

## Maternal deaths drop by one-third from 1990 to 2008: a United Nations analysis

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With only five years left until the 2015 deadline to achieve the United Nations Millennium Development Goals (MDGs), slow progress in MDG 5 (Improve maternal health) has been of concern to the international community. The latest estimates issued by the World Health Organization (WHO), the United Nations Population Fund (UNFPA), the United Nations Children's Fund (UNICEF) and The World Bank in September 2010 provide evidence of progress in all regions of the world, including in sub-Saharan Africa where data had previously shown limited change.<sup>1</sup>

According to estimates presented for 172 countries and territories in the inter-agency report, approximately 358 000 maternal deaths occurred worldwide in 2008. There was a steady decline in the maternal mortality ratio, which relates the number of maternal deaths to the number of live births. At the global level, the maternal mortality ratio fell by 34% from 1990 to 2008. The biggest declines in this ratio were seen in eastern Asia and northern Africa (63% and 59%, respectively).

Although such progress is encouraging, it will be insufficient to meet the MDG target of reducing the maternal mortality ratio by three quarters between 1990 and 2015. This would require an average annual decline of 5.5%. Improvements documented in this study fell short of this goal for the world as a whole with an annual decline of 2.3%, and for sub-Saharan Africa, in particular, where the estimated rate of decline was only 1.7%.

The effect of HIV/AIDS in sub-Saharan Africa is likely to have contributed to the slow pace of decline in maternal mortality. Overall, it was estimated that there were 42 000 deaths due to HIV/AIDS among pregnant women in 2008. About half of those were assumed to be maternal. The contribution of HIV/AIDS was highest in sub-Saharan Africa where 9% of all maternal deaths were estimated to be due to HIV/AIDS.

There was much variability between countries in 2008, with a maternal mortality ratio of 290 deaths (per 100 000 live births) in developing regions as compared to 14 deaths (per 100 000 live births) in developed regions. Not surprisingly, 99% of maternal deaths in 2008 occurred in developing countries.

Levels and trends of maternal mortality varied widely within regions as well. For example, in sub-Saharan Africa, where an overall reduction was noted for the first time, some countries (e.g. Benin, Cape Verde, Equatorial Guinea, Eritrea, Ethiopia, Mozambique and Rwanda) experienced declines in maternal death rates since 1990, whereas in other countries (e.g. Botswana, Kenya, Lesotho, South Africa, Swaziland and Zimbabwe) death rates increased.

WHO, UNICEF, UNFPA and The World Bank have published periodic estimates of maternal mortality every five years since 1990.<sup>2,3</sup> Earlier this year, a study by the Institute of Health Metrics and Evaluation reported a different set of estimates based on an alternative methodology, which showed a faster pace of progress than earlier estimates.<sup>4</sup> This study estimated a total of 342 900 maternal deaths for 2008 and a rate of annual decline of 1.3% between 1990 and 2008.

The estimates summarized here were derived using a larger data set and an improved method than that used for the previous rounds of interagency estimates. The estimation methods were reviewed by an external technical advisory group and will be published separately. We used all available national data on maternal mortality from the late 1980s to the present, analysed the variability of such data over time and space and included formal estimates of uncertainty. We adjusted the data, where appropriate, for the incomplete recording of maternal deaths and for over-counting in cases where a data source includes deaths that occur during pregnancy but are due to incidental or accidental causes.

The country consultation that was done while developing these estimates has helped identify increased data collection efforts in recent years, including special systems to capture data on maternal deaths. However, the global database on which estimates are based remains weak: it is crucial to develop improved mechanisms for counting maternal deaths so that we may better understand the true magnitude of maternal mortality.

These new estimates show a decline in maternal mortality greater than expected during 1990–2008. The study is the first to suggest that there has been a decline in sub-Saharan Africa. Several factors could account for this observation. Countries are increasingly adopting strategies and policies, such as free obstetric care or risk-pooling mechanisms, with the goal of increasing the coverage of effective health services. During the same period, the proportion of deliveries attended by skilled health personnel rose from 53% to 63% and the proportion of women who report using a method of contraception increased from 52% to 62% in developing countries.<sup>5</sup> However, there is still much work to be done in improving health systems to prevent maternal deaths in developing countries. ■

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### References

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## References

1. WHO, UNICEF, UNFPA, The World Bank. *Trends in maternal mortality 1990–2008: estimates developed by WHO, UNICEF, UNFPA and The World Bank*. Geneva: World Health Organization; 2010. Available from: [www.who.int/reproductivehealth/publications/monitoring/9789241500265/en/index.html](http://www.who.int/reproductivehealth/publications/monitoring/9789241500265/en/index.html) [accessed 6 September 2010].
2. Hill K, Thomas K, AbouZahr C, Walker N, Say L, Inoue M et al.; Maternal Mortality Working Group. Estimates of maternal mortality worldwide between 1990 and 2005: an assessment of available data. *Lancet* 2007;370:1311–9. doi:10.1016/S0140-6736(07)61572-4 PMID:17933645
3. WHO, UNICEF, UNFPA, The World Bank. *Maternal mortality in 2005: estimates developed by WHO, UNICEF, UNFPA and The World Bank*. Geneva: World Health Organization; 2007.
4. Hogan MC, Foreman KJ, Naghavi M, Ahn SY, Wang M, Makela SM et al. Maternal mortality for 181 countries, 1980–2008: a systematic analysis of progress towards Millennium Development Goal 5. *Lancet* 2010;375:1609–23. doi:10.1016/S0140-6736(10)60518-1 PMID:20382417
5. *Millennium Development Goals Report 2010*. New York: United Nations Department of Economic and Social Affairs; 2010.