Perinatal and Maternal Mortality Review Committee

He matenga ohorere, he wairua uiui, wairua mutungakore

Health Quality & Safety Commission New Zealand

Kupu Taurangi Hauora o Aotearoa

Ninth Annual Report of the Perinatal and Maternal Mortality Review Committee

Reporting mortality 2013

Practice points

JUNE 2015

The 2015 report[1] of the Perinatal and Maternal Mortality Review Committee (PMMRC) provides practice points for clinicians on:

- alcohol in pregnancy
- family violence
- maternal suicide
- perimortem Caesarean section
- postpartum sepsis
- influenza in pregnancy
- epilepsy in pregnancy
- recognising the baby at risk of neonatal encephalopathy.

The practice points are reproduced below in full.

1 PMMRC. 2015. *Ninth Annual Report of the Perinatal and Maternal Mortality Review Committee: Reporting mortality 2013.*Wellington: Health Quality & Safety Commission.

ALCOHOL IN PREGNANCY

Practitioners working with pregnant women need to be aware of the risks of alcohol in pregnancy, skilled in asking about and detecting alcohol use in pregnancy and have local knowledge of their area's referral resources.

Practice point: Alcohol in pregnancy (appears on page 56 of the 2015 report)

- As early in pregnancy as possible, ask all women about, and assess, alcohol consumption.
- Advise women on the potential risks and consequences of the use of alcohol in pregnancy and advise them not to drink while pregnant.
- When there are concerns about alcohol consumption, use a recognised assessment screening tool to determine the level of drinking (eg, the AUDIT-C Assessment Tool which is included in the Ministry of Health Alcohol in Pregnancy guidance).
- Be aware of which specialist referral services are available locally and refer women who need assistance to these services.
  - Alcohol services should prioritise pregnant women.
  - Where alcohol services do not exist, DHBs need to consider how women can receive this support.
- When there are concerns about alcohol consumption during pregnancy, ask about it often, offer advice and refer again to specialist services as necessary. Document all discussions, advice and referrals.
- Be cognisant of the potential impact of alcohol consumption on the growth and wellbeing of the fetus/baby while providing care during pregnancy, labour and the postnatal period.
- Be conversant with signs of fetal alcohol syndrome.
- Follow up and refer women and babies postnatally if there have been concerns about alcohol consumption during pregnancy.

FAMILY VIOLENCE

Data on screening for family violence are not well reported to the PMMRC. Unlike data on screening for diabetes, data on screening for family violence have not improved in the past five years. There remain 50 percent of women whose babies died where no data were reported on whether they were screened for or experienced family violence.

Practice point: Family violence (appears on page 82 of the 2015 report)

Intimate partner violence is associated with significant adverse pregnancy outcomes for both mother and baby. These outcomes include increased risks of:

- antepartum haemorrhage
- preterm labour and birth
- intrauterine growth restriction
- perinatal death
- low birth weight
- maternal mortality
- termination of pregnancy
- maternal anxiety, depression, alcohol and drug abuse (Boy & Salihu 2004; Janssen et al 2003; Sarkar 2008).

Identifying and responding to violence is an important and appropriate role for health care providers to undertake. It is recommended that practitioners routinely ask all women about family violence during pregnancy and offer referral to appropriate agencies for ongoing support and safety planning.

The Ministry of Health's *Family Violence Intervention Guidelines* (Ministry of Health 2002) are a practical tool to help health providers make safe and effective interventions to assist victims of violence and abuse.

It is recommended that all practitioners access appropriate training to allow them to ask about family violence and respond when it is identified. Family violence education is available to practitioners through DHB Violence Intervention Programmes and the New Zealand College of Midwives.

MATERNAL SUICIDE

Pre-existing medical disease and suicide were the most frequent causes of maternal mortality in New Zealand in 2006–2013, suicide being the leading 'single' cause of maternal death in New Zealand (4.2/100,000 maternities).

Practice point: Maternal suicide (appears on page 115 of the 2015 report)

- Maternal mental health services should be integrated into maternity services.
- Clinicians and LMCs should be encouraged to conduct antenatal screening and document any mental health history to identify women who are at increased risk of mental illness.
- Termination of pregnancy services should undertake holistic screening for maternal mental health and family violence and provide appropriate support and referral.
- A comprehensive perinatal and infant mental health service includes:
  - screening and assessment
  - timely interventions including case management, transition planning and referrals
  - access to respite care and specialist inpatient care for mothers and babies
  - consultation and liaison services within the health system and with other agencies; for example, primary care and termination of pregnancy services.

(PMMRC previous recommendations)

PERIMORTEM CAESAREAN SECTION

Perimortem Caesarean section was undertaken in eight maternal deaths as part of the resuscitation of the mother to improve the chance of survival following a collapse from 2006 to 2013. Five babies were live born, three babies were stillborn and one live born baby died as an early neonatal death. When appropriately undertaken, perimortem Caesarean section can save the life of both the mother and the infant.

Practice point: Perimortem Caesarean section (appears on page 122 of the 2015 report)

Perimortem Caesarean section should be considered at the start of cardio-pulmonary resuscitation in pregnant women >20 weeks gestation. Perimortem Caesarean section is undertaken for maternal survival, not fetal, and should be carried out within 5 minutes of cardiac arrest to aid successful resuscitation if there is no return of spontaneous circulation. Irreversible hypoxic brain damage can occur after 4–6 minutes in pregnant women (Knight et al 2014). There is no need to confirm fetal viability prior to performing perimortem Caesarean section.

Perimortem Caesarean section facilitates maternal resuscitation by:

- relieving aorto-caval compression by the gravid uterus thus improving cardiac output
- improving ventilation and effectiveness of chest compressions
- removing metabolic/cardiovascular demands of the fetus and placenta.

Recommendations for perimortem Caesarean section:

- **perform within five minutes of cardiac arrest if no return of spontaneous circulation with standard resuscitation**
- **operate at site of cardiac arrest – do not move to operating theatre**
- **ensure manual displacement of the uterus and early intubation/ventilation**
- **no anaesthetic is required**
- **no need for consent (duty of care)**
- **a scalpel is the only essential equipment***
- **use the incision that will give most rapid access****
- **activate the massive transfusion protocol at the time of decision for perimortem Caesarean section (Knight et al 2014).**

Secure haemostasis after return of circulation. Be aware of potential for development of disseminated intravascular coagulopathy and bleeding with return of circulation.

* A pre-mounted scalpel blade (size 20) and two cord clamps should be kept available on the resuscitation trolley to ensure that there are no delays if perimortem Caesarean section is necessary.

** A midline abdominal incision and a classical uterine incision will give the most rapid access, but a transverse approach can be used if the operator is more comfortable with that incision (Knight et al 2014).

POSTPARTUM SEPSIS

In 2013, two women died of obstetric sepsis. Between 2006 and 2013 there were six direct maternal deaths from obstetric sepsis. Of these six deaths, five were postpartum deaths at 2, 3, 7, 22 and 28 days postpartum. Three were associated with Group A streptococcus. A common feature in these deaths was vague, seemingly unrelated symptoms followed by sudden severe collapse.

Practice point: Postpartum sepsis (appears on page 125 of the 2015 report)

- Severe sepsis can develop at any time throughout the postpartum period and disease progression may be rapid.
- Symptoms may be less distinctive than in the non-pregnant population and a high index of suspicion is required.
- Common symptoms include fever, diarrhoea, vomiting and lethargy. The most common site of infection is the genital tract and genital tract sepsis may present with severe pain (including back pain) and tenderness unrelieved by usual medication.
- All health professionals should be aware of the symptoms and signs of maternal sepsis and of the rapid, potentially lethal course of severe sepsis and septic shock.
- Suspicion of significant sepsis should trigger urgent referral for assessment, antibiotic therapy and supportive treatment.
- Postpartum women and their families should be made aware of the need to seek medical care if unwell, and the need to re-present promptly if the symptoms worsen because of the potential for rapid deterioration.

INFLUENZA IN PREGNANCY

Five women died from influenza in pregnancy between 2009 and 2013. None of these women had been immunised.

Pregnancy is a risk factor for poor outcome from influenza infection. Influenza in pregnancy is also associated with adverse fetal outcomes.

Practice point: Influenza in pregnancy (appears on page 126 of the 2015 report)

Pregnant women at any gestation and women planning pregnancy during the influenza season should be offered immunisation against influenza (usually available March to July) because they are at increased risk of severe outcomes. Influenza immunisation is free for pregnant women.

Influenza should be suspected in women presenting with respiratory or influenza-like illness (ILI) and antiviral therapy commenced before the results of confirmatory testing with nasopharyngeal swab are available.

All pregnant women with ILI and pneumonia should receive appropriate antibiotics to treat moderate severity community-acquired pneumonia.

'Red flags' requiring immediate hospitalisation and specialist review include:

a. **temperature >38°C or <36°C**
b. **heart rate >110 beats per minute**
c. **respiratory rate >20 breaths per minute (counted over 60 seconds)**
d. **systolic blood pressure <90mmHg (or >40mmHg fall from baseline)**
e. **O_2 saturation <95%**
f. **new onset confusion or altered mental state.**

Repeated presentation for non-resolving symptoms may be a sign of a potentially worsening condition and require a full assessment and specialist referral.

Practitioners should have a low threshold for admitting a pregnant woman with ILI to hospital, and specialist physician and obstetrician review is recommended.

Women not responding to standard therapy should be discussed with a specialist respiratory centre.

EPILEPSY IN PREGNANCY

Three women died of sudden unexpected death in epilepsy (SUDEP) between 2006 and 2013. All three had sub-optimal levels of anticonvulsants at the time of death.

Given the increased risks for pregnant women with epilepsy, the PMMRC recommends that all women with epilepsy on medication are referred for specialist input.

Practice point: Epilepsy in pregnancy (appears on page 127 of the 2015 report)

1. The PMMRC recommends that all pregnant women with epilepsy on medication be referred to a physician. Women with a new diagnosis of epilepsy or a change in seizure frequency should be referred urgently.
2. The dose of anti-epileptic drugs may need to proactively increase. In particular, lamotrigine and levetiracetam should be increased in the second and third trimesters.
3. Labour and birth care for women with epilepsy should be provided in a secondary or tertiary obstetric hospital (NICE 2012).
4. Communicate and document the plan of care for the woman, her family/whānau, and all practitioners involved in her care.
    - Advise women with epilepsy and their family/whānau that the risks of seizures and SUDEP are increased during pregnancy and postpartum.
    - Review first aid procedures for a witnessed seizure with the family and consider modifiable risk factors, such as:
        - not sleeping alone
        - not bathing alone
        - not caring for young children alone
        - not driving if recent seizure.

RECOGNISING THE BABY AT RISK OF NEONATAL ENCEPHALOPATHY

Neonatal encephalopathy is a clinically defined syndrome of disturbed neurological function within the first week of life in the term (≥37 weeks) infant, manifested by difficulty in initiating and maintaining respiration, depression of tone and reflexes, subnormal level of consciousness and often seizures.

Practice point: Recognising the baby at risk of neonatal encephalopathy (appears on pages 147 of the 2015 report)

All practitioners working across primary, secondary and tertiary maternity settings need to be mindful of the potential for neonatal encephalopathy and skilled at identifying which babies may go on to develop neonatal encephalopathy. The early initiation of advanced care (including cooling where appropriate) is an important contributor to the baby's outcome.

Practitioners who are supporting women to give birth in primary settings (and who may therefore have delayed access to secondary or tertiary level care) should liaise early with the local paediatric service when they identify a neonate who may be compromised, to discuss the baby's care prior to and during transfer and to ensure timeliness of transfer. Good lines of communication for contacting the local DHB paediatrician for advice are essential to the provision of optimal care.

Recognising the neonate who may go on to develop neonatal encephalopathy

A number of factors have been associated with the potential for a newborn to develop neonatal encephalopathy, and the presence of these factors should prompt consideration of paediatric consultation. These include:

- an abnormal cardiotocograph in labour
- an Apgar score ≤7 at five minutes of age
- decreased tone, or absent primitive reflexes
- difficulty establishing or maintaining respirations
- requiring resuscitation at birth (especially if this has included assisted ventilation or use of drugs)
- being slower than usual to initiate feeding
- abnormal level of consciousness (eg, hyper alert, irritable or lethargic)
- a weak or absent cry
- seizure activity.

All practitioners involved in the care of newborn babies are encouraged to participate in regular education and skills updates to maintain their competence and confidence with managing initial neonatal care. This should include:

- education about, and use of, customised growth charts
- fetal surveillance education
- contemporaneous documentation of intrapartum events and the sharing of antenatal and labour notes at handover with other practitioners involved in the care of mother and baby
- annual neonatal resuscitation updates
- education that supports recognition of brain injury in the neonate
- regular breastfeeding education to enable identification of disturbances to normal newborn patterns of breastfeeding initiation.

The findings of the NEWG indicate that early identification of 'at-risk' babies, and timely collaboration with the paediatric service, have the potential to reduce the rate of morbidity from neonatal encephalopathy in New Zealand.

The following documents provide guidance for practice:

Dawson J, Walker K. 2015. The compromised neonate. In Pairman S, Pincombe J, Thorogood C, et al (eds), *Midwifery: preparation for practice* (3rd ed, pp. 1182–202). Chatswood, NSW: Churchill Livingstone Elsevier.

Ministry of Health. 2012. *Guidelines for consultation with obstetric and related medical services (referral guidelines)*. Wellington: Ministry of Health.
URL: http://www.midwife.org.nz/quality-practice/multidisciplinary-guidelines.

Ministry of Health. 2012. *Observations of the mother and baby in the immediate postnatal period: consensus statements guiding practice.* Wellington: Ministry of Health.
URL: http://www.midwife.org.nz/quality-practice/multidisciplinary-guidelines.

New Zealand College of Midwives. 2012. *Assessment of fetal well-being during pregnancy: consensus statement.*
URL: http://www.midwife.org.nz/quality-practice/nzcom-consensus-statements.

RANZCOG. 2014. *Intrapartum fetal surveillance clinical guidelines* (3rd ed.). East Melbourne: RANZCOG.
URL: http://www.midwife.org.nz/quality-practice/multidisciplinary-guidelines.

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Janssen P, Holt V, Sugg N, et al. 2003. Intimate partner violence and adverse pregnancy outcomes: A population based study. *Am J of Obstet and Gyneacol* 188(5): 1341–7. doi: 10.1067/mob.2003.274.
URL: http://www.sciencedirect.com/science/article/pii/S0002937803001042 (accessed May 2015).

Knight M, Kenyon S, Brocklehurst P, et al (eds) on behalf of MBRRACEUK. 2014. *Saving Lives, Improving Mothers' Care – Lessons learned to inform future maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009–12*. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2014.
URL: https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/Saving%20Lives%20Improving%20Mothers%20Care%20report%202014%20Full.pdf (accessed April 2015).

Ministry of Health. 2002. *Family Violence Intervention Guidelines: Child and Partner Abuse*. Wellington: Ministry of Health.
URL: http://www.health.govt.nz/publication/family-violence-intervention-guidelines-child-and-partner-abuse (accessed March 2015).

NICE. 2012. *The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care*. The National Institute for Health and Care Excellence, NICE Guidelines [CG137].
URL: http://www.nice.org.uk/guidance/cg137/chapter/guidance (accessed March 2015).

Sarkar N. 2008. The impact of intimate partner violence on women's reproductive health and pregnancy outcome. *J of Obstet Gynaecol* 28(3): 266–71. doi: 10.1080/01443610802042415.
URL: http://informahealthcare.com/doi/abs/10.1080/01443610802042415 (accessed May 2015).