fetus

There are currently no data suggesting an increased risk of miscarriage or early pregnancy loss in relation to COVID-19. Case reports from early pregnancy studies with SARS and MERS do not demonstrate a convincing relationship between infection and increased risk of miscarriage or second trimester loss.⁹

As there is no evidence of intrauterine fetal infection with COVID-19 it is therefore currently considered unlikely that there will be congenital effects of the virus on fetal development.

There are case reports of preterm birth in women with COVID-19, but it is unclear whether the preterm birth was always iatrogenic, or whether some were spontaneous. Iatrogenic delivery was predominantly for maternal indications related to the viral infection, although there was evidence of fetal compromise and prelabour premature rupture of membrane, in at least one report.²

2. Advice for health professionals to share with pregnant women

2. Advice for health professionals to share with pregnant women

As a pregnant woman the news that you were placed in a 'vulnerable group' by the chief medical officer on Monday 16 March may have caused you concern.

We would like to reiterate that the evidence we have so far is that pregnant women are still no more likely to contract the infection than the general population. What we do know is that pregnancy in a small proportion of women can alter how your body handles severe viral infections. This is something that midwives and obstetricians have known for many years and are used to dealing with.

What has driven the decisions made by officials is the need to restrict spread of illness because if the number of infections were to rise sharply the number of severely infected women could rise and this could put the lives of some pregnant women in danger.

Our general advice is that:

- If you get infected with COVID-19 you are still most likely to have no symptoms or a mild illness from which you will make a full recovery
- If you develop more severe symptoms or your recovery is delayed this may be a sign that you are developing a more significant chest infection that requires enhanced care, and our advice remains that if you feel your symptoms are worsening or if you are not getting better you should contact your maternity care team or NHS 111 straight away for further information and advice.
- If you are well at the moment and have no complications in any past pregnancies the following practical advice may be helpful
 - If you have a routine scan or visit due in the coming days please contact your maternity unit for advice and to agree a plan. You will still need to attend for a visit but the appointment may change due to staffing requirements.

- If you are between appointments, please wait to hear from your maternity team
- If you are attending more regularly in pregnancy, then your maternity team will be in touch with plans
- Whatever your personal situation please consider the following:
 - If you have any concerns you will be able to contact your maternity team as usual but please note they may take longer to get back to you
 - If you have an urgent problem related to your pregnancy but not related to Coronavirus, get in touch using the same emergency contact details you already have. Please do not contact this number unless you have an urgent problem
 - If you have symptoms of Coronavirus, contact your maternity service and they will arrange the right place and time to come for your visits. You should not attend a routine clinic.
 - You will be asked to keep the number of people with you to a minimum. This will include to being asked to not bring children with you to maternity appointments.
 - There may be a need to reduce the number of antenatal visits you have. This will be communicated with you. Do not reduce your number of visits without agreeing first with your maternity team.

At this time it is particularly important that you help your maternity team take care of you. If you have had an appointment cancelled or delayed, and are not sure of your next contact with your maternity team, please let them know by using the contact numbers provided to you at booking.

All pregnant women should follow the Government guidance available here:

- 1) [For all vulnerable people including pregnant women](#)¹⁰
- 2) [For individuals and households of individuals with symptoms of new continuous cough or fever](#)¹¹

**3. Advice for all
midwifery and
obstetric services
caring for pregnant
women**

3. Advice for all midwifery and obstetric services caring for pregnant women

The situation is currently moving very fast and reconfiguration of services is likely to be necessary. At present, we recommend the following:

- Care for pregnant and postnatal women is an essential service and should be planned for along with other essential services
- Women should be advised to attend routine antenatal care unless they meet current stay at home guidance for individuals and households of individuals with symptoms of new continuous cough or fever¹²
- Units should rapidly seek to adopt teleconferencing and videoconferencing capability and consider what appointments can be conducted remotely. We hope to issue further guidance on this soon. The [NHS](#) has provided guidance on the relaxation of information governance requirements for video calling.
- Record keeping remains paramount
- Electronic record systems should be used and where remote access for staff or patients is an available function, this should be expedited. When seeing women face to face, simultaneous electronic documentation will facilitate future remote consultation.
- Units should appoint a group of clinicians to co-ordinate care for women forced to miss appointments due to isolation. Women should be able to notify the unit of their isolation through numbers that are already available to them. Appointments should then be reviewed for urgency and either converted to remote appointments, attendance appropriately advised or deferred.
 - [For women who live alone, appointments can be deferred by 7 days](#)
 - [For women who live with others, in line with stay at home guidance from PHE, this should be for 14 days](#)

- Units should have a system to flag women who have missed serial appointments, which is a particular risk for women with small children who may become repeatedly unwell, and any woman who has a routine appointment delayed for more than 3 weeks should be contacted.
- Individualised plans for women requiring frequent review may be necessary

**4. Advice for
services caring
for women
with suspected
or confirmed
COVID-19**

4. Advice for services caring for women with suspected or confirmed COVID-19

The following advice mostly refers to the care of women in the second or third trimesters of pregnancy. Care of women in the first trimester should include attention to the same infection prevention and investigation/diagnostic guidance.

4.1 General advice for services providing care to pregnant women

Pregnant women have been advised to reduce social contact by the government based on the theoretical risks to pregnancy posed by COVID-19. Antenatal and postnatal care is based on years of evidence to keep mothers and babies safe in pregnancy and birth. The majority of antenatal and postnatal care should therefore be regarded as essential care and women should be encouraged to attend, even while minimising contact with others.

We recommend that, where practical, appointments should be conducted on the telephone or using videoconferencing, provided there is a reasonable expectation that maternal observations or tests are not required.

4.2 General advice for services providing care to women with suspected or confirmed COVID-19, in whom hospital attendance is necessary

The following suggestions apply to all hospital/clinic attendances for women with suspected or confirmed COVID-19:

- Women should be advised to attend via private transport where possible or call 111/999 for advice as appropriate. If an ambulance is required, the call handler should be informed that the woman is currently in self-isolation for possible COVID-19.
- Women should be asked to alert a member of maternity staff to their attendance when on the hospital premises, but prior to entering the hospital

- Staff providing care should take personal protective equipment (PPE) precautions as per local / [Public Health England](#)¹³/[Health Protection Scotland](#)⁹ guidance
- Women should be met at the maternity unit entrance by staff wearing appropriate PPE and provided with a surgical face mask (not FFP3 mask).
- Women should immediately be escorted to an isolation room, suitable for the majority of care during their hospital visit or stay
 - For overnight stays, isolation rooms should ideally have an ante-chamber for donning and removing staff PPE equipment and ensuite bathroom facilities
 - Rooms should have negative pressure in comparison to the surrounding area, if available
- Only essential staff should enter the room and visitors should be kept to a minimum
- Remove non-essential items from the clinic/scan room prior to consultation
- All clinical areas used will need to be cleaned after use as per local/[Public Health England](#)¹⁰/ [Health Protection Scotland](#)⁹ guidance

4.3 Women presenting for care with unconfirmed COVID-19 but symptoms suggestive of possible infection

Maternity departments with direct entry for patients and the public should have in place a system for identification of potential cases as soon as possible to prevent potential transmission to other patients and staff. This should be at first point of contact (either near the entrance or at reception) to ensure early recognition and infection control. This should be employed before a patient sits in the maternity waiting area.

Services should follow guidance available from the NHS about whether the woman is at risk of COVID-19. If women show symptoms suggestive of COVID-19 infection (cough or fever of or above 37.8 degrees) and

require admission to hospital they should be tested. they should be tested. Until test results are available, they should be treated as though they have confirmed COVID-19. The full [Public Health England guidance](#)⁸ has been summarised in a flowchart for this guideline (Appendix 1).

Pregnant women may attend for pregnancy reasons and have coincidental symptoms meeting current COVID-19 case definition. There are some situations where overlap between pregnancy symptoms and COVID-19 symptoms may cause confusion (e.g. fever with ruptured membranes). In cases of uncertainty seek additional advice or in case of emergency investigate and treat as suspected COVID-19 until advice can be sought.

In the event of a pregnant woman attending with an obstetric emergency and being suspected or confirmed to have COVID-19, maternity staff must first follow IPC guidance. This includes transferring to an isolation room and donning appropriate PPE. This can be time consuming and stressful for patients and health professionals. Once IPC measures are in place the obstetric emergency should be dealt with as the priority. Do not delay obstetric management in order to test for COVID-19.

Further care, in all cases, should continue as for a woman with confirmed COVID-19, until a negative test result is obtained.

4.3 Attendance for routine antenatal care in women with suspected or confirmed COVID-19

Routine appointments for women with suspected or confirmed COVID-19 (growth scans, OGTT, antenatal community or secondary care appointments) should be delayed until after the recommended period of isolation. Advice to attend more urgent pre-arranged appointments (fetal medicine surveillance, high risk maternal secondary care) will require a senior decision on urgency and potential risks/benefits.

Trusts are advised to arrange local, robust communication pathways for senior maternity staff members to screen and coordinate appointments missed due to suspected or confirmed COVID-19.

If it is deemed that obstetric or midwifery care cannot be delayed until after the recommended period of isolation, infection prevention and control measures should be arranged locally to facilitate care. Pregnant women in isolation who need to attend should be contacted by a local care coordinator to re-book urgent appointments / scans, preferably at the end of the working day.

If ultrasound equipment is used, this should be decontaminated after use in line with [guidance](#).

4.4 Attendance for unscheduled/urgent antenatal care in women with suspected or confirmed COVID-19

Where possible, early pregnancy (EPU) or maternity triage units should provide advice over the phone. If this requires discussion with a senior member of staff who is not immediately available, a return telephone call should be arranged.

Local protocols are required to ensure women with confirmed or suspected COVID-19 are isolated on arrival to EPU or triage units and full PPE measures are in place for staff (see Section 3.1).

Medical, midwifery or obstetric care should otherwise be provided as per routine.

4.5 Women who develop new symptoms during admission (antenatal, intrapartum or postnatal)

There is an estimated incubation period of 0-14 days (mean 5-6 days); an infected woman may therefore present asymptotically, developing symptoms later during an admission.¹⁴

Health professionals should be aware of this possibility, particularly those who regularly measure patient vital signs (e.g. Health Care Assistants). [National guidance is available](#) on actions and when further assessment of the patient in the event of new onset respiratory symptoms or unexplained fever of or above 37.8 degrees.

4.6 Women attending for intrapartum care with suspected/confirmed COVID-19 and no/mild symptoms

4.6.1 Attendance in labour

All women should be encouraged to call the maternity unit for advice in early labour. Women with mild COVID-19 symptoms can be encouraged to remain at home (self-isolating) in early (latent phase) labour as per standard practice.

If birth at home or in a midwifery-led unit is planned, a discussion should be initiated with the woman regarding the potentially increased risk of fetal compromise in women infected with COVID-19 (as was noted in the Chinese case series of nine women).² The woman should be advised to attend an obstetric unit for birth, where the baby can be monitored using continuous electronic fetal monitoring. This guidance may change as more evidence becomes available.

When a woman decides to attend the maternity unit, general recommendations about hospital attendance (Section 4.1) apply.

Once settled in an isolation room, a full maternal and fetal assessment should be conducted to include:

- Assessment of the severity of COVID-19 symptoms should follow a multi-disciplinary team approach including an infectious diseases or medical specialist
- Maternal observations including temperature, respiratory rate and oxygen saturations
- Confirmation of the onset of labour, as per standard care
- Electronic fetal monitoring using cardiotocograph (CTG)
 - In two Chinese case series, including a total of 18 pregnant women infected with COVID-19 and 19 babies (one set of twins), there were 8 reported cases of fetal compromise.^{2 15} Given this relatively high rate of fetal compromise, continuous electronic fetal monitoring in labour is currently recommended for all women with COVID-19.
- If the woman has signs of sepsis, 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 [guidance](#)

If there are no concerns regarding the condition of either the mother or baby, women who would usually be advised to return home until labour is more established, can still be advised to do so, if appropriate transport is available.

Women should be given the usual advice regarding signs and symptoms to look out for, but in addition should be told about symptoms that might suggest deterioration related to COVID-19 following consultation with the medical team (e.g. difficulty in breathing, fever greater than 38.0oC).

If labour is confirmed, then care in labour should ideally continue in the same isolation room.

4.6.2 Care in labour

The following considerations apply to women in spontaneous or induced labour:

- When a woman with confirmed or suspected COVID-19 is admitted to the Delivery Suite, the following members of the multi-disciplinary team should be informed: consultant obstetrician, consultant anaesthetist, midwife-in-charge, consultant neonatologist and neonatal nurse in charge
- Efforts should be made to minimise the number of staff members entering the room and units should develop a local policy specifying essential personnel for emergency scenarios
- There is evidence of household clustering and household co-infection.¹⁶ 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.
- Maternal observations and assessment should be continued as per standard practice, with the addition of hourly oxygen saturations
 - Aim to keep oxygen saturation >94%, titrating oxygen therapy accordingly
- If the woman has signs of sepsis, 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 [guidance](#)
- Given the rate of fetal compromise reported in the Chinese case series,^{2,12} the current recommendation is for continuous electronic fetal monitoring in labour. This recommendation may be altered as more evidence becomes available.

- There is currently no evidence to favour one mode of birth over another and therefore mode of birth should be discussed with the woman, taking into consideration her preferences and any obstetric indications for intervention. Mode of birth should not be influenced by the presence of COVID-19, unless the woman's respiratory condition demands urgent delivery.
 - At present, there are no recorded cases of vaginal secretions being tested for COVID-19. However, a stool sample from a male patient with diarrhoea in the USA did test positive for viral RNA¹⁷
- The use of birthing pools in hospital should be avoided in suspected or confirmed cases, given the inability to use adequate protection equipment for healthcare staff during water birth.
- There is no evidence that epidural or spinal analgesia or anaesthesia is contraindicated in the presence of coronaviruses. Epidural analgesia should therefore be recommended before, or early in labour, to women with suspected/confirmed COVID-19 to minimise the need for general anaesthesia if urgent delivery is needed.
- There is no evidence that the use of Entonox is an aerosol generating procedure.
- Entonox should be used with a single-patient microbiological filter. This is standard issue throughout maternity units in the UK.
- In case of deterioration in the woman's symptoms, refer to Section 4.7 for additional considerations, and make an individual assessment 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 mother.
- When caesarean birth or other operative procedure is advised, follow guidance from Section 4.6.4.
 - For Category I CS, donning PPE is time consuming. This may impact on the decision to delivery interval but it must be done. Women and their families should be told about this possible delay.
- An individualised decision should be made regarding shortening the length of the second stage of labour with elective instrumental birth in a symptomatic woman who is becoming exhausted or hypoxic
- Given a lack of evidence to the contrary, delayed cord clamping is still recommended following birth, provided there are no other contraindications. The baby can be cleaned and dried as normal, while the cord is still intact.

4.6.3 General advice for obstetric theatre

- Elective procedures should be scheduled at the end of the operating list
- Non-elective procedures should be carried out in a second obstetric theatre, where available, allowing time for a full post-operative theatre clean according to local/[Public Health England/Health Protection Scotland](#) guidance^{18 10}
- The number of staff in the operating theatre should be kept to a minimum, all of whom must wear appropriate PPE
- All staff (including maternity, neonatal and domestic) should have been trained in the use of PPE so that 24 hour emergency theatre use is available and possible delays reduced
- Anaesthetic management for women with symptoms or confirmed COVID-19 should be with reference to [anaesthetic guidance](#) and <https://icmanaesthesiacovid-19.org/airway-management> for obstetric anaesthetic and general airway management respectively.
- Departments should consider running dry-run simulation exercises to prepare staff, build confidence and identify areas of concern.

4.6.4 Elective caesarean birth

Where women with mild symptoms suggestive of, or confirmed COVID-19 have scheduled appointments for pre-operative care and elective caesarean birth, an individual assessment should be made to determine whether it is safe to delay the appointment to minimise the risk of infectious transmission to other women, healthcare workers and, postnatally, to her infant.

In cases where elective caesarean birth cannot safely be delayed, the general advice for services providing care to women admitted when affected by suspected/confirmed COVID-19 should be followed (see Section 3.1).

Obstetric management of elective caesarean birth should be according to usual practice.

4.6.5 Planned induction of labour

As for elective caesarean birth, an individual assessment should be made regarding the urgency of planned induction of labour for women with mild symptoms and suspected or confirmed COVID-19. If induction of labour cannot safely be delayed, the general advice for services providing care to women admitted to hospital when affected by suspected/confirmed COVID-19 should be followed (see Section 4.1). Women should be admitted into an isolation room, in which they should ideally be cared for the entirety of their hospital stay.

4.7 Additional considerations for women with confirmed COVID-19 and moderate/severe symptoms

The following recommendations apply in addition to those specified for women with no/mild symptoms.

4.7.1 Women admitted during pregnancy (not in labour)

Where pregnant women are admitted to hospital with deterioration in symptoms and suspected/confirmed COVID-19 infection, the following recommendations apply:

- A multi-disciplinary discussion planning meeting ideally involving a consultant physician (infectious disease specialist where available), consultant obstetrician, midwife-in-charge and consultant anaesthetist responsible for obstetric care should be arranged as soon as possible following admission. The discussion and its conclusions should be discussed with the woman. The following should be discussed:
 - Key priorities for medical care of the woman;
 - 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 amongst the team regarding special considerations in pregnancy, particularly the condition of the baby

- The priority for medical care should be to stabilise the woman's condition with standard supportive care therapies
 - At the time of publication, there was no UK guidance for supportive care for adults diagnosed with COVID-19, but a useful summary has been published by the [WHO](#)¹⁹
- Particular considerations for pregnant women are:
 - Radiographic investigations should be performed as for the non-pregnant adult; this includes chest X-ray and CT of the chest. Reasonable efforts to protect the fetus from radioactive exposure should be made, as per usual protocols.
 - The frequency and suitability of fetal heart rate monitoring should be considered on an individual basis, taking into consideration the gestational age of the fetus and the maternal condition. If urgent delivery is indicated for fetal reasons, birth should be expedited as normal, as long as the maternal condition is stable.
 - If maternal stabilisation is required before delivery, this is the priority, as it is in other maternity emergencies e.g. severe pre-eclampsia
 - An individualised assessment of the woman should be made by the MDT team to decide whether elective birth of the baby is indicated, either to assist efforts in maternal resuscitation or where there are serious concerns regarding the fetal condition. Individual assessment should consider: the maternal condition, the fetal condition, the potential for improvement following elective birth and the gestation of the pregnancy. The priority must always be the wellbeing of the mother.
 - There is no evidence to suggest that steroids for fetal lung maturation, when they would usually be offered, cause any harm in the context of COVID-19. Steroids should therefore be given where indicated. As is always the case, urgent delivery should not be delayed for their administration.

4.7.2 Women requiring intrapartum care

In addition to recommendations in Sections 4.6 and 4.7.1, for women with moderate/severe COVID-19 requiring intrapartum care it is also recommended that:

- The neonatal team should be informed of plans to deliver the baby of a woman affected by moderate to severe COVID-19, as far in advance as possible
- With regards to mode of birth, an individualised decision should also be made, with no obstetric contra-indication to any method except water birth (see above). Caesarean section should be performed if indicated based on maternal and fetal condition as in normal practice.
- Given the association of COVID-19 with acute respiratory distress syndrome²⁰, women with moderate-severe symptoms of COVID-19 should be monitored using hourly fluid input-output charts, and efforts targeted towards achieving neutral fluid balance in labour; in order to avoid the risk of fluid overload.

4.8 Postnatal management

4.8.1 Neonatal care

There are limited data to guide the postnatal management of babies of mothers who tested positive for COVID-19 in the third trimester of pregnancy. Reassuringly, there is no evidence at present of (antenatal) vertical transmission as of 17th March 2020. Media reports to the contrary are, to our current knowledge, based on incorrect information.

Literature from China has advised separate isolation of the infected mother and her baby for 14 days. However, routine precautionary separation of a mother and a healthy baby should not be undertaken lightly, given the potential detrimental effects on feeding and bonding. Given the current limited evidence we advise that women and healthy infants, not otherwise requiring neonatal care, are kept together in the immediate post-partum period.

A risks / benefits discussion with neonatologists and families to individualise care in babies that may be more susceptible is recommended. We emphasise that this guidance may change as knowledge evolves.

All babies born to COVID-19 positive mothers should be cared for as [per RCPCH guidance](#).

4.8.2 Infant feeding

It is reassuring that in six Chinese cases tested, breastmilk was negative for COVID-19;² however, given the small number of cases, this evidence should be interpreted with caution. The main risk for infants of breastfeeding is the close contact with the mother, who is likely to share infective airborne droplets. In the light of the current evidence, we advise that the benefits of breastfeeding outweigh any potential risks of transmission of the virus through breastmilk. The risks and benefits of breastfeeding, including the risk of holding the baby in close proximity to the mother, should be discussed with her. This guidance may change as knowledge evolves.

For women wishing to breastfeed, precautions should be taken to limit viral spread to the baby:

- Hand washing before touching the baby, breast pump or bottles;
- Try and avoid coughing or sneezing on your baby while feeding at the breast
- Consider wearing a face mask while breastfeeding, if available
- Follow recommendations for pump cleaning after each use;
- Consider asking someone who is well to feed expressed milk to the baby

For women bottle feeding with formula or expressed milk, strict adherence to [sterilisation guidelines](#) is recommended. Where mothers are expressing breastmilk in hospital, a dedicated breast pump should be used.

4.8.3 Discharge and readmission to hospital

Any mothers or babies requiring readmission for postnatal obstetric or neonatal care during the period of home isolation due to suspected or confirmed COVID-19 are advised to phone ahead to contact their local unit and follow the attendance protocol as described in section 3.1. The place of admission will depend on the level of care required for mother or baby.

**5. Advice for services
caring for women
following isolation for
symptoms, or recovery
from confirmed
COVID-19**

5. Advice for Services Caring for Women following isolation for symptoms, or recovery from confirmed COVID-19

5.1 Antenatal care for pregnant women following confirmed COVID-19 illness

Scheduled antenatal care that falls within the isolation period should be re-arranged for after the period of isolation ends. No additional tests are necessary.

Even if a woman has previously tested negative for COVID-19, if she represents with symptoms, COVID-19 should be suspected.

5.2 Antenatal care for pregnant women following confirmed COVID-19 illness

Referral to antenatal ultrasound services for fetal growth surveillance is recommended, 14 days following resolution of acute illness. Although there isn't yet evidence that fetal growth restriction (FGR) is a risk of COVID-19, two thirds of pregnancies with SARS were affected by FGR and a placental abruption occurred in a MERS case, so ultrasound follow-up seems prudent.^{21 22}

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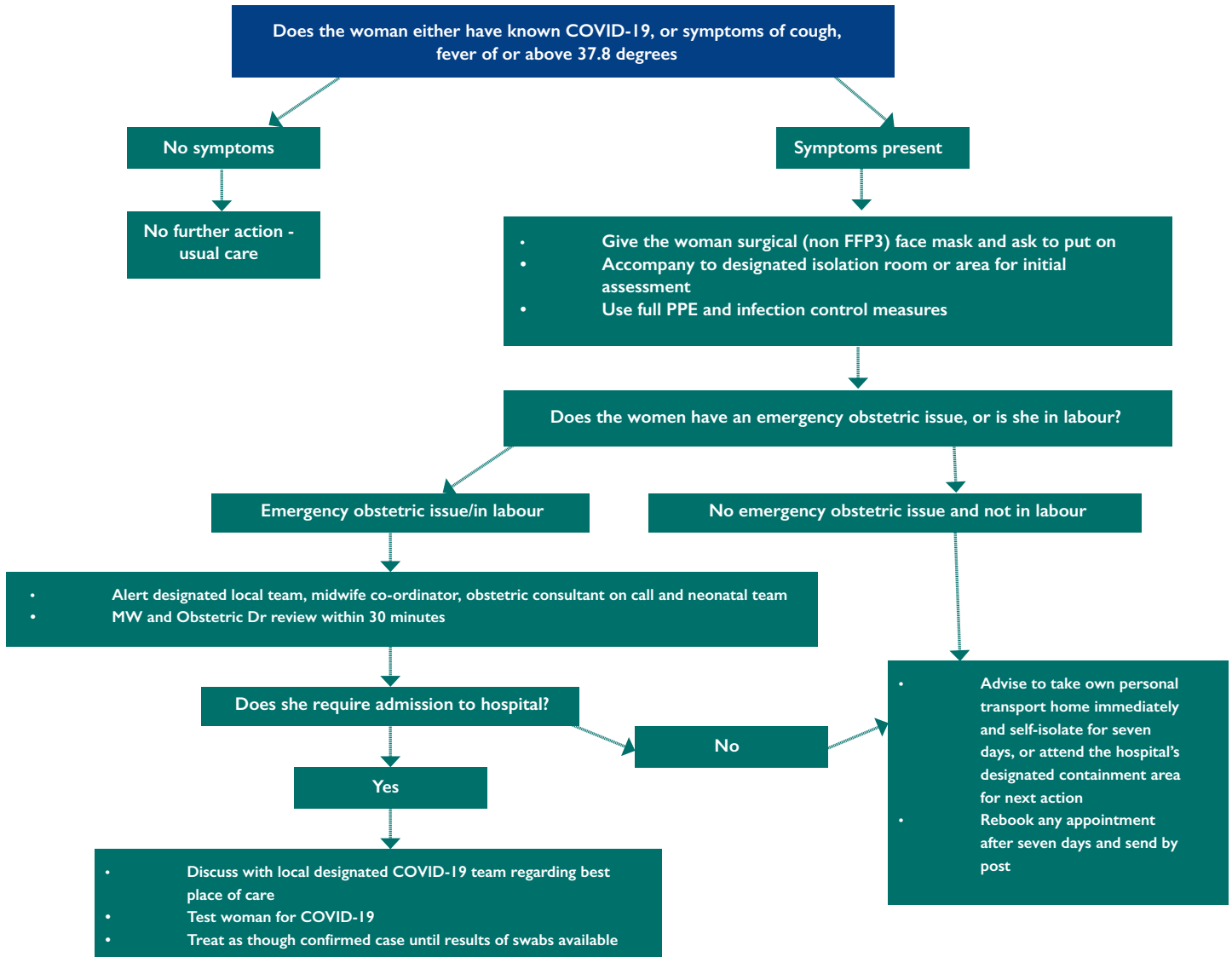
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Acknowledgments

We wish to thank the following people and teams for expert input and review: the Royal College of Midwives; the Royal College of Anaesthetists; the Royal College of Paediatrics and Child Health; the Obstetric Anaesthetists' Association; Public Health England; Health Protection Scotland; NHS England; NHS Improvement Infection, Prevention and Control Team; Dr Benjamin Black and Professor Asma Khalil.

Flow chart to assess COVID-19 risk in maternity unit attendees

Derived from Royal London flowchart developed by Dr Misha Moore



References

References

- 1 Rasmussen S, Smulian J, Lednicky J, et al. Coronavirus Disease 2019 (COVID-19) and Pregnancy: What obstetricians need to know. *American Journal of Obstetrics and Gynecology* 2020 doi: <https://doi.org/10.1016/j.ajog.2020.02.017>
- 2 Murphy S. Newborn baby tests positive for coronavirus in London. *The Guardian* 2020 14 March.
- 3 Chen H, Guo J, Wang C, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet* 2020 doi: [https://doi.org/10.1016/S0140-6736\(20\)30360-3](https://doi.org/10.1016/S0140-6736(20)30360-3)
- 4 3. Chen S, Huang B, Luo DJ, et al. Pregnant women with new coronavirus infection: a clinical characteristics and placental pathological analysis of three cases. *Zhonghua Bing Li Xue Za Zhi* 2020;49(0):E005-E05. doi: 10.3760/cma.j.cn112151-20200225-00138
- 5 Chen et al. Infants Born to Mothers With a New Coronavirus (COVID-19). *Frontiers in Pediatrics* doi:10.3389/fped.2020.00104
- 6 Chen et al. Infants Born to Mothers With a New Coronavirus (COVID-19) *Journal Frontiers in Pediatrics*. Vol 8 p 104 [Available from <https://www.frontiersin.org/article/10.3389/fped.2020.00104>] 10.3389/fped.2020.00104
- 7 Chen et al. Infants Born to Mothers With a New Coronavirus (COVID-19) *Journal Frontiers in Pediatrics*. Vol 8 p 104 [Available from <https://www.frontiersin.org/article/10.3389/fped.2020.00104>] 10.3389/fped.2020.00104
- 8 Liu Y, Chen H, Tang K, et al. Clinical manifestations and outcome of SARS-CoV-2 infection during pregnancy. *Journal of Infection* 2020; Online doi: <https://doi.org/10.1016/j.jinf.2020.02.028>
- 9 Zhang J, Wang Y, Chen L, et al. Clinical analysis of pregnancy in second and third trimesters complicated severe acute respiratory syndrome. *Zhonghua Fu Chan Ke Za Zhi* 2003;38:516-20.
- 10 COVID-19: guidance on social distancing and for vulnerable people 2020 [Available from: <https://www.gov.uk/government/publications/covid-19-guidance-on-social-distancing-and-for-vulnerable-people> accessed 17 March 2020.
- 11 Stay at home: guidance for households with possible coronavirus (COVID-19) infection 2020 [Available from: <https://www.gov.uk/government/publications/covid-19-stay-at-home-guidance/stay-at-home-guidance-for-households-with-possible-coronavirus-covid-19-infection> accessed 17 March 2020
- 12 Stay at home: guidance for households with possible coronavirus (COVID-19) infection 2020 [Available from: <https://www.gov.uk/government/publications/covid-19-stay-at-home-guidance/stay-at-home-guidance-for-households-with-possible-coronavirus-covid-19-infection> accessed

17 March 2020

- 13 COVID-19: Infection, prevention and control guidance 2020 [Available from: <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/wuhan-novel-coronavirus-wn-cov-infection-prevention-and-control-guidance> accessed 05 January 2020.
- 14 Coronavirus disease 2019 (covid-19) Situation Report – 29. 2020 [Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200219-sitrep-30-covid-19.pdf?sfvrsn=6e50645_2 accessed 08 March 2020.
- 15 Zhu H, Wang L, Fang C, et al. Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia. *Transl Pediatr* 2020;9(1):51-60. doi: <http://dx.doi.org/10.21037/tp.2020.02.06>
- 16 Pung R, Chiew CJ, Young BE, et al. Investigation of three clusters of COVID-19 in Singapore: implications for surveillance and response measures. *The Lancet* doi: 10.1016/S0140-6736(20)30528-6
- 17 Holshue ML, DeBolt C, Lindquist S, et al. First Case of 2019 Novel Coronavirus in the United States. *New England Journal of Medicine* 2020;382(10):929-36. doi: 10.1056/NEJMoa2001191
- 18 COVID-19 - guidance for secondary care 2020 [Available from: <https://www.hps.scot.nhs.uk/web-resources-container/covid-19-guidance-for-secondary-care/> accessed 06 March 2020.
- 19 Clinical management of severe acute respiratory infection when novel coronavirus (nCoV) infection is suspected 2020 [Available from: [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected) accessed 05 March 2020.
- 20 Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet* 2020;395(10223):497-506. doi: 10.1016/S0140-6736(20)30183-5
- 21 Swartz D, Graham A. Potential Maternal and Infant Outcomes from Coronavirus 2019-nCoV (SARS-CoV-2) Infecting Pregnant Women: Lessons from SARS, MERS, and Other Human Coronavirus Infections. *Viruses* 2020:1-16.
- 22 Alserahi H, Wali G, Alshukairi A, et al. Impact of Middle East Respiratory Syndrome coronavirus (MERS - CoV) on pregnancy and perinatal outcome. *BMC Infect Dis* 2016:1-4. doi: <http://dx.doi.org/10.1186/s12879-016-1437-y>.

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