Guideline for the Care of the Pregnant or Recently Pregnant (up to 6 weeks post delivery) Woman in a Non-Obstetric Area

NHS Lothian

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1.0 Overview

In the unusual circumstance that a pregnant or recently pregnant woman presents to a non-obstetric area in NHS Lothian it is important that the clinical management takes into account the physiological differences of pregnancy and to this end communication with the obstetric team is central to the care of such women. The use of an obstetric-specific early warning scoring chart (MEWS) is important to pick up the subtle changes in physiological parameters in previously fit women that may precede decompensation. In the event of a life-threatening emergency it is vital to ensure the best possible outcome for the mother and baby by following the correct resuscitation sequence.

The report from the UK and Ireland Confidential Enquiry into Maternal Deaths and Morbidity published December 2016[1] highlighted that cardiovascular disease was the largest single cause of maternal death in the UK and "*no individual health professional can have all the expertise to provide the complex care needed by these women. The need to consult an expert in a different medical area should not be seen as a failing but as the most appropriate action to ensure the women with complex health problems receive the highest quality care. As our maternity population becomes more clinically complex, there is a real need to build a network of experts on a regional and national basis to care for pregnant and postpartum women with medical and mental health co-morbidities.*"

In Lothian the serious adverse event review process has identified common themes where the care of pregnant women in non-obstetric areas could be improved and this centres on appropriate communication and escalation within the multidisciplinary team. It has been identified that outcomes could have potentially been improved by consultant to consultant communication and where possible a face to face discussion would have optimised decision making.

It is as a direct result of the local serious adverse event review process that this guideline has been proposed with the multidisciplinary input from the NHS Lothian network of experts as suggested by the Confidential Enquiry. The guideline writing workshop on 22nd March 2017 enabled a site-specific communication and escalation route for the care of the pregnant or recently pregnant woman who presents to non-obstetric areas in Lothian.

Care of a pregnant or recently pregnant woman in a non-obstetric area

	Stable	Unstable	Cardiac arrest
RIE	• Bleep 1616 • Use MEWS chart	• Pregnant and deteriorating: phone 2222 "obstetric emergency..." **and** call 22544/2 who will inform consultants • Perform MUD*	• 2222 "obstetric emergency cardiac arrest..." • Perform CPR + MUD* • Perimortem section at 5 minutes
SJH	• Bleep 3558 • Use MEWS chart • Handover at hospital huddle	• Pregnant and deteriorating: phone 2222 "obstetric emergency..." **and** call 54125 who will inform consultants • Perform MUD*	• 2222 "maternal cardiac arrest..." • Perform CPR + MUD* • Perimortem section at 5 minutes
WGH	• Unbooked (<12 weeks or uncertain): bleep 1625 • Booked (>12 weeks): bleep 1622 • In labour: phone 0131 2422657	• Bleep RIE 1616 **and** phone RIE Labour Ward 0131 2422544/2 • Stabilise and perform MUD* while awaiting transfer	• 2222 "obstetric emergency cardiac arrest..." • Perform CPR+ MUD* • Follow resuscitation guidelines • Phone Labour Ward RIE 0131 2422544/2
Community	Phone Labour Ward coordinator RIE 0131 2422544/2 or SJH Labour Ward 01506 524125	• Phone 999 **and** Labour Ward RIE 0131 2422544/2 or SJH 01506 524125 with history • Perform MUD*	• Phone 999 **and** Labour Ward coordinator RIE 0131 2422544/2 or SJH 01506 524125 • Perform MUD* • Perform CPR

*MUD: Manual Uterine Displacement. See Figure 1, page 12.

Important Contact Numbers

RIE
- Labour Ward 0131 2422544/2
- Obstetric bleep 1616, 1617
- Obstetric anaesthetic bleep 2204

SJH
- Labour Ward 01506 524125
- Obstetric bleep 3558
- Obstetric anaesthetic bleep 3948

WGH
- Anaesthetic bleep 8112 (on arrest team)
- ITU extension 31664/5
- ITU bleep 8118 (not on arrest team)

2.0 Communication and Escalation Routes by Site

2.1 Royal Infirmary of Edinburgh

Stable pregnant in-patient in Royal Infirmary of Edinburgh or Princess Alexandra Eye Pavilion

Contact the senior obstetric trainee on bleep 1616. Record vital signs on a MEWS chart which can be sourced from the RIE Emergency Department or Labour Ward.

Unstable pregnant patient

If a pregnant woman is in the Emergency Department resus or is clinically deteriorating elsewhere in the hospital make a 2222 call and state "Obstetric emergency in... (for example Emergency Department resus)".

Also phone the Labour Ward extension 22544/22542 so the coordinating midwife can ensure the consultant obstetrician and consultant obstetric anaesthetist who may be at home are aware they need to attend.

Relieve aortocaval compression by performing manual uterine displacement (MUD) or implementing 15 degrees of left lateral tilt (see figures 1 and 2).

Record vital signs on a MEWS chart which can be sourced from the Emergency Department or Labour Ward.

If a pregnant woman is to be admitted to CCU or critical care there needs to be a consultant to consultant handover with agreed and documented clinical goals using the NHS Lothian Handover Sheet for Obstetric Patients Requiring Admission to Critical Care: http://intranet.lothian.scot.nhs.uk/Directory/CriticalCare/Pages/Default.aspx?RootFolder=%2FDirectory%2FCriticalCare%2FCritical%20Care%20Guidelines%2FObstetrics&FolderCTID=0x012000788B35528E417F40AC7B36AA74550EE9&View=%7B358BA3D2%2D95A0%2D4C4E%2D98D0%2D8CF3EF13C93C%7D.

Obstetric cardiac arrest

In this situation a 2222 call should be made stating "Obstetric emergency cardiac arrest" and giving the location of the patient. This will alert both the Obstetric Emergency (obstetric, obstetric anaesthetic, neonatal) and the Cardiac Arrest teams. Manual uterine displacement should be performed and resuscitation guidelines followed. A perimortem caesarean section should be performed at the site of the arrest within 5 minutes of the patient's arrest. A perimortem caesarean section pack can be found in the Emergency Department, Obstetric Triage, Labour Ward, Wards 119 and 211.

2.2 St John's Hospital Livingston

All patients who are pregnant, or whom have been recently pregnant, and are admitted to a non-obstetric area of the hospital should be discussed with the obstetric team via bleep 3558. A MEWS chart should be obtained from either Labour Ward or Ward 11 to record observations.

Stable patient

If the patient is stable, then the patient details should be discussed with the obstetric team on bleep 3558. The patient can then be discussed with the relevant obstetric consultant in a timely manner. Patient details will be written on the handover board in Labour Ward, and further discussion will take place at handover meetings about the outlying patient. The anaesthetic team will be informed at the handover meeting, or earlier if felt necessary by the obstetric team.

Unstable patient

As soon as an obstetric patient is identified as unstable there should be immediate consultant input from both the home specialty and obstetrics. The obstetric bleep 3558 should be informed as well as the consultant obstetrician (bleep 3898 0830-1700 Monday-Friday; mobile phone via switchboard out of hours). The anaesthetic team should be informed on bleep 3948, who will then involve the consultant anaesthetist. Labour Ward should also be informed by calling extension 54125.

If an unstable patient requires either High Dependency or Intensive Care, this should take place on either the Labour Ward or in the Intensive Care Unit. This is to ensure easier access to treatment facilities and personnel if they are required. The intensive care anaesthetist should be informed on bleep 3561 who will escalate to the intensive care consultant. Other specialty input may be required.

Patients should only be transferred to medical wards/CCU etc after agreement with senior obstetric and anaesthetic staff and continued obstetric observation agreed and arranged.

Obstetric cardiac arrest

In this situation a 2222 call should be made stating "Obstetric emergency cardiac arrest" and giving the location of the patient. This will alert both the Obstetric Emergency and the Cardiac Arrest teams. Manual uterine displacement should be performed and resuscitation guidelines followed. If the arrest is out with the obstetric area or the Emergency Department, a midwife will be dispatched from Labour Ward by the charge midwife to supply an emergency caesarean section kit. A perimortem caesarean section should be performed at the site of the arrest within 5 minutes of the patient's arrest.

2.3 Western General Hospital

Pregnant women may attend the WGH as "self presenters" to the minor injuries/acute medical receiving unit not realising there is no obstetric cover on site. Pregnant women attend the WGH also for antenatal appointments and as visitors.

Stable patient

Unbooked pregnancy (usually less than 12 weeks and has not seen a midwife): phone the RIE gynaecology bleep 1625 and arrange patient review at Gynaecology Triage at RIE.

Booked pregnancy (usually more than 12 weeks and has seen a midwife): phone the RIE obstetric bleep 1622 and arrange patient review at Obstetric Triage at RIE.

If in labour: Phone RIE Obstetric Triage on 0131 2422657 / 0131 2422423 or RIE Labour Ward coordinator on 0131 2422544 and advice will be given on mode of transport.

Unstable patient

Stabilise and transfer to RIE where possible having informed the RIE obstetrician on bleep 1616 and RIE Labour Ward coordinator on 0131 2422544. A consultant obstetric anaesthetist is always available for advice on bleep 2203 or via RIE Labour Ward coordinator. Use a MEWS chart (available in the acute medical receiving unit) and perform manual uterine displacement or 15 degrees of left lateral tilt. Utilise the speciality expertise on site while awaiting transfer – for example if cardiac problem seek urgent consultant cardiologist help.

Obstetric cardiac arrest

In this situation a 2222 call should be made stating "Obstetric emergency cardiac arrest" and giving the location of the patient. Manual uterine displacement should be performed and resuscitation guidelines followed. Telephone the RIE Labour Ward coordinator on 0131 2422544 with the exact location of the arrest so that the RIE consultants in obstetrics, obstetric anaesthesia and neonatology are informed and can give advice by telephone/mobilise additional skilled help.

2.4 Community

Stable patient

Phone the Labour Ward coordinator at RIE on 0131 2422544/2 or St John's Labour Ward coordinator on 01506 524125.

Unstable patient

Phone 999 and the Labour Ward coordinator at RIE on 0131 2422544/2 or St John's Labour Ward coordinator on 01506 524125 and perform manual uterine displacement.

Obstetric cardiac arrest

Phone 999 and the Labour Ward coordinator at RIE on 0131 2422544/2 or St John's Labour Ward coordinator on 01506 524125 and perform CPR with manual uterine displacement.

3.0 Appendix 1: Recognising Pregnancy

1. Consider the possibility of pregnancy in any female patient of reproductive age – i.e. 11 years old onwards.
2. Remember all methods of contraception can fail.
3. Ask about last menstrual period and last normal menstrual period:
    i. An implantation bleed occurs at about 4 weeks after last menstrual period/2 weeks after conception and can be mistaken for last menstrual period
    ii. Some women will have irregular or even apparently regular vaginal bleeding whilst pregnant but mistake this for a period – this is commonly reported in concealed/unrecognised pregnancies
4. Gastrointestinal symptoms can be the only clinical sign of an ectopic pregnancy, miscarriage and labour.
5. Consider doing a urinary hCG pregnancy test:
    i. Readily available in gynaecology wards/clinics/emergency department
    ii. Very sensitive, usually positive as early as first missed period
    iii. However can appear negative in both very early and very advanced pregnancy
6. Palpate the abdomen:
    i. From 14 weeks uterus palpable above pubic symphysis
    ii. At 18-20 weeks uterus palpable about level of umbilicus
7. Consider an ultrasound scan
8. Consider serum hCG

Contact Obstetrics and Gynaecology if in doubt (see summary on page 6 for contact details by site)

4.0 Appendix 2: Physiological Differences in Pregnancy

4.1 Airway

Progesterone mediated vasodilatation results in venous engorgement, and lower albumin and colloid osmotic pressure predisposes to oedema.

Implication for resuscitation

More difficult to open and maintain a clear airway and more difficult to introduce laryngoscope blade.

Intubation difficulty or failed intubation more likely in pregnancy.

A nasopharyngeal airway is not recommended as bleeding more likely.

4.2 Breathing

Increase in minute ventilation results in a respiratory alkalosis.

↓ FRC, ↑V/Q mismatch.

Displacement of diaphragm.

↑Oxygen consumption.

Implication for resuscitation

Shorter time to desaturation following standard preoxygenation, shorter time to hypoxic brain damage.

Normocapnia for pregnancy should be maintained in the range 3.7-4.2 kPa, so a pCO_2 >4.2 kPa may indicate impending respiratory failure, for example in acute asthma.

4.3 Circulation

↑Cardiac output, ↓systemic vascular resistance. Blood pressure falls in early and mid pregnancy from pre-pregnancy levels but normalises by term.

↑Blood volume: 100 mL/kg.

Fetoplacental unit part of circulation receiving 10% of cardiac output.

Aortocaval compression from 20 weeks. At term the vena cava is completely occluded in 90% of supine pregnant patients and the stroke volume may only be 30% of that of a non-pregnant woman.

Implication for resuscitation

Need for manual uterine displacement or at least 15 degrees of left lateral tilt (see figures 1 and 2) in all visibly pregnant women when lying supine.

If symptomatic from cardiac disease pre-pregnancy then likely to decompensate in pregnancy.

Blood pressure can be maintained even in the face of significant hypovolaemia. Can lose up to 40% of circulating volume in pregnancy before signs of decompensated shock.

The fetoplacental unit is a vascular bed that shuts down early to compensate for shock, therefore **fetal distress may be the first sign of a circulatory problem.**

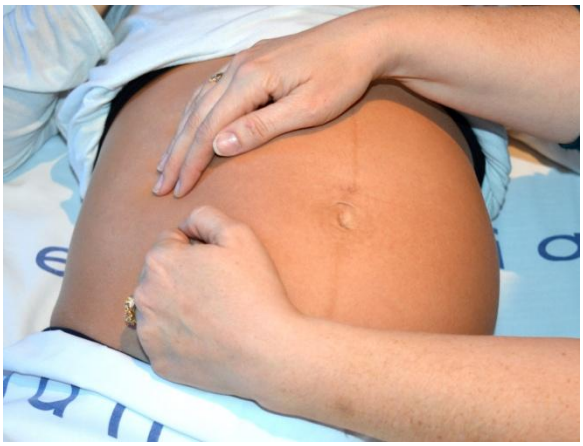

Figure 1. Manual uterine displacement to the left when there is a visible pregnancy bump or >20 weeks gestation.
(Photo credit: Trauma Victoria, http://trauma.reach.vic.gov.au).

Figure 2. Left lateral tilt of 15 degrees on an operating table.

Once cardiorespiratory arrest has been established for 4 minutes, preparation should be made to carry out a perimortem caesarean section. Delivery of the fetus during cardiac arrest will make it possible that resuscitation will be successful by:

1. Reducing oxygen demand and minimising the risk of maternal neurological damage from cerebral anoxia as irreversible anoxic brain injury occurs more rapidly in pregnancy
2. Increasing venous return
3. Enabling more effective chest compressions and ventilation

Emptying the uterus in a maternal cardiac arrest can lead to rapid improvement with return of spontaneous circulation and there may also be a chance of neonatal survival. It is not appropriate to wait for a neonatal team before performing a perimortem caesarean section as the primary reason is to save the life of the mother. A recent study[2] has indicated survival is improved if perimortem caesarean section is performed at the site of the maternal collapse and also when performed promptly.

4.4 Gastrointestinal

Progesterone mediated incompetence of lower oesophageal sphincter from 16 weeks gestation.

Increased intra-abdominal pressure.

Implication for resuscitation

Airway at risk of aspiration of gastric contents.

Pre-medicate with acid prophylaxis: ranitidine 150 mg oral or 50 mg IV and 0.3 M sodium citrate orally.

A rapid sequence induction technique with a cuffed tube in the trachea is necessary for airway protection beyond 16 weeks gestation. If a surgical procedure is necessary in pregnancy, regional anaesthesia is preferable to general anaesthesia if surgical site allows.

4.5 Renal

Increased renal plasma flow and GFR.

Implication for resuscitation

"Normal range" urea and creatinine may mask impaired renal function.

4.6 Haematology

Pregnancy is a prothrombotic state with raised fibrinogen, therefore thromboprophylaxis must be considered for all pregnant women.

Implication for resuscitation

Conventional coagulation studies (PT/aPTT) remain normal despite large blood loss. However fibrinogen levels fall progressively with increasing blood loss and reach critically low levels earlier than other coagulation factors. A fibrinogen level of < 2 should be treated.

5.0 Appendix 3: The MEWS Chart

The MEWS chart is a patient observation chart incorporating an early warning scoring system for pregnant women over 13 weeks gestation and up to one week after delivery. The physiological parameters which should trigger concern are adjusted on the chart to take account of some the physiological changes of pregnancy. In particular, triggers for blood pressure are different in pregnancy, and hypertension is a concern as it may indicate pre-eclampsia. As with the use of any early warning scoring system, however, the chart is only a tool and if there are any clinical concerns about a pregnant patient then escalation should occur even if the MEWS score is not high.

MEWS charts can be found in RIE in Obstetric Triage, Wards 119 and 211 and Labour Ward.

MEWS charts in St John's can be found in Labour Ward and Ward 11.

6.0 Appendix 4: Prevention of Cardiac Arrest in an Unstable Pregnant Patient and the Correct Resuscitation Sequence Including Perimortem Caesarean Section

Use the ABCDE approach of simultaneous assessment and resuscitation. This will identify problems in the order most likely to cause harm and allow recognition and rapid treatment e.g. sepsis and early intravenous antibiotics.

Place the woman in the left lateral position or manually displace the uterus to the left to relieve aortocaval compression.

Give high flow oxygen and monitor oxygen saturation.

Establish IV access and give a 250 mL fluid bolus if hypotensive/hypovolaemia suspected.

Seek expert help early from an obstetrician, anaesthetist and neonatologist

Assessment of the fetus follows on after ABCDE unless the fetoplacental unit is contributing to a circulatory problem, for example in uterine rupture, placental abruption or unstable pelvic fracture where emptying the uterus is necessary to "turn off the tap". Fetal distress may be the only sign of hypovolaemia in pregnancy due to the pregnant woman's ability to compensate for hypovolaemia with an expanded blood volume.

Modifications to advanced life support drill in cardiac arrest in pregnancy

Start resuscitation according to standard ALS guidelines with manual displacement of the uterus to the left.

Use the standard defibrillation energy levels.

Establish a protected airway early, if expertise available. Establish IV access and consider the reversible causes using the 4 Hs and 4 Ts. Hypovolaemia, thromboembolic (pulmonary embolus and amniotic fluid embolus) and toxic/therapeutic (local anaesthetic) causes are more likely in pregnancy.

In the absence of return of spontaneous cardiac output by 4 minutes preparation should be made to perform a perimortem caesarean section at 5 minutes. Moving the patient to theatre and an anaesthetic area is not required to carry out a perimortem caesarean section[2].

7.0 Appendix 5: Psychiatric Emergencies in Pregnancy and the Puerperium

Patients may present with a psychiatric emergency at any time but the first few weeks following delivery are a period of significantly increased risk. The incidence of postpartum psychosis (PPP) is 1-2 per 1,000 births. The risk is highest in the first postpartum week but remains elevated for the first 3 months post delivery. Almost half of the women presenting with PPP have no past psychiatric history.

The key clinical feature of PPP is its rapid escalation. Patients often present with fluctuating perplexity, confusion or unusual behaviour but within 24 – 48 hours the picture has evolved into florid psychosis.

The first priority when dealing with any psychiatric emergency is to ensure the patient is in a safe environment:

1. If the patient is already in hospital, ideally move them into a single room and ensure at least 2 people are with them at all times
2. If the patient is not yet in hospital, the best option is usually to call a 999 ambulance to take them to the Emergency Department

The next priority is to contact mental health services to request an urgent psychiatric assessment:

1. In hospital, during office hours contact Liaison Psychiatry:
    i. RIE: extension 21398 for psychiatrist (or bleep 4019 for psychiatric nurse)
    ii. WGH: bleep 8454 (or bleep 8686)
    iii. SJH: bleep 3017
2. In hospital, outside office hours contact:
    i. RIE: bleep on-call psychiatry StR via switchboard (or bleep 4019 for psychiatric nurse)
    ii. WGH: bleep on-call psychiatry StR via switchboard (no psychiatric nurse on site)
    iii. SJH: bleep 3034
3. Out with hospital, consider transferring patient to the Emergency Department for assessment.

Urgent mental health advice is available via NHS Lothian switchboard – state whether the patient is in Edinburgh, West Lothian, East Lothian or Midlothian and you will be put through to the relevant mental health assessment service.

8.0 References

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