

# Maternal death surveillance and response

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Of the eight United Nations Millennium Development Goals, the goal of reducing maternal mortality is the one that remains the furthest from reaching its targets.<sup>1-3</sup> The inability to reliably measure levels and trends contributes to a lack of accountability and, in turn, to lack of progress. A maternal death surveillance and response system that includes maternal death identification, reporting, review and response can provide the essential information to stimulate and guide actions to prevent future maternal deaths and improve the measurement of maternal mortality. The current convergence of factors including political will, technical innovations and financial resources provides an ideal opportunity to make such systems a reality for low-income countries.

In September 2010, the Secretary-General of the United Nations launched the Global Strategy for Women's and Children's Health, focusing on the 49 lowest-income countries where maternal and child mortality rates are highest.<sup>4</sup> The Commission on Information and Accountability for Women's and Children's Health, established in the wake of that report, stressed the lack of reliable data to monitor progress and also flagged issues concerning the quality of care. The Commission's ten recommendations, announced in September 2011, focused on strengthening country and global accountability.<sup>5</sup> The Commission urged countries to improve their health information systems, take significant steps to develop civil registration and vital statistics systems, and introduce innovative methods to count all maternal deaths and to review and better monitor progress.

Maternal mortality measurement, including numbers of deaths, their causes and circumstances, remains a challenge in low-income countries.<sup>6</sup> Only two of the 49 lowest-income countries have functional, civil registration and vital statistics systems, the preferred source of data for counting deaths.<sup>7</sup> In the absence of such systems, alternative methods used to collect retrospective data on maternal mortality include census (recent deaths in the household), household surveys (sibling survival history) and special studies. The uncertainty of statistics derived using these methods tends to be very large. Furthermore, the data refer to the past and are generally not available at the sub-national level, making them unsuitable for proactive response, planning or resource allocation.

New and exciting opportunities for using information and communication technologies have great potential to help countries improve birth and death registration systems. Projects across sub-Saharan Africa and Asia are increasingly demonstrating the feasibility of using mobile devices to track and support maternal care in facility and community settings, often starting with the registration of pregnancies.

A national maternal death surveillance and response system should draw upon two main sources of information. Within the health system, facilities should be required to report all deaths of women during pregnancy, delivery and the postpartum period. All such deaths should be routinely reviewed or audited as an integral aspect of health-care quality improvement. Reporting systems, preferably internet-based, should be linked to review and action. At the community level, local networks of informants from the health, administrative or traditional authorities should report maternal deaths. They should primarily use cell phones to immediately notify deaths to district authorities who then report up

the chain to the national level. There the data received from both health facilities and the community are reviewed, compiled and analysed. Several countries have made maternal death a notifiable event and this can, if enforced, work together with technology to enhance maternal death surveillance.

This approach not only takes advantage of innovations in statistics reporting, but simultaneously improves response mechanisms to avoid future deaths. Over the past years, many low-income countries have introduced action-oriented review mechanisms, described under various names including maternal death enquiry, review or audit.<sup>8-10</sup> These require analysis of the circumstances of each death, identification of avoidable factors and action to improve care at all levels of the health system, from home to hospital. Much of the responsibility for follow-up actions lies with district and local health authorities. At the same time, active civil society engagement is needed to ensure that the circumstances surrounding each death are fully elucidated and that there are comprehensive and feasible recommendations for follow-up action. This linking of mortality surveillance with remedial action is the centre-piece of an accountability framework.

Maternal death surveillance and response systems have the potential to deliver real-time, frequent monitoring of maternal mortality levels, trends and causes, provided investments are made to assess the completeness of reporting and data accuracy as part of the system. If successful, such systems would be a major step forward in the measurement of maternal mortality. Moreover, they would serve as the basis for a longer-term advancement, namely, strengthening the civil registration and vital statistics system.

The Commission on Information and Accountability for Women's and Children's Health has created renewed momentum for building action-oriented maternal mortality surveillance systems. Through innovation and the concerted efforts of all partners, maternal mortality can at last be monitored in real time and prompt immediate actions to improve maternal health. There has never been a better opportunity.

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## References

- *The Millennium Development Goals report 2011*. New York: United Nations; 2011.
- *Trends in maternal mortality: 1990 to 2008*. Geneva: World Health Organization; 2010.
- Lozano R, Wang H, Foreman KJ, Rajaratnam JK, Naghavi M, Marcus JR, et al., et al. Progress towards Millennium Development Goals 4 and 5 on maternal and child mortality: an updated systematic analysis. *Lancet* 2011; 378: 1139-65 doi: [10.1016/S0140-6736\(11\)61337-8](https://doi.org/10.1016/S0140-6736(11)61337-8) pmid: [21937100](https://pubmed.ncbi.nlm.nih.gov/21937100/).
- United Nations Secretary-General Ban Ki-moon. *Global Strategy for women's and children's health*. New York: United Nations; 2010. Available from: [http://www.un.org/sg/hf/Global\\_StrategyEN.pdf](http://www.un.org/sg/hf/Global_StrategyEN.pdf) [accessed 10 October 2011].
- Commission on information and accountability for women's and children's health. *Keeping promises, measuring results*. Geneva: World Health Organization; 2011. Available from: [http://www.everywomaneverychild.org/images/content/files/accountability\\_commission/final\\_report/Final\\_EN\\_Web.pdf](http://www.everywomaneverychild.org/images/content/files/accountability_commission/final_report/Final_EN_Web.pdf) [accessed 10 October 2011].
- AbouZahr CA. New estimates of maternal mortality and how to interpret them: choice or confusion? *Reprod Health Matters* 2011; 19: 117-28 doi: [10.1016/S0968-8080\(11\)37550-7](https://doi.org/10.1016/S0968-8080(11)37550-7) pmid: [21555092](https://pubmed.ncbi.nlm.nih.gov/21555092/).
- *Country health information systems: a review of the current situation and trends*. Geneva: Health Metrics Network and World Health Organization; 2011.
- *Beyond the numbers: reviewing maternal deaths and complications to make pregnancy safer*. Geneva: World Health Organization; 2004.
- Kongnyuy EJ, Mlava G, van den Broek N. Facility-based maternal death review in three districts in the central region of Malawi: an analysis of causes and characteristics of maternal deaths. *Womens Health Issues* 2009; 19: 14-20 doi: [10.1016/j.whi.2008.09.008](https://doi.org/10.1016/j.whi.2008.09.008) pmid: [19111783](https://pubmed.ncbi.nlm.nih.gov/19111783/).

- Dumont A, Tourigny C, Fournier P. Improving obstetric care in low-resource settings: implementation of facility-based maternal death reviews in five pilot hospitals in Senegal. *Hum Resour Health* 2009; 7: 61- doi: [10.1186/1478-4491-7-61](https://doi.org/10.1186/1478-4491-7-61) pmid: [19627605](https://pubmed.ncbi.nlm.nih.gov/19627605/).