

**Table 2**Analysis of HIV status among women who died due to obstetric hemorrhage.<sup>a</sup>

Year of death	HIV status unknown, %	HIV negative, %	HIV positive, not requiring HAART, %	AIDS, not receiving HAART, %	AIDS, receiving HAART, %	All HIV positive, %
2005–2007	59.7	21.2	–	–	–	19.1
2008–2010	25.4	38.7	21.2	4.9	9.7	35.8
2011–2013	9.8	50.0	18.1	6.2	10.1	41.2

Abbreviation: HAART, highly active antiretroviral therapy.

<sup>a</sup> Values taken from Saving Mothers Reports [1,2].

with the introduction of highly active antiretroviral therapy (HAART) for patients in the public sector in 2008 (Table 1).

The proportion of women whose primary cause of death was obstetric hemorrhage who were living with HIV infection has increased between 2005–2007 and 2011–2013 (Table 2). In the latest report [1], the proportion of women who died due to obstetric hemorrhage who had HIV infection was statistically lower than the proportion with HIV in the overall report (45% vs 65%;  $P < 0.001$ ). However, it was also notably higher than the national HIV seroprevalence of 29% [1]. Importantly, the risk of hemorrhage was higher among women who were receiving HAART than among those not receiving HAART (relative risk 1.61, 95% confidence interval 1.15–2.25 (Table 2)).

This increased tendency to bleeding in pregnancy among women with HIV infection is in line with the findings of Chweneyagae et al. [3]. On the basis of data from the report for 2008–2010 [2], they stated that for deaths due to obstetric hemorrhage, the institutional mortality ratios were 38.4 and 17.2 per 100 000 live births among women with and without HIV infection, respectively [3]. Furthermore, Bloch et al. [4] found increased rates of blood transfusions among pregnant women with HIV infection.

The current reanalysis of the South African data adds to the body of evidence suggesting that the frequency of hemorrhage among pregnant women with HIV infection is increasing, which could be associated with the use of HAART. Increased bleeding among women

with HIV infection could be associated with anemia, HIV-associated thrombocytopenia, or chorioamnionitis. Alternatively some form of coagulopathy or endothelial dysfunction could be the cause, but this needs further investigation.

### Conflict of interest

The author has no conflicts of interest.

### References

- [1] National Committee for Confidential Enquiry into Maternal Deaths. Saving Mothers 2011–2013: Sixth report on the Confidential Enquiries into Maternal Deaths in South Africa. <http://www.kznhealth.gov.za/mcwh/Maternal/Saving-Mothers-2011-2013-short-report.pdf>. Published 2014. Accessed November 12, 2015.
- [2] National Committee for Confidential Enquiry into Maternal Deaths. Saving Mothers 2008–2010: Fifth report on the Confidential Enquiries into Maternal Deaths in South Africa. <http://www.health.gov.za/index.php/2014-08-15-12-55-04/category/100-2012rp?download=189:saving-mothers-2008-2010-fifth-report-on-the-confidential-enquiries-into-maternal-deaths-in-south-africa-short-report>. Published August 19, 2014. Accessed April 19, 2016.
- [3] Chweneyagae D, Delis-Jarrosay N, Farina Z, Fawcus S, Godi NP, Khaole N, et al. The impact of HIV infection on maternal deaths in South Africa. *S Afr J Obstet Gynaecol* 2012; 18(3):70–5.
- [4] Bloch EM, Crookes RL, Hull J, Fawcus S, Gangaram R, Anthony J, et al. The impact of human immunodeficiency virus infection on obstetric hemorrhage and blood transfusion in South Africa. *Transfusion* 2015;55(7):1675–84.

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## Maternal suicide risk among refugees and migrants

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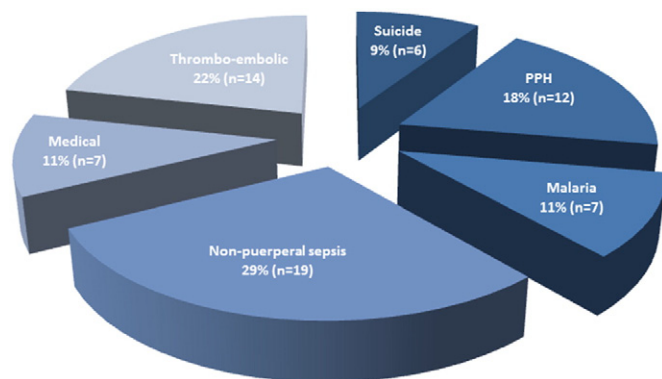
Suicide

Suicide is a leading cause of maternal mortality across all income settings [1]. Published data underestimates the true burden because these deaths are frequently reported as accidental [1]. Pregnancy-related suicide in refugee and migrant populations is rarely reported, although risk is probably increased as a result of multiple psychosocial and socioeconomic stresses [2]. Data on suicide rates of refugees and migrants before resettlement are particularly scarce.

Shoklo Malaria Research Unit has provided obstetric care to refugees in Maela—the largest refugee camp on the Thailand–Myanmar border—since 1996, and to migrant women in this region since 1998 [3]. A comprehensive database review was conducted to identify maternal deaths at the unit between 1998 and 2015. Suicide accounted for 6 (9%) of 65 maternal deaths (Fig. 1). This frequency is much higher than the pooled figure of 1.0% across low- and middle-income regions [1]. The suicide-related maternal mortality rate (MMR) per 100 000 live births

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**Fig. 1.** Causes of maternal mortality (1998–2005) among migrants and refugees as a proportion of all maternal deaths (n=65). Abbreviation: PPH, postpartum hemorrhage.

was 16.4 (95% confidence interval [CI] 5.7–37.9; 4 deaths among 24 323 live births) for refugees and 13.8 (95% CI 3.8–50.2; 2 deaths among 14 534 live births) for migrants. These MMRs are higher than the all-cause MMR in most high-income countries, and contrast starkly with the maternal suicide rate of 0.80 per 100 000 live births in the UK [4]. The present field-based statistics are underestimates because suicides were not recorded before 1998 [3] and uptake of postpartum services in this setting is low.

Women who died by suicide were aged 18–36 years and were at 9–30 weeks of pregnancy. One suicide in 1998 and one in 2001 involved quinine ingestion. Four later suicides involved pesticide ingestion, reflecting lower quinine availability in recent years following the decrease in malaria in this region [3].

A multifaceted approach is required to tackle maternal suicide [2]. First, detection and treatment of mental disorders must improve through the development and systematic use of culturally valid tools

and increased availability of cost-effective treatment. Second, socioeconomic determinants, including poverty, lack of education, and violence against women, must be addressed, particularly in vulnerable populations. Sex education and access to family planning and safe abortions are paramount to the prevention of suicides triggered by unwanted pregnancy. Finally, reporting must be improved [1]. The recent addition of suicide as a direct cause of maternal death to the 11th revision of the International Classification of Diseases (ICD-XI) will facilitate this. The global decrease in direct obstetric deaths shifts suicide up the agenda of preventable maternal mortality [1]. Addressing this important cause of mortality is essential to ensure women's well-being, promote the health of their children, and contribute to the reduction of poverty-related inequalities.

### Conflict of interest

The authors have no conflicts of interest.

### References

- [1] Fuhr DC, Calvert C, Ronsmans C, Chandra PS, Sikander S, De Silva MJ, et al. Contribution of suicide and injuries to pregnancy-related mortality in low-income and middle-income countries: a systematic review and meta-analysis. *Lancet Psychiatry* 2014;1(3):213–25.
- [2] Collins CH, Zimmerman C, Howard LM. Refugee, asylum seeker, immigrant women and postnatal depression: rates and risk factors. *Arch Womens Ment Health* 2011; 14(1):3–11.
- [3] McGready R, Boel M, Rijken MJ, Ashley EA, Cho T, Moo O, et al. Effect of early detection and treatment on malaria related maternal mortality on the north-western border of Thailand 1986–2010. *PLoS One* 2012;7(7), e40244.
- [4] Knight M, Tuffnell D, Kenyon S, Shakespeare J, Gray R, Kurinczuk JJ, et al. Saving Lives, Improving Mothers' Care—Surveillance of maternal deaths in the UK 2011–13 and lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009–13. Oxford: National Perinatal Epidemiology Unit, University of Oxford; 2015.