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## Botswana Maternal Mortality Reduction Initiative: Final Report

Botswana has made tremendous progress in the reduction of maternal mortality since 1990. At that point, the maternal mortality ratio (MMR) in the country was 360 per 100,000 live births. This rate remained high for the following 10 years, in part due to the concomitant HIV epidemic that hit the country with devastating force. After the effective introduction and widespread provision of antiretrovirals (ARVs) to pregnant women the maternal mortality rate was brought down by 50% to a MMR of 196 per 100,000 Live Births (LB) in 2008. Since then, progress in the reduction in maternal mortality has stagnated, threatening the ability of Botswana to reach or exceed the MDG 5 goal of 80 maternal deaths per 100,000 live births by 2015.

In 2013, the Ministry of Health (MOH) in Botswana designed and implemented a new initiative to accelerate the reduction of maternal mortality in Botswana: the Maternal Mortality Reduction Initiative (MMRI). Technical assistance for this initiative was provided by the USAID Health Care Improvement Project (HCI) and its successor, the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project. USAID support of the MMRI initiative ended in September 2015.

The aim of the MMRI is to develop a system-level strategy to achieve the MDG target of reducing maternal deaths by identifying gaps in the health system and implementing improvements in a timely and efficient way. The initiative used quality improvement (QI) methods implemented by teams in facilities providing obstetric care countrywide. Topic areas for improvement were informed initially by the MOH's 2007-2011 Maternal Mortality Audit Report that identified 73% of all maternal deaths were due to direct obstetric and mainly avoidable causes. The QI interventions focused on the three most frequent causes of maternal mortality: hemorrhage, hypertensive disorders in pregnancy, and abortion complications (22%). Access to obstetric health services was high with 98% of deliveries occurring in health facilities and 94.6% of births countrywide attended by skilled personnel.

This technical report gives the accomplishments and results of the MMRI through July 2015. Maternal mortality was reduced from 90 deaths in 2013 to 69 deaths in 2014, which accounts for a reduction of 23% in one year. Maternal death audits identified as the mayor contributor to maternal deaths the lack of provider skills. Poor clinical competence of health personnel and inconsistent compliance with protocols are playing a major role in the outcome of maternal complications in Botswana. Trainings to improve provider's knowledge in the management of obstetric emergencies and practical training to improve provider's skills to manage complications should be considered as well as programs to support continuous medical education of providers.

A dysfunctional referral system was found in 59% of maternal deaths. Uncoordinated referrals between facilities, delays and failure to stabilizing patients before referral caused patients to die in transit, and patients referred to two or three facilities before being admitted for emergency treatment. In order to improve the referral system, the MOH will need to design clear referral protocols for obstetric and neonatal emergencies. A coordination mechanism such as a call center (24/7) should be implemented to coordinate emergency referrals to facilities with the capacity to manage the emergency.

The MMRI has been successful in piloting the implementation of a QI model to reduce maternal mortality during its almost two years of implementation. The lessons learned in the process should inform and advance the implementation of other QI activities in the country.

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