

Maternal mortality and psychiatric morbidity in the perinatal period: challenges and opportunities for prevention in the Australian setting

Marie-Paule Austin, Susan Kildea and Elizabeth Sullivan

The assessment of maternal deaths relating to psychiatric morbidity in the perinatal period poses several challenges: the definition and classification of maternal deaths, the difficulty of detecting all maternal deaths, and the definition of psychiatric morbidity and mortality in the maternity setting.

Classification of maternal deaths

“Maternal deaths” were traditionally defined as occurring any time during pregnancy and up to 42 days postpartum, with additional classification as “direct”, “indirect” or “incidental”.¹ *Direct* deaths result from obstetric complications (eg, eclampsia). *Indirect* deaths result from a condition that is not directly related to obstetric causes but is aggravated by the effects of pregnancy (eg, a cardiac condition).¹ In Australia, before 1997, deaths from psychiatric illness, apart from puerperal psychosis (which was classified as a direct cause), were classified as *incidental* maternal deaths (conditions occurring during pregnancy but for which the pregnancy is unlikely to have contributed significantly to the death). In line with recommendations from the 1997–1999 Confidential Enquiries into Maternal Deaths in the United Kingdom (the “National Institute for Clinical Excellence [NICE] report”),² Australia has classified these deaths as *indirect* since the 1997–1999 triennium.

More recently, the classification of maternal deaths was broadened (ICD-10 coding) to include *late* maternal deaths — that is, deaths from direct or indirect causes between 43 and 365 days postpartum.¹ Deaths associated with psychiatric illness are increasingly being included in the category of late maternal deaths.

It is well recognised that maternal deaths due to psychiatric illness have been under-reported, partly because of misclassification of suicides as incidental deaths, and partly because of under-reporting of late maternal deaths.³ Late maternal deaths are more difficult to identify, as they often occur after women have ceased to attend maternity services. Researching deaths thereafter is reliant on various data collections (including coroners’ reports and state registries of births, deaths and marriages), which in the past have not necessarily identified death in relation to giving birth, thus making them a less reliable source of information. In Australia, this problem is now being addressed by the inclusion of an item on death certificates enquiring about pregnancy in the preceding year and the incorporation of ICD-10 coding into coroners’ reports.

Incomplete detection of maternal deaths

Where linkage studies of death and birth data have been performed, they have revealed an over-representation of maternal deaths associated with suicide or psychiatric illness. Many of these deaths are not captured by routine data collection methods because they often occur after 42 days postpartum.^{3,4} Thus, an Office of National Statistics (ONS) linkage study in the UK identified over 40 extra maternal deaths in the 1997–1999 triennium from suicide or violent causes, making suicide the

ABSTRACT

- Maternal mortality associated with psychiatric illness in the perinatal period (pregnancy to the end of the first year postpartum) has until recently been under-reported in Australia due to limitations in the scope of the data collection and methods of detection.
- The recent United Kingdom report *Why mothers die 2000–2002* identified psychiatric illness as the leading cause of maternal death in the UK.
- Findings from the last three reports on maternal deaths in Australia (covering the period 1994–2002) suggest that maternal psychiatric illness is one of the leading causes of maternal death, with the majority of suicides occurring by violent means.
- Such findings strengthen the case for routine perinatal psychosocial screening programs, with clear referral guidelines and assertive perinatal treatment of significant maternal psychiatric morbidity.
- Data linkage studies are needed to measure the full extent of maternal mortality associated with psychiatric illness in Australia.

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leading cause of indirect maternal deaths once these cases were added to the NICE report statistics.^{5,6} The ONS study demonstrated that 65% of all maternal suicides were not included in the NICE report, due mainly to the lack of reporting of late indirect maternal deaths.⁵ A similar finding was also demonstrated in a Finnish linkage study of maternal deaths,⁷ which reported 73 suicides associated with pregnancy between 1987 and 1994. A pilot data linkage study is underway to investigate the coverage and quality of maternal death data collections in Australia and the extent of ascertainment bias.

Detection and definitions of psychiatric morbidity and mortality in the maternity setting

From the psychiatric perspective, there has also been a conceptual shift. Researchers and clinicians have moved away from focusing solely on postnatal psychiatric disorders to including disorders arising across the *perinatal* period. In the mental health context, the perinatal period is usually defined as encompassing pregnancy through to the end of the first year postpartum.⁸

In Australia, identifying psychiatric disorders in the maternity setting presents researchers with a further methodological challenge. As detailed mental health reports are not available to the state and territory maternal mortality committees, it is difficult to establish, in some cases, whether a woman has experienced a psychiatric disorder. For the purposes of this article, we have

1 Profiles of maternal deaths associated with psychiatric causes in Australia and the United Kingdom

Characteristic	Australia, 1994–2002 ⁹⁻¹¹ (n = 26)	UK, 2000–2002 ⁵ (n = 60)
Age < 25 years	7 (27%)	11/58 (19%)
Ethnic/Indigenous status	At least 3 (12%) Indigenous	7/60 (12%) ethnic minorities
Substance misuse	6 (23%)	31/60 (52%)
Suicide by violent means	17 (65%)	17/26 (65%)*
Antenatal death	17 (65%)	14/60 (23%)
Prior psychiatric illness	6 (23%)	34/56 (61%)
Perinatal psychiatric episode	13 (50%)	37/60 (62%)
Receiving treatment perinatally	9 (35%)	37/60 (62%)
Contact with a psychiatric service perinatally	8 (31%)	23/60 (38%)
Psychiatric inpatient care perinatally	6 (23%)	10/60 (17%)
Perinatal risk detection	Of the 19 women with a previous or current psychiatric disorder, 9 (47%) were in contact with mental health services	Of the 34 women with a previous psychiatric disorder, 17 (50%) had been identified as "at risk"; 10/17 had a management plan in place

* Details were not available for two of the 28 suicide deaths. ◆

defined "psychiatric disorder" as *either* probable current mood disorder or psychosis, *or* a past history of mental health problems, *or* past or current contact with psychiatric services.

Finally, as confirmation of death by suicide is always difficult, we have focused instead on maternal death associated with psychiatric morbidity (including suicide and deaths related to substance misuse).

Australian findings

Data on maternal deaths in Australia are provided to the National Perinatal Statistics Unit by state and territory maternal mortality committees. These committees receive death notifications from medical practitioners, midwives, hospitals, health departments, and coronial and postmortem investigations. Health departments also interrogate perinatal and hospital morbidity data collections and death data from state registries of births, deaths and marriages. Individual maternal mortality committees are responsible for conducting confidential death enquiries that assign each death a principal cause and classification.

Our report focuses on deaths extracted from reports on maternal deaths in Australia between 1994 and 2002.⁹⁻¹¹ Twenty-six deaths associated with psychiatric causes occurred over this period (Box 1). Of these, 17 (65%) occurred antenatally, with 13 (76%) of these occurring at less than 20 weeks' gestation. Six of the nine postnatal deaths occurred in the 42 days after birth. Ten women hanged themselves, and there was an increase in deaths due to hanging across the three triennial periods examined between 1994 and

2002. Another seven women died from other violent causes: gunshot wounds, drowning, intentional road trauma, jumping or poisoning. In total, 17 women (65%) died violently, suggesting a profound wish to die. The other nine women died from an overdose of prescription or illicit drugs.

Of the 13 women experiencing a psychiatric episode at the time of death, nine suffered from anxiety or depressive disorder and four from a severe psychiatric disorder (bipolar disorder [2], schizophrenia [1], and psychotic depression [1]). A further six women had a past history of depression (three had had postnatal depression), and in seven cases the diagnosis was unknown. Thus, 19 women (73%) had a previous or current psychiatric disorder.

Five of the 26 women had received medication for psychiatric conditions during pregnancy, as reported to the Australian Institute of Health and Welfare National Advisory Committee on Maternal Mortality. All five had stopped taking their medications: two were concerned about the potential effect on their babies, one stopped because of side effects, another for an unknown reason, and one had a long history of psychiatric illness and regularly ceasing medication. Six women had been inpatients in a psychiatric institution during the pregnancy or after the birth, suggesting severe psychiatric illness.

Comparison with UK findings

A comparison of the Australian data⁹⁻¹¹ with the most recently published UK Confidential Enquiry into Maternal and Child Health (CEMACH) triennium report on maternal deaths associated with a probable psychiatric cause⁵ is shown in Box 1. (The following comparisons should be interpreted with caution in view of the small numbers of maternal deaths involved.)

Women in the UK sample of 60 (28 reported suicides, 11 deaths from drugs, 18 from physical illness, and three from other causes) tended to be somewhat older and not characterised by social deprivation; 14/28 (50%) of the UK women who committed suicide were in current contact with psychiatric services; 17% had had a psychiatric admission; and 15% were being treated for mental health problems by their general practitioner. As reported elsewhere,¹²⁻¹⁴ the majority of the UK women who committed suicide died violently, with 9/26 (35%) dying by overdose of prescription medication (details were not available for the two other suicide deaths); just over half had a probable diagnosis of psychosis or severe depression; and all the women who committed suicide less than 42 days after giving birth were suffering from serious mental illness. Although 51% of the women had some history of substance misuse, this was not always the direct cause of their death.

In contrast to the Australian findings,⁹⁻¹¹ the CEMACH report⁵ found that suicide was relatively less common during pregnancy and emphasised the need "to be particularly vigilant about the mental health of women in late pregnancy and the first 3 months postpartum", as this was the time when suicide was most likely to occur. The difference between Australian and UK data with respect to the timing of death may in part reflect the fact that the CEMACH study, using linked birth and death data, included a greater proportion of *late* deaths.

With respect to maternal age at death, our findings are more comparable with the study by Gissler et al,⁷ which found teenage women were especially at risk.

Indigenous women were over-represented among maternal deaths (12%), considering they represented only 3.5% of the total

2 Recommendations

- Women with a history of significant mental health problems should be offered a mental health assessment antenatally and be counselled about pharmacological and other treatments during pregnancy.
- Psychosocial screening, with ongoing mental health monitoring and clear referral pathways (where appropriate), should be made available to all women in the maternity setting.
- Continuing professional development programs for general practitioners, midwives, child and family health nurses, and other community health practitioners should include education about perinatal morbidity and mortality from mental illness up to a year after birth.
- Members of the mental health profession should be engaged in developing a standard instrument for investigating maternal deaths from psychiatric illness.
- A culture of audit should be developed among mental health professionals regarding maternal deaths. The proposed standard instrument could be applied in investigations of deaths in which suicide is suspected. ♦

number of women giving birth in Australia during the survey period (12% may even be an underestimate, given that Indigenous status was unreported in 31% of cases).

Conclusions and recommendations

Methodological considerations

Changing the classification of deaths due to mental illness to indirect deaths and expanding the scope of monitoring to include late deaths has seen an increase in reported maternal mortality due to psychiatric conditions, and specifically suicide, around the world. Indeed, the last two reports on maternal deaths in Australia (covering the period 1997–2002) noted that maternal mental illness was one of the leading causes of indirect maternal death in the perinatal period,^{10,11} with the majority of deaths occurring by violent means. Yet there is probable under-ascertainment of these deaths, and their true extent will best be assessed through a data linkage study of pregnancy and deaths of women of reproductive age.

The detailed forensic review and cross-linkage of the UK cases is critical to strengthening risk detection, identifying gaps in the health system and formulating policy to minimise further tragedy. The standard audit tool used in the UK allows thorough investigation into the circumstances of the deaths and gathers significantly more additional information than Australian data collections.

Although late maternal deaths were not routinely reported before the 2000–2002 triennium in Australia, the low number (two) of late maternal deaths (> 42 days postpartum) noted in the Australian report (and the high proportion of unreported probable suicides in the UK revealed by linkage) strongly suggests the importance of linking birth data with death registers in future. A linkage study of perinatal and death data currently being conducted in New South Wales will assess the usefulness of this method for improving ascertainment of maternal deaths in Australia.

Clinical and policy considerations

The relatively high proportion of maternal deaths occurring early in pregnancy in Australia strengthens the case for antenatal psychosocial screening. The significant proportion of maternal

deaths among women with a previous psychiatric history, having current contact with mental health services, or ceasing psychotropic medication during pregnancy suggests that these deaths, in particular, may have been avoided if there had been adequate monitoring of the women's mental health status.

Based on Australian and UK findings, we support the development of a perinatal mental health national action plan, as outlined in the *beyondblue* postnatal depression final report, *Prevention and early intervention 2001–2005*.¹⁵ The plan would incorporate early antenatal and postnatal psychosocial assessment with ongoing mental health monitoring across all maternity and postnatal settings. However, this should not be implemented until clear referral guidelines and resources are in place for all jurisdictions. Recommendations for improved detection of perinatal risk in women with a history of mental health problems are outlined in Box 2.

Acknowledgements

We wish to acknowledge the support of Associate Professor James King, Chair of the Australian Institute of Health and Welfare National Advisory Committee on Maternal Mortality, and the state and territory committees for provision of data to the national maternal death data collection. We are also grateful for comments from Dr Leo Leader, Professor Michael Bennett and Professor Gordon Parker on earlier versions of the manuscript.

Competing interests

None identified.

Author details

Marie-Paule Austin, MB BS, MD, FRANZCP, Perinatal Psychiatrist¹
 Susan Kildea, RM, BHSc(Hons), PhD, Associate Professor²
 Elizabeth Sullivan, MB BS, MPH, MMed(Sexual Health), Senior Lecturer
 and Director, Australian Institute of Health and Welfare National
 Perinatal Statistics Unit³

1 School of Psychiatry, University of New South Wales, Sydney, NSW.

2 Graduate School for Health Practice, Institute of Advanced Studies,
 Charles Darwin University, Darwin, NT.

3 School of Women's and Children's Health, University of New South
 Wales, Sydney, NSW.

Correspondence: m.austin@unsw.edu.au

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(Received 3 Aug 2006, accepted 3 Jan 2007)

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