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Maternal deaths in the UK: pre-eclampsia deaths are avoidable

Being pregnant in the UK has never been safer. The latest Confidential Enquiry into Maternal Deaths[1] reported that less than one in 10 000 women died in or around pregnancy in the UK during 2012–14 (241 women within the triennium), the lowest rate recorded since such surveillance began in 1952 in England and Wales. This maternal mortality rate is lower than age-matched male death rates (5–17 per 10 000 population for men aged 20–44 years in England and Wales, 2014) such that a man is more likely to die while his partner is pregnant than she is.[2]

Several important messages emerge from the latest Confidential Enquiry into Maternal Deaths: cardiac disease is the leading cause of indirect maternal death, while thrombosis and thromboembolism continues to feature as a major issue and is the leading cause of direct deaths. Suicide is, however, the leading cause of direct maternal deaths within a year after the end of pregnancy.[1] Two thirds of maternal mortality is due to a medical or mental health condition. Therefore, the need for specialist care for women with pre-existing medical and mental health problems is clearly still a vital concern.

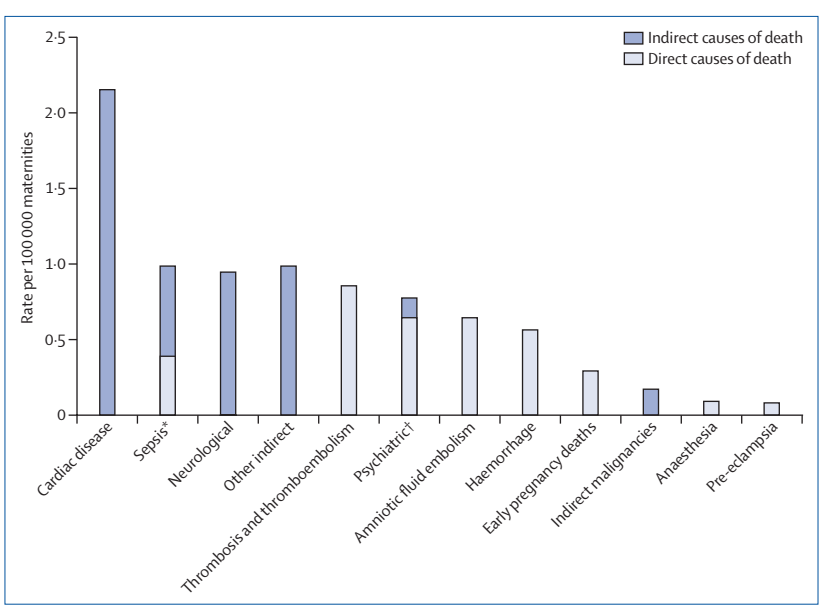

Figure: **Maternal mortality by cause from 2012 to 2014 in the UK**
*Rate for direct sepsis (genital tract sepsis and other pregnancy related infections) is shown in pale and rate for indirect sepsis (influenza, pneumonia, others) in dark bar. †Rate for suicides is shown in pale and rate for indirect psychiatric causes (drugs/alcohol) in dark bar. Source: MBRRACE-UK. Reproduced from Saving lives, improving mothers' care—surveillance of maternal deaths in the UK 2012–14 and lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009–14.[1]

In addition to ongoing surveillance of triennial maternal deaths, this report examined deaths related to cardiovascular and hypertensive disease, early pregnancy problems, and critical care between 2009 and 2014. Indirect maternal deaths, related to underlying conditions exacerbated by pregnancy, are increasingly important and now represent 59% of total maternal deaths; 153 women died from heart disease between 2009 and 2014, representing about one third of all maternal deaths.[1] Specialist multidisciplinary care for women with known heart disease, particularly with prosthetic valves, together with prompt action when women present with chest symptoms or breathlessness remain key to avoiding further deaths. Health-service provision must also focus on pre-pregnancy counselling, and uptake of contraception and provision of termination services to limit future mortality among women with known heart disease. Other causes of death both indirect and direct (resulting from obstetric complications of pregnancy) have been stable, with the exception of pre-eclampsia which has substantially reduced since the last report and is now the least represented category (figure).

Only two women died from pre-eclampsia and eclampsia during pregnancy in the UK in 2012–14.[1] In the previous two reports, there were 19 and 10 maternal deaths from pre-eclampsia in 2006–08 and 2009–11, respectively.[1] This reduction is remarkable since hypertensive diseases have consistently been a leading direct cause of death in pregnancy. Maternal deaths from pre-eclampsia have been associated with substandard care,[3] suggesting they are avoidable. In the latest Confidential Enquiry into Maternal Deaths, less than one woman per million women died from hypertensive related disorders during pregnancy in the UK and there was less than one such death per year.[1] The low rate of maternal deaths from pre-eclampsia in the UK is in stark contrast with the global setting where an estimated 40 000 women die each year from this condition,[4] which equates to about five deaths every hour. The proportion of maternal deaths from hypertensive disorders of pregnancy is 2·8% in the

UK (2011–13),[1] 7·4% in the USA (2011–13),[5] and 14% globally (2013).[4]

Deaths from hypertensive diseases of pregnancy are largely due to treatable pathology, the elements of which are important to define if other countries are to emulate the reduction in the UK. The largest triennial fall in maternal deaths from these diseases in England and Wales occurred between the 1950s (200 deaths) and 1970s (fewer than 40 deaths); this reduction was related to improved surveillance, diagnosis, and timely delivery. From the 1980s onwards, the confidential enquiries showed that deaths in women with hypertensive diseases of pregnancy were related to pulmonary oedema and intracerebral events, particularly haemorrhage. The subsequent introduction of fluid-restricting management protocols meant pulmonary oedema was no longer a cause of maternal death in the UK in 2002.[6] Intracerebral haemorrhage remained a fairly common cause of death, and substandard care was often associated with inadequate treatment of severe hypertension, a likely causative factor.[6]

Have further improvements in management caused this latest reduction in deaths? Pre-eclampsia can be partly prevented by prophylactic use of low-dose aspirin.[7] Since 2010, aspirin has been routinely recommended for higher-risk women by the UK National Institute for Health and Care Excellence,[8] which also underlines the judicious use of antihypertensive medication with lower target thresholds (now to less than 150/100 mm Hg). The use of anticonvulsant therapies has increasingly been introduced into practice for women with pre-eclampsia in the past few decades, after trials showed the efficacy of magnesium sulphate for the prevention of eclamptic fits.[9] More recently, planned delivery from 37 weeks' gestation has been shown to reduce morbidity,[10] and has become a standard of care in the UK.[8] The introduction of National Health Service evidence-based guidelines that have focused on the systematic use of interventions may be the catalyst that has reduced deaths from hypertensive diseases of pregnancy.

The maternal deaths that remain still seem to be largely avoidable, and are often related to poor detection. However, we must guard against complacency. Pre-eclampsia is only safe for the mother if identified and well managed. However, as delivery remains the mainstay of treatment, preterm birth and its ensuing perinatal morbidity will continue to be a challenge. The contribution of hypertensive diseases of pregnancy to the 2·6 million stillbirths that occur annually across the globe was highlighted in the *Lancet*'s Ending Preventable Stillbirths Series.[11] If services are to impact on perinatal outcomes, therapies that ameliorate established disease at early gestations and safely maintain pregnancy will become increasingly important. Novel therapies such as statins and other drugs targeting various pathophysiological pathways have been proposed and are under evaluation in clinical trials.[12]

In the latest Confidential Enquiry into Maternal Deaths about a quarter of pregnant women who died in 2012–14 were born outside the UK, but maternal death rates were similar in these women and those born in the UK (8·85 *vs* 7·87 per 100 000 maternities: relative risk 1·12; 95% CI 0·80–1·56),[1] even when their origins were from a low-income setting, which suggests that universal pregnancy care provision, rather than background demographics, influence the reduction of maternal mortality rates. Antenatal care and many therapeutic and management interventions for pregnancy hypertensive disorders can be provided at relative inexpensive cost and are potentially available in low-income settings. The challenge is implementation.

Andrew H Shennan, Marcus Green, Lucy C Chappell
Women's Health Academic Centre, King's College London, London SE1 7EH, UK (AHS, LCC); and Action on Pre-eclampsia, Evesham, UK (MG)
andrew.shennan@kcl.ac.uk

MG is Chief Executive Officer of Action on Pre-eclampsia and contributed to the lay summary of the last Confidential Enquiry into Maternal Deaths. AHS and LCC declare no competing interests.

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