

## Admission to Maternity Complex Care Area (MCCA)

Unique Identifier	NMP200/SSM/101 – v01.00
Document Type	Clinical Guideline
Risk of non-compliance	may result in significant harm to the patient/DHB
Function	Clinical Practice, Patient Care
User Group(s)	Auckland DHB only
<ul style="list-style-type: none"> <li>• Organisation(s)</li> </ul>	Auckland District Health Board
<ul style="list-style-type: none"> <li>• Directorate(s)</li> </ul>	Women’s Health
<ul style="list-style-type: none"> <li>• Department(s)</li> </ul>	Maternity, Newborn Services
<ul style="list-style-type: none"> <li>• Used for which patients?</li> </ul>	All maternity women and their babies
<ul style="list-style-type: none"> <li>• Used by which staff?</li> </ul>	All clinicians in maternity including access holder lead maternity carers (LMCs)
<ul style="list-style-type: none"> <li>• Excluded</li> </ul>	
Keywords	N/A
Author	Charge Midwife - Labour and Birthing Suite
Authorisation	
<ul style="list-style-type: none"> <li>• Owner</li> </ul>	Service Clinical Director – Regional Maternity Services
<ul style="list-style-type: none"> <li>• Delegate / Issuer</li> </ul>	Service Clinical Director – Regional Maternity Services
Edited by	Document Control
First issued	24 May 2019
This version issued	24 May 2019 - issued
Review frequency	3 yearly

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## 1. Purpose guideline

Auckland District Health Board (Auckland DHB) aims to provide a safe clinical service for the provision of enhanced maternity care to women with complex medical problems and to preserve all of the benefits of care provided by a multidisciplinary team of perinatal care specialists without the separation of mother and baby.

This guideline establishes the care of women and their babies requiring admission to the Maternity Complex Care Area (MCCA) within Auckland District Health Board (Auckland DHB).

## 2. Guideline management principles and goals

The majority of emergency admissions to the Maternity Complex Care Area (MCCA) are for women with sepsis, pre-eclampsia and postpartum haemorrhage (PPH) and planned admissions for women with complex cardiac disease.

As a general rule the acute team of the day will decide when a woman would benefit from admission, in consultation with the obstetric physician and obstetric anaesthetist. There is also a clear recognition that the list of four main categories is not a complete list of those who might benefit from MCCA and admission has to remain to some degree at the discretion of the acute obstetric, anaesthetic and medical teams.

Woman and baby should be kept together when possible. It should be noted that women with complex medical needs is itself a risk factor for an otherwise well, low-risk baby. Babies being cared for in MCCA need regular monitoring of feeding, respiratory effort and temperature.

## 3. Definitions and management considerations

### 3.1 Severe pre-eclampsia

Severe pre-eclampsia is defined as pre-eclampsia with any of the following:

- **Severe hypertension** (SBP  $\geq$  160 mmHg **and/or** DBP  $\geq$  110 mmHg on one occasion at any time)
- **Thrombocytopenia**: platelet count  $<$   $100 \times 10^9/L$
- **Impaired liver function** not responding to treatment and not accounted for by alternative diagnosis. AST and ALT at least twice the upper limit of normal range and/or right upper quadrant or epigastric abdominal pain (may be referred to upper back)
- **Progressive renal insufficiency**: Serum or plasma creatinine  $>90 \mu\text{mol/L}$  or doubling of serum creatinine in the absence of other renal disease. Oliguria, urine output  $<80\text{mL}/4$  hours
- **Pulmonary oedema**
- **New onset of headaches and visual disturbances**
- **Eclampsia**: New onset of seizures in association with pre-eclampsia
- **HELLP syndrome**: A variant of severe pre-eclampsia (elements include **H**aemolysis, **E**levated Liver enzymes and **L**ow **P**latelet count). In a woman with pre-eclampsia, the presence of any of the following is an indicator of HELLP:
  - Maternal platelet count  $<$   $100 \times 10^9/L$
  - Elevated transaminases (elevated blood concentrations of liver enzymes to twice normal concentration)

- Microangiopathic haemolytic anaemia with red cell fragments on blood film

Acute management of severe hypertension may include the use of intravenous agents such as labetalol and/or hydralazine.

- Labetalol infusion may be used for blood pressure stabilisation. See administration instructions in associated guideline, Hypertension Antenatal Intra and Postpartum.
- Ensure patient is lying down during and for three hours after IV administration, to reduce risk of orthostatic hypotension.
- Monitor for signs and symptoms of hypersensitivity/anaphylaxis.
- Monitor blood pressure and heart rate before, during and after IV administration.
- Establish the patient's ability to tolerate an upright position before allowing any walking.

### **3.2 Postpartum haemorrhage**

Admission to MCCA should be considered if there is a severe PPH (> 1000 mL), with haemodynamic compromise. Women who are asymptomatic and have stable vital signs (MEWS 0-4) are eligible for admission to the postnatal ward following O&G registrar review.

Women with an intrauterine balloon, vaginal pack or B-Lynch suture insitu are eligible for admission to the postnatal ward depending on blood loss and general condition.

After a PPH of  $\geq 2000$  mL the following are recommended in addition to the above:

- Consider arterial line
- DCCM review in MCCA for "outreach"
- Consider thromboprophylaxis. PPH > 1500 mL is a risk factor for thrombosis.
- Consider iron infusion

### **3.3 Sepsis**

Sepsis is a relatively infrequent, but serious condition that requires early recognition and response. It is a cause of significant maternal morbidity. Early identification and treatment is essential. Women with two or more warning signs, or MEWS  $\geq 5$  should be considered for one-to-one midwifery care in MCCA.

#### **3.3.1 Warning signs**

- Temperature  $\geq 38^{\circ}\text{C}$  or  $< 36^{\circ}\text{C}$
- Confusion or disorientation
- Respiratory rate  $\geq 25$  breaths/min
- HR  $\geq 100$  bpm
- Systolic BP  $< 90$  mmHg
- Extreme pain or discomfort

### 3.3.2 Treatment

- Give high-flow oxygen
- Measure lactate
- Take appropriate cultures
- Give a fluid challenge
- Give IV antibiotics
- Measure urine output
- Assess fetal state and consider delivery or evacuation of retained products of conception
- Consider thromboprophylaxis

See the Society of Obstetric Medicine Australia and New Zealand (SOMANZ) guidelines (Bowyer et al, 2017) for the investigation and management sepsis in pregnancy:

<https://obgyn.onlinelibrary.wiley.com/doi/pdf/10.1111/ajo.12646>

### 3.4 Women with cardiac conditions

Women with structural and/or electrical cardiac conditions should be under the care of the Maternal Fetal Medicine (MFM) team, and as such will have an individualised care plan. If they require intrapartum or postnatal cardiac monitoring and/or other invasive monitoring/strict fluid balance management they will require admission to MCCA.

When there is an acute admission out of normal working hours (and if the patient has not been seen by the MFM team) then the obstetric Physicians should guide the other acute teams as to the need for MCCA care on a case by case basis.

### 3.5 General management considerations

- Liaise with DU CCM to ensure staffing needs are met
- Midwife to review risk sheet and birth plan on HealthWare, update if required
- Check for Intra Partum Care Plan for Complex Medical Patients (CR9142)
- Refer to physiotherapy department
- Inform PaR/CMA/CNM/DCCM

It is the responsibility of the MCCA midwife to ensure that relevant environmental and equipment checks are completed. This includes full assessment of the woman, appropriately set monitor alarms, checking of all infusions and lines.

### 3.6 Criteria for referral to Department of Critical Care Medicine (DCCM)

- Coagulopathy
- Requirement for ventilation
- Inotrope support
- Multi-organ failure
- Unplanned peripartum hysterectomy

### **3.7 Neonate**

A woman in MCCA should be supported to bond with and breastfeed her baby, including hand or pump expressing when indicated. Maternal morbidity frequently leads to infant feeding challenges and early Lactation Consultant support should be considered.

All babies of women admitted to the MCCA need monitoring and recording of feeding and output. A full set of observations should be recorded at least once per shift.

Normal criteria for paediatric support remains and midwives need to ensure that the baby is reviewed if required. When a baby is in NICU, the midwife should aim to facilitate visits if maternal condition allows. The midwife may need to stay with the woman for the duration of the visit, unless clear alternative arrangements have been communicated and agreed to by all staff involved.

## **4. Staffing**

The Delivery Unit (DU) SMO is the responsible clinician. The DU team (SMO, registrar and SHO) will seek advice and clinical guidance from the on-call level 9 anaesthetic registrar and on-call obstetric physician as required.

Midwives working in MCCA will be appropriately trained to provide complex care. They will be proficient in the use of the Draegar monitor used in MCCA. They will be proficient in caring for women with arterial lines and central venous lines. Staff will be able to recognise arrhythmias and escalate appropriately.

The Auckland DHB MCCA midwifery training programme consists of two study days and up to three shifts in acute areas (DCCM, CCU, and others as appropriate to individual learning needs). The acute area shifts have specific learning objectives and midwives are expected to reflect on the experience and identify future learning objectives.

## 5. Contact details

Role		Extension or Mobile Number
<b>DU CCM</b>		24913
<b>Anaesthetic registrar</b>		29009
<b>DU registrar</b>		29078
<b>DU SHO</b>		93 5524
<b>CMA</b>		021 893 449
<b>CNM</b>	0700-1900 M to F	021 943 748
	After hours	021 938 632
<b>PaR team (iBleep preferred)</b>		021 938 692
<b>DCCM registrar</b>		021 472 823
<b>DCCM CCN</b>		021 938 763
<b>NICU CN</b>		021 874 779
<b>L1 Paed (&gt;34 weeks)</b>		29598
<b>L2 Paed (31-34 weeks)</b>		29283
<b>L3 Paed (&lt;31 weeks)</b>		29361

## 6. Supporting evidence

- Bowyer, L., Robinson, H.L., Barrett, H., Crozier, T.M., Giles, M., Idel, I., ... & Said, J. (2017). SOMANZ guidelines for the investigation and management sepsis in pregnancy. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, 57(5), 540-551.
- Elkayam, U., Goland, S., Pieper, P.G., & Silversides, C.K. (2016). High-risk cardiac disease in pregnancy: part I. *Journal of the American College of Cardiology*, 68(4), 396-410.
- Hardy, D. (2013). High dependency care: Education of midwives and preparation for practice. *British Journal of Midwifery*, 21(9), 654-659.
- Royal College of Anaesthetists (RCOA). (2018). *Care of the critically ill woman in childbirth; enhanced maternal care 2018*. London, England: RCOA.
- Townsend, R., O'Brien, P., & Khalil, A. (2015). Diagnosis and management of pre-eclampsia: A clinical perspective on recent advances in the field. *British Journal of Midwifery*, 23(4), 252-258.

## 7. Associated documents

- Postpartum Haemorrhage Prevention and Management
- Hypertension - Antenatal, Intrapartum and Postpartum
- Magnesium Sulfate for Pre-eclampsia and for Neuroprotection in Pre-Term Births <30 weeks
- Thromboprophylaxis Therapy in DCCM

## 8. Disclaimer

No guideline can cover all variations required for specific circumstances. It is the responsibility of the health care practitioners using this Auckland DHB guideline to adapt it for safe use within their own institution, recognise the need for specialist help, and call for it without delay, when an individual patient falls outside of the boundaries of this guideline.

## 9. Corrections and amendments

The next scheduled review of this document is as per the document classification table (page 1). However, if the reader notices any errors or believes that the document should be reviewed **before** the scheduled date, they should contact the owner or [Document Control](#) without delay.