COVID-19 position statement:
Maternal critical care provision

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Introduction

The purpose of this guideline is to provide NHSScotland with advice on minimising obstetric-related critical care admissions and the management of sicker obstetric patients during the COVID-19 pandemic.

This guideline is for clinical advisors in NHS 24 and COVID-19 community assessment hubs, midwives, obstetricians, physicians, obstetric anaesthetists and critical care staff.

The recommendations are based on expert opinion.

Recommendations

Antenatal

- Be proactive in monitoring and managing anaemia so that women are not anaemic upon admission during labour.
- When discussing management of the third stage of labour antenatally do this within the context of adaptations to routine maternity services due to COVID-19. Endorse active management for all.
- Labour should be induced only if medically indicated. Promote home/outpatient induction with a balloon catheter.¹
- Plan for elective delivery of high-risk pregnancies with a consultant-led multidisciplinary team (MDT).
- ALL pregnant women assessed and/or admitted with respiratory symptoms must be seen or discussed with an obstetrician and have daily physician and obstetric review irrespective of location of secondary care.

Intrapartum

Midwifery

- Be mindful of the impact and value of proactive vigilant 1-to-1 midwifery care to increase physiological birth, improve outcomes and experience of the pregnant woman, reduce interventions and facilitate early discharge.²
- Support regular risk assessment, monitoring of progress and cardiotocography (CTG) review.
- Support and encourage midwifery that facilitates progress through positioning and relaxation and hydration.
Midwifery and obstetrics

- Pregnant women are already hypercoagulable so stringent adherence to obstetric anticoagulation policies is required.
- Assess the risk of postpartum haemorrhage (PPH) on admission to the labour ward and regularly throughout labour.
- ICU should be contacted if a woman is requiring ≥40% facial mask oxygen to maintain oxygen saturations >94%.
- Senior review of CTGs: in cases of fetal bradycardia, use in utero resuscitation guidelines with the aim of reversing or improving fetal distress, allowing time for regional techniques rather than general anaesthesia.
- Active management of the third stage of labour for everyone with all forms of delivery.
- Follow PPH protocol early (ensure staff are up to date), including bimanual uterine compression, stepwise uterotonic and early tranexamic acid.
- Utilise point of care testing – haemacue, blood gas analysers and rotational thromboelastometry (ROTEM) or thromboelastography (TEG) if available.
- Keep the patient warm.
- Encourage use of bakri balloons.
- Consider blood earlier – liberal transfusion triggers.

Postnatal

- Strongly encourage long-acting contraception to prevent short interval pregnancies.
- Liberal use of postnatal intravenous iron.
1. Clinical context

Pregnant women will get Sars-CoV-2 infection (COVID-19) in the same way as the rest of the population. Most pregnant women will already be under the care of maternity professionals. Maternity care operates at both community and acute levels, and occupies a distinct place in the healthcare landscape. Pregnant women will need some distinct advice and care in relation to coronavirus because of the unique physiological changes of pregnancy.

In the UK, 427 pregnant women required admission to hospital with confirmed COVID-19 infection between 1 March and 14 April 2020, representing an estimated incidence of 4.9 per 1,000 maternities (95% CI 4.5–5.4 per 1,000 maternities). Very few of these were from Scotland. Of these 427 pregnant women 40 required critical care. Public Health Scotland reports that only 16 young adults or women aged 15–44 have been admitted to ICU with confirmed COVID-19 infection in Scotland between 1 March and 3 May 2020.

The Intensive Care National Audit Research Centre (ICNARC) provides an audit of patient outcomes from all adult, general critical care units (intensive care and combined intensive care/high dependency units) in England, Wales and Northern Ireland. During the pandemic, ICNARC is reporting on patients in ICU who are critically ill with COVID-19. A recent publication from ICNARC (including ICU patients reported up to 4pm on 30 April 2020) reported that 4–6% of female patients of childbearing age who were critically ill with confirmed COVID-19 in ICU were pregnant or recently pregnant. The National Maternity and Perinatal Audit (NMPA) is a national audit of NHS maternity services across England, Scotland and Wales. By linking births in NHS maternity services for 2015–2016 to the Scottish Intensive Care Society Audit Group (SICSAG) audit data set for admissions to critical care, NMPA estimated the overall rate of intensive care admission during pregnancy, birth and the postnatal period (up to 6 weeks) for any cause in Scotland to be 2.21 per 1,000 women.

There were 51,308 births in Scotland in 2018 which, using above rates of admission, equates to approximately 112 ICU admissions with approximately 10 obstetric ICU admissions per month in Scotland based on normal obstetric activity. Obstetric haemorrhage is the most common reason for admission, mainly on day of birth and in the immediate postpartum period.
2. Community assessment of pregnant women

NHS 24 provides a single point of entry for all adults, including pregnant women, with respiratory symptoms via the national 111 phone line. NHS 24 will use the maternity pathway (see Figure 1) thereafter to triage pregnant women. The pathway describes how to assess pregnant women to determine their route into care. In all cases, pregnant women experiencing symptoms indicative of COVID-19 should be advised to inform their midwife as soon as possible, and ahead of their next scheduled antenatal appointment. In all cases where symptomatic women are in labour or have an additional obstetric problem, e.g., vaginal bleeding, they should be referred to their local maternity unit for combined assessment by an obstetrician and physician in an obstetric unit with isolation facility.

Those with no obstetric issues but worsening respiratory symptoms, breathlessness or risk factors for deterioration should be assessed in person and in consultation with an obstetrician. They should NOT be referred to the local COVID Hub. Their point of assessment will be board specific, either through the COVID assessment centre or the local Maternity Triage unit. In either location obstetric input must be available.

2.1 Criteria for referral to secondary care

There are respiratory symptom criteria for admission to secondary care which are specific to and reflect the differing physiology of pregnancy. ALL pregnant women assessed and/or admitted with respiratory symptoms must be seen or discussed with an obstetrician and have daily physician and obstetric review irrespective of location of secondary care - eg, medical or obstetric ward.

Figure 1: Maternity assessment pathway

- **Cough / fever, no risk factors for deterioration***
  - No breathlessness
  - **Advise:**
    - Self isolate for 7 days and inform primary midwife
    - Call back if worsening symptoms or develop breathlessness

- **Shortness of breath, Worsening respiratory symptoms OR Risk factors for deterioration***
  - Refer face to face assessment as per local health board policy.
  - This should include contact with Maternity Triage, who will then advise according to:
    - **No additional obstetric complications**
      - Follow local health board policy
      - **Pregnancy specific criteria for admission:**
        - oxygen saturation <95%
        - respiratory rate >20
    - **Additional obstetric complications**
      - assessment in obstetric unit

- **Central COVID-19 NHS 24 - 111 help line**
  - For pregnant women with respiratory symptoms at any stage of pregnancy

- **Risk factors for deterioration**
  - Respiratory or cardiac comorbidities
  - Immunosuppression
  - Diabetes (type 1 and 2 not gestational diabetes)
3. Management of pregnant women in maternity settings

3.1 Key principles
The following points are key principles in the management of pregnant women in secondary-care maternity settings.

- Be mindful of clinical symptoms of COVID-19 including atypical presentation (acute abdominal, neurological or cardiac symptoms). Have a low threshold for testing if clinically suspected.
- Aim for euvolaemia.
- Conduct invasive monitoring, e.g. arterial blood gas monitoring, early to aid vasopressor titration.
- Consider delivery, especially if worsening respiratory function but also consider mode of delivery and type of anaesthetic. There is no evidence that epidural or spinal analgesia or anaesthesia is contraindicated in the presence of coronaviruses. 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. However if a pregnant women is significantly unwell with respiratory distress or cardiovascular compromise then regional anaesthesia is not appropriate. Decisions should be made on an individual basis.
- Use the Scottish Maternity Early Warning System (MEWS) for monitoring.
- Increased rates of deep vein thrombosis (DVT), pulmonary embolism (PE) and stroke have been reported. Pregnant women are already hypercoagulable so stringent adherence to obstetric anticoagulation policies is required.
- D-dimer is not useful in pregnancy as a marker for thrombosis.
- Women may not feel breathless despite having a raised respiratory rate and/or having significant hypoxia.
- If mechanical ventilation is indicated, delivery should be actively considered, particularly where proning may be required (relative contraindication during 2nd and 3rd trimesters). Delivery should be discussed on a case-by-case basis at MDT meeting.
- A daily MDT discussion should be held with the ICU team regarding ongoing location of care as this may change over the course of the pandemic.

3.2 Criteria for referral to intensive care
Oxygen saturation and oxygen requirement are important triggers for referral to ICU. The target oxygen saturation is >94% and oxygen should be prescribed to limit waste. ICU should be contacted if a woman is requiring ≥40% facial mask oxygen to maintain oxygen saturations >94%.

Whilst every effort should be made to prevent and manage obstetric-related morbidity in maternity areas, there will still be a need for critical care resource, such as the examples below:

- women requiring advanced respiratory support
- women requiring inotropes or multiple vasopressors
- women with complex airway issues for example, post cardiorespiratory arrest/ anaphylaxis
- women with renal impairment requiring haemofiltration
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• women with central nervous system (CNS) issues for example, cerebrovascular accident (CVA) or cerebral venous sinus thrombosis (CVST)
• women with multiorgan failure, irrespective of cause
• women with ongoing resuscitation requirement.
This list is not exhaustive.

The quick Sepsis Related Organ Failure Assessment score (qSOFA) is a bedside prompt that may identify patients with suspected infection who are at greater risk of a poor outcome. It is not validated in pregnancy and should not be used in this group.

Early discussion with ICU staff about pregnant women being considered for ICU admission is essential. Such discussions should be with the MDT, including, as a minimum, a consultant in ICU, an obstetrician, an obstetric anaesthetist and a neonatologist (depending on gestation and likelihood of delivery being required to facilitate optimal ICU care).
4. Management of pregnant women in intensive care

Whilst in ICU there must be MDT ward rounds, clear lines of communication and escalation.

In those requiring advanced respiratory support, if ventilation is required, strongly consider delivery as proning is a mainstay of treatment and difficult to achieve in later gestations. This decision needs to be individualised and achieved by MDT decision. Delivery will also aid ventilation by relieving pregnancy-specific respiratory changes.
5. Education

5.1 Upskilling requirements
Each obstetric unit has been asked to consider pregnant women who could be looked after in an obstetric HDU setting and what would be required to achieve this. Protected skills teaching time will be required for staff upskilling and time allocated for this, concentrating initially on previously upskilled staff as a cohort if possible. This will depend on the level of obstetric unit. Level 3 maternity units will be better placed to provide this care than level 2 units.

The key skills to develop (and examples of available training resources) include:

- Recognition of the deteriorating patient (eg MEWS\textsuperscript{8}, TURAS Learn\textsuperscript{11})
- Performing ECG and basic interpretation (eg TURAS Learn\textsuperscript{12})
- Invasive monitoring, care of arterial lines, blood sampling and basic ABG interpretation (eg TURAS Learn\textsuperscript{13,14})
- Care of central venous catheters (CVC) and central venous pressure (CVP) lines, blood sampling, drug delivery and removal (eg TURAS Learn\textsuperscript{13})
- CVS support – single vasopressors.

5.2 Upskilling resources
Maternity units should adopt a process of continuous practice development augmented by input from education teams with daily refresher sessions and small group teaching. Midwives with existing knowledge in enhanced maternal care\textsuperscript{15} have a key role in cascading critical care knowledge and skills.

The Scottish Maternity REACTS (Recognition, Evaluation, Assessment, Critical Treatment and Stabilisation) course provides staff with the supplementary knowledge and skills necessary to help them recognise and deal appropriately with women requiring obstetric critical care and transfer where appropriate.

NHS Education for Scotland provides resources to support all professionals caring for critically ill pregnant women. It also provides specific training materials for maternity professionals in neonatal resuscitation and management of a range of obstetric emergencies.

The Royal College of Obstetricians and Gynaecologists, Royal College of Midwives, Royal College of Paediatrics and Child Health, Health Protection Scotland and Public Health England Coronavirus (COVID-19) guidance can be found here.

The Royal College of Obstetricians and Gynaecologists provides a range of educational and support resources for women’s healthcare professionals.

Practical Obstetric MultiProfessional Training (PROMPT) provides training packages, materials and tools to promote sustainable, best practice and reduce maternal and neonatal mortality and morbidity. During the pandemic they have published a COVID-19 maternity care newsletter to help time-pressed clinicians keep right up-to-date with the relevant national guidance and evidence.
6. Methodology

This Guidance has been produced on behalf of the Scottish Government’s Chief Medical Officer in response to the COVID-19 pandemic situation and so has not followed the standard process used by SIGN to develop guidelines. The recommendations are based on expert opinion, with rapid expert peer review as assurance.

6.1 Updating the guidance
This guidance will be considered for review on 20 July 2020 or sooner if significant new evidence emerges.

6.2 Contributors

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6.3 Peer review
The document was reviewed by NHS Board Clinical Directors and Heads of Midwifery.

6.4 Editorial review
As a final quality check, the guideline was reviewed by an editorial group, as follows:

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