Department of Health

Maternal and Perinatal Mortality and Morbidity in Queensland

Queensland Maternal and Perinatal Quality Council Report 2013

Great state. Great opportunity.

Queensland Government

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Preface

The primary purpose of the Queensland Maternal and Perinatal Quality Council is to provide advice and make recommendations to the Minister for Health and the Director-General of the Queensland Department of Health on matters relating to statewide and facility-specific morbidity and mortality. The Council functions under the quality assurance provisions of sections 81-92 of the *Hospital and Health Boards Act 2011*, which enables the Council to undertake confidential enquiries into maternal and perinatal morbidity and mortality while providing members with legislative protection.

This is the third report of the Council since it recommenced activity in mid-2009, after a three year period during which its purpose and functionality were reviewed. This report:

- Reviews maternal deaths in the period 2009 to 2011 in Queensland
- Reviews perinatal deaths in the period 2009 to 2011 in Queensland
- Examines pregnancy and newborn outcomes in the period 2010 to 2011 in Queensland.

The report highlights clinical areas which may benefit from review by practitioners in maternity and newborn facilities, to the ultimate benefit of future mothers and babies.

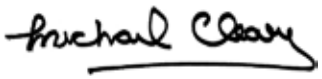
The report contains data obtained from the following sources:

- Perinatal Data Collection Team (PDCT)
- Health Statistics Unit (HSU)
- Australian Institute of Health and Welfare (AIHW)
- Registry of Births, Deaths and Marriages, Queensland
- Office of the State Coroner, Queensland.

The Council is grateful for the cooperation of the Registrar for Births, Deaths and Marriages and the State Coroner who have facilitated access to relevant data.

I would like to thank the Council members, and those who support them, for their commitment to improving maternal and perinatal outcomes. I trust that clinicians throughout Queensland will find this report helpful and ask that they give careful consideration to, in particular, the Council's recommendations and good practice points.

The Department of Health supports the work of the Queensland Maternal and Perinatal Quality Council with the realisation that sound health planning principles need to be based on the best available evidence including analyses of health outcomes by clinical experts such as form the contents of this report. Comments on the findings of this report are welcomed.



Dr Michael Cleary
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Foreword

The Queensland Maternal and Perinatal Quality Council (the Council) has completed its second two year term since being reconvened in 2009. In this report, the Council reviews statewide maternity and newborn outcomes between the calendar years 2009 and 2011.

The purpose of the Council is to:

- collect and analyse clinical information regarding maternal and perinatal mortality and morbidity in Queensland to identify statewide and facility-specific trends
- make recommendations to the Minister for Health on standards and quality indicators of maternal and perinatal clinical care to enable health providers in Queensland to improve safety and quality
- assist with the adoption of such standards in both Public and Private sectors.

The Council functions collaboratively with the Statewide Maternity and Neonatal Clinical Network (SMNCN) and a Private Hospitals Maternity Liaison Group (supported by the Private Hospitals Association of Queensland). For more information about the Terms of Reference of the Council visit **www.health.qld.gov.au**

This report examines

- the management of pregnancies, births and newborns in Queensland, including maternal deaths, perinatal deaths and apparent risk factors for such events, and attempts to identify areas of maternal and neonatal care where service providers might focus attention to prevent future deaths and adverse outcomes
- maternal deaths and perinatal deaths between 2009 and 2011, and statewide maternity and neonatal data from 2010 and 2011 with a comparative snapshot of the previous decade wherever those data are available. In Queensland, between 2000 and 2011, 658,105 women gave birth to 669,379 babies. Data regarding these mothers and babies is provided to the Perinatal Data Collection Team (PDCT), Health Statistics Unit (HSU), Department of Health, by midwives, under the Perinatal Statistics provisions of the *Public Health Act 2005* (Chapter 6, Part 1, s214–228). Data provided by PDCT for this report, has been analysed by the Council members.

Examination of issues relating to severe maternal morbidity continues to be challenging with limited resources, and the Council continues to support the Australian Maternity Outcomes Surveillance System (AMOSS) program as the most effective means of such review at this time.

I wish to acknowledge the commitment of Council members, and those who support them, to improving maternal and perinatal outcomes. The close and effective working relationship with the staff of the HSU, Department of Health, is particularly valuable. I trust that all involved in the provision of care to mothers and their babies throughout Queensland will find this report helpful and give careful consideration to the Council's recommendations.

Professor Michael Humphrey
Chair, Queensland Maternal and Perinatal Quality Council

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Summary

The report focuses primarily on the 122,150 women who gave birth to 124,211 babies in Queensland between 2010 and 2011, with a comparative review of the previous decade depending upon data availability. To complete the 'catch-up phase' of the Queensland Maternal and Perinatal Quality Council's work after a period of inactivity prior to 2009, it examines maternal deaths and perinatal deaths between 2009 and 2011.

During this time:

- there were 18 deaths of women during pregnancy or within 42 days after their pregnancy—four of which were direct maternal deaths. A further 48 women died between 43 days and 365 days after their pregnancy. Using the International Classification of Diseases, Version 10 (ICD–10) definition of maternal death, the maternal mortality ratio (MMR) in Queensland for these years was 8.1 per 100,000 births. Suicide was the leading cause of death in women, both within 42 days after their pregnancy and between 43 days and 365 days after their pregnancy.
- there were 1954 perinatal deaths, giving a perinatal mortality rate of 10.5 per 1000 births (stillbirth rate 6.8 per 1000 births and neonatal mortality rate (NMR) 3.8 per 1000 live births). Comparison with most recently published Australian data cannot be made directly, as neonatal mortality data was missing from one state in the Australian report[1], and the definitions of perinatal death differ slightly. With those caveats in mind, the perinatal mortality rate (PNMR) for Queensland was close to the Australian rate—the stillbirth rate in Queensland was equivalent to the Australian rate, but the NMR for Queensland was higher than the Australian rate.

The deaths were classified using the Perinatal Society of Australia and New Zealand (PSANZ) perinatal (PSANZ-PDC) and neonatal (PSANZ-NDC) classifications. The most common cause of perinatal death in normally formed term infants was unexplained stillbirth (46.3%) followed by hypoxic peripartum death (16.1%) which includes deaths occurring either intrapartum or in the neonatal period without major pre-existing conditions. This group of deaths may benefit from closer review at both local and state level.

The risk factors for adverse pregnancy outcomes identified in this report, including smoking, overweight and obesity, and living in disadvantage are consistent with those reported in The Lancet Stillbirth Series[2 3]. This series made a specific call to action for high income countries to develop programs to address inequality of health outcomes for women of childbearing age[4].

Indigenous women continue to have higher rates of adverse pregnancy outcomes compared to non-Indigenous women. The overall PNMR is 80% higher for Indigenous women—the neonatal death component is 2.4 times the rate of non-Indigenous women. The main contributor to this disparity relates to preterm birth. However, the relatively higher incidence of neonatal deaths assigned to unknown or undetermined for Indigenous women indicates the need for improvement in data quality.

Smoking throughout pregnancy increases the likelihood of preterm and low birthweight birth, and is associated with a perinatal mortality risk of 14.5 per 1000 births for smokers versus a risk of 9.2 per 1000 births for non-smokers. Smoking throughout pregnancy is significantly more common in young women and Indigenous women.

Almost 50% of the women who gave birth between 2010 and 2011 were overweight or obese, and women in this group were more likely to have a:

- caesarean section birth
- baby weighing more than 4000 grams
- baby who died in the perinatal period.

The safety of interventions for weight loss when a woman is pregnant and obese, for the mother and her baby, is not clear[5]. Prenatal counselling must be seen as vital to this group of women, both for their future pregnancies and for their ongoing life and health expectancy.

1 Li Z, Zeki R, Hilder L & Sullivan EA. (2012). *Australia's mothers and babies 2010*. Perinatal statistics series no. 27. Cat. no. PER 57. Canberra: AIHW National Perinatal Epidemiology and Statistics Unit.

2 Flenady V, Middleton P, et al. (2011). *Stillbirths: the way forward in high-income countries*. Lancet 377(9778): 1703-1717.

3 Flenady V, Koopmans L, et al. (2011). *Major risk factors for stillbirth in high-income countries: a systematic review and meta-analysis*. Lancet 377(9774): 1331-1340.

4 Goldenberg RL, McClure EM, Bhutta ZA, Belizan JM, Reddy UM, Rubens CE, Mabeya H, Flenady V, Darmstadt GL, for The Lancet's Stillbirth Series steering committee. *Stillbirths: the vision for 2020*. Lancet 2011; published online April 14. DOI:10.1016/S0140-6736(10)62235-0).

5 Furber CM, McGowan L, Bower P, Kontopantelis E, Quenby S, Lavender T. (2013). *Antenatal interventions for reducing weight in obese women for improving pregnancy outcome*. Cochrane Database of Systematic Reviews 2013, Issue 1.

Attendance at more than five antenatal visits is less common in Indigenous women. Socio-economic disadvantage—as measured by Socio-economic Indexes for Areas (SEIFA) quintiles—is associated with an increased risk of perinatal death, preterm birth and low birthweight birth. These outcomes are more marked for Indigenous women and their babies. The influence of remoteness of residence of the mother—as measured by Accessibility/remoteness index of Australia (ARIA) score—was less clear.

Between 2000 and 2011, the rate of birth at gestations 37 to 39 weeks has increased significantly (from less than 43% to more than 53%). There has been a concomitant decrease in births at gestations of 40 weeks or more. Overall, there has been little change seen in the rate of birth at less than 37 weeks, though there has been a clear increase in the rate of birth at less than 37 weeks gestation in the private healthcare sector. There is a clear difference in the gestational patterns between public and private healthcare sectors with a marked preponderance for elective caesarean section and, to a lesser degree induction of labour, in the 37 to 39 week gestation period in the private healthcare sector. A significantly higher PNMR is shown for all gestations below 40 weeks in association with elective birth.

Between 2000 and 2011, 56% to 62% of multiple pregnancies ended before 37 weeks gestation. Approximately 4% of births in Queensland are from pregnancies conceived with the aid of assisted conception techniques—28% of multiple pregnancies have been conceived with the aid of assisted conception techniques. Improved extracorporeal techniques for assisted conception have resulted in a steady fall in the rate of multiple pregnancy in association with these techniques, but the same type of improvement has not been seen in relation to the use of ovulation induction and/or artificial insemination.

Since 2005, the frequency of elective caesarean section (20% to 21%) and induction of labour (22% to 23%) have remained steady with pregnancies ending in spontaneous labour in less than 60% of instances. Women being cared for in the public healthcare sector laboured spontaneously in 63% to 65% of pregnancies, while women being cared for in the private healthcare sector laboured spontaneously in 39% to 40% of pregnancies. This disparity between these modes of healthcare delivery is mirrored in the lower rates of induction of labour and elective caesarean section in the public healthcare sector.

Between 2000 and 2011 the rate of unassisted vaginal birth decreased from 65% to 56%, with a concomitant rise in the rate of caesarean section birth from 26% to 34%. A marked disparity is seen between care in the public and private healthcare sectors, with the likelihood of a woman giving birth in the public healthcare sector having an unassisted vaginal birth being approximately 50% higher than a woman in the private healthcare sector. By 2011, almost 50% of women giving birth in the private healthcare sector had a caesarean section birth, while less than one-third of women giving birth in the public healthcare sector had a caesarean section birth.

A small group of care indicators, chosen for relevance by the Council, are examined in this report, with comparison hospitals being grouped in clinically relevant 'hospital/facility' groupings. Women presenting to public hospitals which did not have an established maternity service often presented in preterm labour and the outcomes were often poor. Indicators examining 'selected primigravidae' showed that these women were most likely to have a caesarean section birth in a private facility or in a high-care level public facility. Spontaneous onset of labour and unassisted vaginal birth without major perineal damage (third/fourth degree tear or episiotomy) were less likely in these facilities and more likely in smaller provincial/rural facilities.

Future work and direction of the Council includes:

- implementation of an active Indigenous Perinatal Health Sub-Committee
- potential reporting of facility-specific public hospital indicator outcomes—the Council would be interested in dialogue regarding potential future maternity and newborn care clinical indicators and the manner in which they are reported
- review of 'contributing factors' by the Maternal and Perinatal Mortality Sub-Committees
- piloting of the revised National Maternal Mortality Advisory Committee's *Maternal Death Reporting form* by the Maternal Mortality Sub-Committee, subsequent to proposed changes to the *Public Health Act 2005* which will mandate reporting of maternal deaths[6]
- examination of the potential for development of a Queensland Congenital Anomaly Register by the Congenital Anomaly Sub-Committee.

6 Recommendation five, QMPQC report 2011: Legislative change to the Public Health Act 2005, with reference to a requirement for all deaths of women during pregnancy or within one year of the end of a pregnancy being reported via the PDCT, is necessary to improve the quality of information available for review of the causation of deaths and the possible presence of avoidable factors.

Recommendations

The Council recommends (not in any order of priority):

1. all frontline clinicians (e.g. medical officers, nurses and bereavement support personnel) involved in Queensland hospital maternity and newborn services attend the IMPROVE program to enhance optimal clinical practice around the time of a perinatal death according to the PSANZ Perinatal Mortality Guidelines (see Section 1.3.4)
2. that the SMNCN seeks assistance from the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) and other relevant professional bodies to examine the possible development of a small number of obstetric services which retain, preserve and teach the obstetric skill of vaginal breech birth (see Section 2.8)
3. that the HSU considers progressing a recommendation through the appropriate mechanisms of government to Council of Australian Governments (COAG), to develop an indicator relating to gestation at birth (e.g. less than 37 weeks gestation) in addition to the indicator relating to Indigenous baby birthweight. The Indigenous baby birthweight indicator may be more valuable if calculated for gestation equal to 37 or more weeks, tracking near-term intrauterine growth restriction (see Section 2.9.1).
4. that the Department of Health ensures no further rural maternity services close, and actively seeks to open/re-open rural maternity services where possible (see Section 4).
5. that future Council reports examine clinical indicators, such as those in this report, by individual hospital/facility (see Section 4).

Good practice points

The Council commends the following clinical practice improvement 'good practice points' to clinicians:

- Women with a history of serious mental illness (e.g. schizophrenia, bipolar affective disorder, schizoaffective disorder) should routinely be offered mental health follow-up for at least the first 12 months post-partum (see Section 1.2.7).
- Practitioners referring women for termination of pregnancy or undertaking termination of pregnancy should ensure adequate follow-up for such women, especially if the procedure is undertaken for mental health concerns (see Section 1.2.7).
- Mental health screening is performed almost universally in the public healthcare sector, but less so in the private healthcare sector. Use of the Edinburgh postnatal depression score (EPDS) in the private healthcare sector may help to identify women who warrant further follow-up (see Section 1.2.7).
- A rise in blood pressure during antenatal care needs careful evaluation and review. This is particularly important in women with gestational diabetes, who are at an increased risk of developing pre-eclampsia (see Section 1.2.8).
- Hypertension in labour needs to be actively managed, even if the aetiology of the hypertension is not clearly apparent (see Section 1.2.8).
- Vaginal bleeding in pregnancy warrants a careful history and examination, including visualising the cervix, rather than replacing these procedures with an ultrasound scan alone (see Section 1.2.9).
- Post-partum thromboprophylaxis in high risk women should be continued for six weeks. The finding of ovarian vein thrombosis is an indication for full anticoagulation in the post-partum period (see Section 1.2.9).
- Multiple presentations post-partum need to be thoroughly assessed and reviewed at a senior level even if the pregnancy and birth were uncomplicated (see Section 1.2.9).

Good practice points *continued*

- Autopsy should be undertaken whenever possible after a maternal death, even if a coronial autopsy is not ordered, because inheritable conditions may be discovered (see Section 1.2.11).
- All perinatal deaths should be investigated comprehensively according to the *PSANZ Perinatal Mortality Guidelines* despite the presence of a presumed cause of death (see Section 1.3.8).
- Following a perinatal death, all parents should be offered the option of an autopsy examination. The Council strongly encourages requesting placental histopathology in every case of stillbirth, neonatal death and high risk newborn according to the PSANZ Perinatal Mortality Guidelines. Placentas should be sent to pathology fresh and un-fixed (see Section 1.3.3).
- Determining the accuracy of completion of the death certificates, and submitting amendments when required, should be a routine part of local perinatal mortality committee review of all perinatal deaths. Parents should be informed of this outcome prior to receiving a revised death certificate (see Section 1.3.3).
- Elective repeat caesarean section and induction of labour before 39 weeks of gestation are common, yet are associated with respiratory and other adverse neonatal outcomes. Elective intervention in pregnancy before 39 weeks of gestation should be avoided wherever possible (see Section 2.3).
- Maternity care providers should provide clear information to women carrying multiple pregnancies regarding the risk of preterm labour, and steps that should be taken in the event that a woman carrying a multiple pregnancy suspects the onset of preterm labour (see Section 2.5).
- Given the unchanging risks of multiple pregnancy occurring in association with ovulation induction and the consequent risk of adverse outcomes due to the multiple pregnancies, the same attention to technique monitoring and quality improvement as has been seen with extracorporeal techniques is recommended to those prescribing ovulation induction (see Section 2.6).
- Smoking cessation programs as part of routine antenatal care reduce fetal exposure to cigarette smoke, low birthweight and preterm birth, and should form part of routine antenatal care. Specialised programs to assist Indigenous women to stop smoking before and during pregnancy should be prioritised (see Section 2.10.5).
- Where maternal risk factors, such as advanced maternal age, obesity and smoking are identified, clinicians should provide clear information to the woman regarding those risks and their implications. Whilst specific recommendations may be required regarding an appropriate level of facility care, such recommendations must be consistent with continuing provision of non-fragmented models of care with a defined primary care giver (see Section 2.10).
- Maternity services are encouraged to be continuously aware of their own performance by monitoring against relevant indicators and to readily make this information available to staff and to consumers of their care (see Section 4).