

# Case Study: Experience Applying and Tracking a Quality Improvement Approach for Maternal and Newborn Health Services in Sub-Saharan Africa

---



Barbara Rawlins, MPH, Monitoring and Evaluation Team Leader, Maternal and Child Survival Program, Jhpiego, Washington, DC, USA

Young-Mi Kim, EdD, Senior Research and Evaluation Associate, Jhpiego, Baltimore, MD, USA

Jaime Haver, MPH, Senior Program Officer, Jhpiego, Baltimore, MD, USA

Aleisha Rozario, MPH, Senior Program Officer, Jhpiego, Dhaka, Bangladesh

Adrienne Kols, MA, Senior Technical Advisor, Jhpiego, Baltimore, MD, USA

Hillary Chiguvare, MBChB, MPH, Technical Director, Jhpiego, Harare, Zimbabwe

Matias Anjos, BSc, Monitoring and Evaluation Officer, Jhpiego, Maputo, Mozambique

Emmanuel Otolorin, FRCOG, Country Director, Jhpiego, Abuja, Nigeria

Jacqueline Aribot, MSc, Senior Monitoring and Evaluation Advisor, Jhpiego, Conakry, Guinea



Correspondence may be directed to:  
Barbara Rawlins  
E-mail: [barbara.rawlins@jhpigo.org](mailto:barbara.rawlins@jhpigo.org)



## Abstract

The Standards-Based Management and Recognition (SBM-R®) approach to quality improvement was applied to maternal and newborn health services in Guinea, Mozambique, Nigeria and Zimbabwe. In every country, the quality of service delivery, as measured by clinical performance standards, improved following the intervention. The performance of evidence-based service delivery practices, as measured through service statistics, also increased and institutional rates of postpartum hemorrhage and very early neonatal deaths exhibited declining trends. Findings suggest that the effects of SBM-R reach beyond service delivery processes to health outputs and outcomes and demonstrate the potential returns of investing in quality improvement approaches.

## Background

Many low- and middle-income countries did not achieve the Millennium Development Goal targets for reductions in maternal and child mortality (United Nations 2015), despite notable increases in utilization of maternal and newborn health (MNH) services. A focus on increasing attendance at facility-based MNH services, at the expense of quality, contributed to the problem (Austin et al. 2014; Srivastava et al. 2014). Quality improvement initiatives play a critical role in guiding how services are provided so that they can have the intended impact on morbidity and mortality. However, there is a lack of global evidence regarding the benefits of quality improvement initiatives, in part because routine data needed to monitor progress are missing or unreliable (Bhutta et al. 2014; Bradley and Yuan 2012).

Quality improvement was one focus of the Maternal and Child Health Integrated Program (MCHIP), a global program of the United States Agency for International Development (USAID) that supported the introduction and scale-up of high-impact maternal, newborn and child health interventions. From 2008 to 2013, MCHIP worked with Ministries of Health to apply the Standards-Based Management and

Recognition (SBM-R®) quality improvement approach to a range of health service areas in 16 countries. This case study describes the experience of four countries that applied SBM-R to MNH services (Guinea, Mozambique, Nigeria and Zimbabwe) and the results of their efforts.

## Intervention

SBM-R is a practical approach to quality improvement that empowers providers and managers to take the initiative to improve the quality of services in their facility. Each of the case study countries applied the SBM-R approach following a four-step process that incorporates a continuous “Plan, Do, Study, Act” (PDSA) cycle (Necochea and Bossemeyer 2005; Necochea et al. 2015; Tawfik et al. 2010):

**1: Set standards.** Detailed, evidence-based standards for the organization and functioning of MNH services were established based on international and national evidence-based norms, policies and guidelines. These standards defined desired provider performance and specified tasks essential to good quality care. The standards also formed the basis for an SBM-R MNH assessment tool for use at the facility level.

**2: Implement standards.** Trained quality improvement teams of health workers at each facility that implemented the SBM-R approach, starting with a baseline assessment of the extent to which MNH services at their facility complied with the performance standards, using the SBM-R MNH assessment tool. The tool included observations of client-provider interactions, an inventory of essential supplies and equipment and provider interviews about how care was provided for complications, such as postpartum hemorrhage. Teams used the results to identify gaps between actual and desired performance, analyze root causes of these gaps, create an action plan and mobilize the resources to implement their action plan.

**3: Measure progress.** Facility teams conducted follow-up assessments with the same tool every three to nine months and addressed any remaining or new gaps in the quality of care. Teams also monitored service statistics that were relevant to the service delivery practices promoted by the SBM-R standards. Each of the MCHIP country programs in case study countries worked with their Ministry of Health counterparts to expand the types and quality of information available. For example, programs in Guinea and Nigeria modified registers to record data on active management of the third stage of labour (AMTSL) and partograph use, while programs in Mozambique and Zimbabwe worked to integrate MNH indicators into the national health management information system. MCHIP also trained providers and supervisors in all four countries on how to correctly record data in new and revised forms and introduced monitoring systems for data quality and data management.

**4: Reward achievements.** The programs offered incentives for performance improvement. For example, when facilities in Guinea and Mozambique achieved targets for performance standards, the facilities were recognized and the staff rewarded with plaques, certificates and donated materials and equipment.

MCHIP staff and their Ministry of Health counterparts in each case study country supplemented the SBM-R intervention by conducting competency-based MNH training to strengthen providers' clinical skills. They also strengthened supervision and the use of data for decision making in Mozambique and Zimbabwe.

### **Methodology/Change Process/Results**

A secondary analysis of data was conducted from SBM-R performance assessments and routine service statistics from 63 health facilities in Guinea, Mozambique, Nigeria and Zimbabwe. Ethical clearance was not needed for the analysis because it uses de-identified secondary data.

Data from routine facility assessments with the SBM-R MNH assessment tool were used to calculate the mean percentage of performance standards achieved across health facilities in each country during one assessment period per year. A health facility must meet every item in a detailed checklist of relevant tasks in order to achieve a standard.

Facility service statistics from maternity registers and monthly reports and, in some countries, supplemental data collection forms introduced by MCHIP were used to measure the use of evidence-based practices promoted by SBM-R and related health outcomes. Limited data were available and data varied between countries. Eight priority facility performance indicators expected to be affected by SBM-R were calculated: the proportion of women in labour who had a companion present during labour or birth; the proportion of women delivering at a facility who received

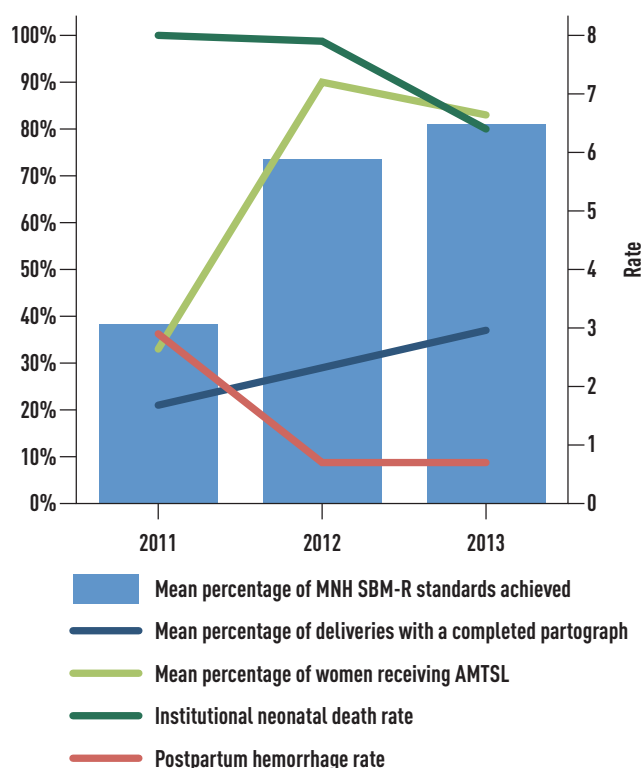
AMTSL or a uterotonic immediately after birth; the proportion of deliveries for which a partograph was used; the proportion of newborns who had skin-to-skin contact with their mother immediately after birth; the proportion of newborns who were breastfed within one hour after birth; the proportion of women delivering at a facility who experienced a postpartum hemorrhage; the institutional very early maternal death rate (number of maternal deaths before discharge divided by the number of deliveries at a facility); and the institutional very early neonatal death rate (number of neonatal deaths before discharge divided by the total number of live births at a facility). It was not possible to calculate every indicator in all four countries as they did not all collect the same data elements.

This analysis is restricted to the facilities in each case study country that offer complete data on selected indicators. Results in Guinea come from six facilities (of 52 implementing SBM-R) that participated in a later phase of the intervention when more data were collected. Results in Mozambique come from 34 facilities (of 104 implementing SBM-R) that participated in the initial phase of the intervention and had more years of implementation. Results in Nigeria come from six hospitals; five health centres that also implemented SBM-R were excluded because they collected fewer data and had low caseloads, making it difficult to detect change. Results in Zimbabwe come from all 17 facilities that implemented SBM-R. Most of the 63 health facilities included in this case study were hospitals (41)

located in urban areas (40) and government-affiliated (54).

Figure 1 shows the trends in Guinea after SBM-R was initiated in April 2011. The mean percentage of MNH standards achieved by facilities almost doubled in the first year. A large increase in the use of AMTSL in the first year was accompanied by a favorable decrease in a related health outcome, the institutional postpartum hemorrhage rate. Partograph use increased slowly but steadily, and the institutional very early neonatal death rate exhibited a declining trend in 2013. Data for two other health outcomes are available only for 2012 and 2013, during which the fresh stillbirth rate decreased from 3.6% to 3.3% and the institutional maternal death rate decreased from 0.6% to 0.4% (data not shown).

**Figure 1. Trends in Guinea: Maternal and newborn health SBM-R standards, service delivery practices and health outcomes at 6 facilities**



Number of deliveries is 4,017 in 2011, 3,665 in 2012, and 3,405 in 2013. SBM-R intervention began in April 2011 at these six health facilities.

The institutional very early neonatal death rate decreased from 8% in 2011 to 6.4% in 2013.

Figure 2 shows the trends in Mozambique after SBM-R was initiated in January 2010. The mean percentage of MNH standards achieved doubled in the first year, after which scores changed little. Use of partographs and AMTSL increased, and AMTSL was nearly universal by 2013. The institutional very early maternal death rate began and ended at the same level. By 2013, the proportion of women with a companion during labour or birth had doubled. Immediate skin-to-skin contact with the mother and breastfeeding within the first hour of birth were relatively common at the baseline (about 75%) and remained high (70% to 76%) over the next three years (data not shown).

In Nigeria, the mean percentage of SBM-R MNH standards achieved rose dramatically for two years in succession after the introduction of SBM-R, from 12% in 2007 to 49% in 2008 and 84% in 2009 (data not shown). Use of AMTSL decreased from 88.2% of deliveries in 2007 to 50.7% in 2008, before rebounding in 2009 to 79.5%. As would be expected, changes in postpartum hemorrhage exhibited an inverse trend to those in AMTSL, first increasing and then decreasing. The institutional very early maternal death rate decreased from 3.5% in 2007 to 1% two years later, when MCHIP support ended.

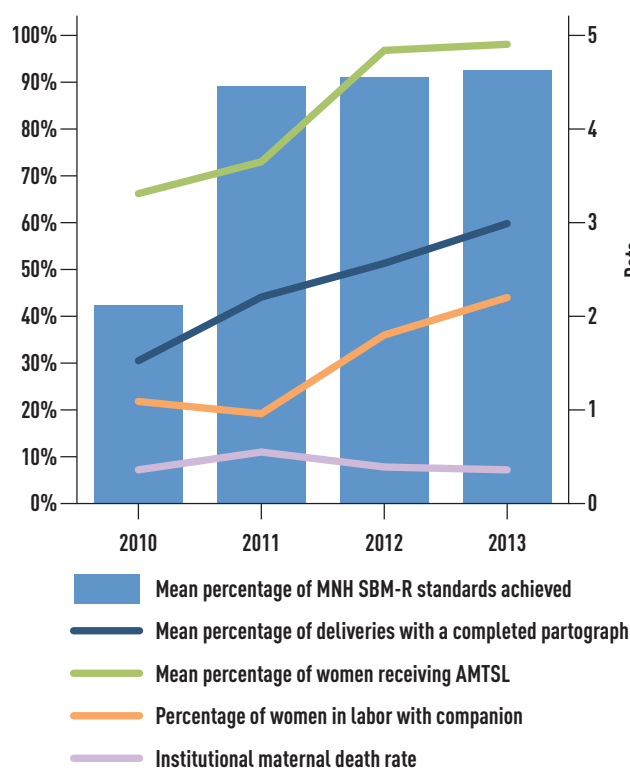
Figure 3 shows the trends in Zimbabwe after SBM-R was initiated in October 2010. The mean percentage of MNH standards achieved more than tripled by 2013. Use of

uterotonics immediately after birth to prevent postpartum hemorrhage was high at the baseline but still improved over time. The institutional very early neonatal death rate decreased from 7% to 3.4% in the first year and then remained at this level. The very early institutional maternal death rate, which was very low at the baseline, edged up slightly.

## Discussion/Conclusion

In all four countries, the proportion of MNH standards achieved by facilities more than doubled during the two to three years after the introduction of SBM-R. Concurrently, improvements were observed in use of evidence-based practices and some health outcomes, suggesting SBM-R is producing the intended effects. Although a causal link between the use

**Figure 2. Trends in Mozambique: Maternal and newborn health SBM-R standards, service delivery practices and health outcomes at 34 facilities**



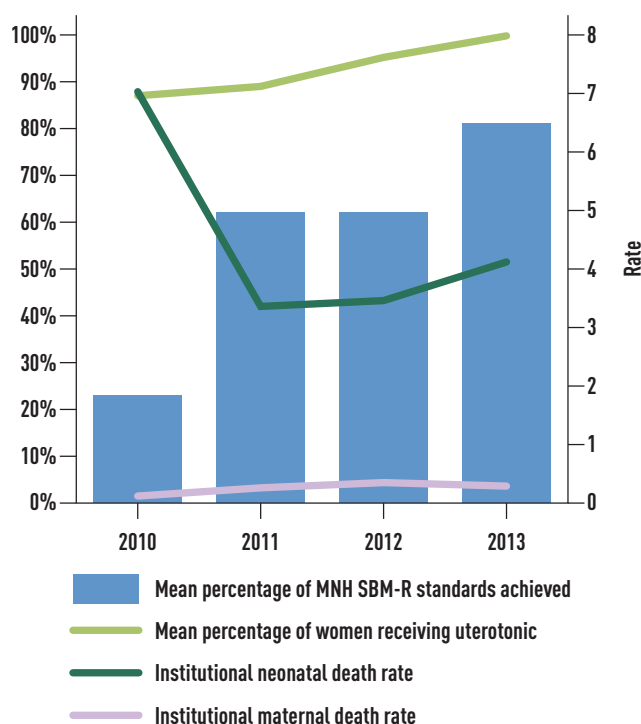
Number of deliveries is 127,156 in 2010, 76,799 in 2011, 100,322 in 2012, and 124,277 in 2013. SBM-R intervention began in January 2010 at these 34 health facilities.

of the SBM-R approach and improved health outcomes cannot be established with routine data from intervention facilities alone, the consistent patterns exhibited across four different real-world settings provides a strong argument for the effectiveness of the SBM-R approach (Shelton 2014). Maternal mortality showed a declining trend only in Nigeria, but it is unrealistic to expect to see decreases in such a rare event over short time periods, especially at facilities with low delivery caseloads. All SBM-R programs had to strengthen data collection at the facility level in order to document the effects of the intervention and generate information for decision making.

The literature is limited, but some studies confirm that a well-designed and properly implemented quality improvement intervention can lead to increased use of evidence-based service delivery practices during the intrapartum period, leading to improved MNH outcomes (Dettrick et al. 2013). Studies in Belize, Nicaragua and Tanzania documented increased use of best practices and lower morbidity and mortality at the facility level following quality improvement interventions (Kidanto et al. 2012; Lin et al. 2003; Ministry of Health 2011). Two randomized controlled trials of quality improvement interventions focused on MNH also have yielded largely positive results (Colbourn et al. 2013a; Colbourn et al. 2013b; Dumont et al. 2013).

There are some limitations to the findings that should be recognized. The SBM-R interventions were implemented as part of

**Figure 3. Trends in Zimbabwe: Maternal and newborn health SBM-R standards, service delivery practices and health outcomes at 17 facilities**



Number of deliveries is 9,310 in 2010, 2,901 in 2011, 12,018 in 2012, and 3,139 in 2013. Data is for 12 months for all years except 2013, which includes data for October through December. SBM-R intervention began in October 2010 at these 17 health facilities.

government initiatives to improve MNH, not as part of research studies, so comparable data were not collected from facilities that did not implement SBM-R. In addition, SBM-R peer assessments conducted by facility staff may not be as objective as external assessments. It is also possible that limiting the case study to facilities with more complete datasets has introduced some bias to the results.

Program efforts to increase the types and quality of service statistics available to measure the results of SBM-R are an important advance in monitoring quality improvement initiatives. Prior evaluations have largely relied on assessments of performance standards alone (Kim, Banda et al. 2013; Kim, Chilila et al. 2013; Necochea et al. 2015) and have been limited by incomplete recordkeeping when trying to use service statistics (Rawlins et al. 2013).



Quality improvement initiatives targeting HIV/AIDS services have recognized and addressed the need for routine data sources to monitor and assess progress (El-Sadr et al. 2015). Concerted efforts are likewise needed to strengthen the MNH components of national health management information systems in order to routinely assess the effects of continuous quality improvement interventions (Bhutta et al. 2014).

### Acknowledgements

This paper would not have been possible without the work of the MCHIP SBM-R implementing team members in each of the countries featured (Nigeria, Zimbabwe, Guinea and Mozambique), including MCHIP and Ministry of Health staff. We would like to acknowledge the contributions of Bokar Dem and Gbenga Ishola, from MCHIP/Guinea and Jhpiego/Nigeria, respectively. The views expressed here are those of the authors and do not necessarily reflect those of the United States Agency for International Development.

### References

- Austin, A., A. Langer, R.A. Salam, Z.S. Lassi, J.K. Das and Z.A. Bhutta. 2014. "Approaches to Improve the Quality of Maternal and Newborn Health Care: An Overview of the Evidence." *Reproductive Health* 11(Suppl 2):S1. doi: 10.1186/1742-4755-11-S2-S1.
- Bhutta, Z.A., R.A. Salam, Z.S. Lassi, A. Austin and A. Langer A. 2014. "Approaches to Improve Quality of Care (QoC) for Women and Newborns: Conclusions, Evidence Gaps and Research Priorities." *Reproductive Health* 11(Suppl 2):S2. doi: 10.1186/1742-4755-11-S2-S5.
- Bradley, E.H., and C.T. Yuan. 2012. "Quality of Care in Low- and Middle-Income Settings: What Next?" *International Journal of Quality in Health Care* 24(6):547-49. doi:10.1093/intqhc/mzs065.
- Colbourn, T., B. Nambiar, A. Bondo, C. Makwenda, E. Tsetekani, A. Makonda-Ridley et al. 2013a. "Effects of Quality Improvement in Health Facilities and Community Mobilization through Women's Groups on Maternal, Neonatal and Perinatal Mortality in Three Districts of Malawi: MaiKhanda, a Cluster Randomized Controlled Effectiveness Trial." *International Health* 5(3):180-95. doi: 10.1093/inthealth/ih011.
- Colbourn, T., B. Nambiar and A. Costello. 2013b. *MaiKhanda – Final Evaluation Report. The Impact of Quality Improvement at Health Facilities and Community Mobilisation by Women's Groups on Birth Outcomes: an Effectiveness Study in Three Districts of Malawi*. London: UCL Institute for Global Health. Retrieved, August 17, 2015. <<http://www.health.org.uk/sites/default/files/MaiKhandaFinalEvaluationReport.pdf>>.
- Dettrick, Z., S. Firth and E. Jimenez Soto. 2013. "Do Strategies to Improve Quality of Maternal and Child Health Care in Lower and Middle Income Countries Lead to Improved Outcomes? A Review of the Evidence." *PLoS One* 8(12):e83070. doi: 10.1371/journal.pone.0083070.
- Dumont, A., P. Fournier, M. Abrahamowicz, M. Traoré, S. Haddad and W.D. Fraser. 2013. "Quality of Care, Risk Management, and Technology in Obstetrics to Reduce Hospital-Based Maternal Mortality in Senegal and Mali (QUARITE): A Cluster-Randomised Trial." *Lancet* 382(9887):146-57. doi: 10.1016/S0140-6736(13)60593-0.
- El-Sadr, W.M., P. Barker, M. Rabkin, Y. Pillaye and D. Birx. 2015. "Putting Quality at the Heart of HIV Programs." *AIDS* 29 (Suppl 2):S119–S120. doi: 10.1097/QAD.0000000000000732.
- Kidanto, H.L., P. Wangwe, C.D. Kilewo, L. Nystrom and G. Lindmark. 2012. "Improved Quality of Management of Eclampsia Patients through Criteria Based Audit at Muhimbili National Hospital, Dar es Salaam, Tanzania. Bridging the Quality Gap." *BMC Pregnancy and Childbirth* 12(1):134. doi: 10.1186/1471-2393-12-134.
- Kim, Y.M., J. Banda, W. Kanjipite, S. Sarkar, E. Bazant, C. Hiner, M. Tholandi, S. Reinhardt, P.D. Njobvu, A. Kols, and B. Benavides. 2013. "Improving Performance of Zambia Defence Force antiretroviral Therapy Providers: Evaluation of a Standards-Based Approach." *Global Health Science and Practice* 1(2):213-227. doi: 10.9745/GHSP-D-13-00053.
- Kim, Y.M., M. Chilila, H. Shasulwe, J. Banda, W. Kanjipite, S. Sarkar et al. 2013. "Evaluation of a Quality Improvement Intervention to Prevent Mother-To-Child Transmission of HIV (PMTCT) at Zambia Defence Force Facilities." *BMC Health Services Research* 13(1):345. doi: 10.1186/1472-6963-13-345.
- Lin, Y., J. Hermida, F. Hernández, O. Nuñez and L. Urbina. 2003. *Using Quality Assessment to Improve Maternal Care in Nicaragua. Quality Assurance Project Case Study*. Bethesda, MD: Published for the U.S. Agency for International Development (USAID) by the Quality Assurance Project. Retrieved August 17, 2005. <<http://www.hrhresourcecenter.org/node/1043>>.

Ministry of Health [Belize]. 2011. *Improving Maternal Care in Belize: Results of the Ministry of Health's Quality Initiative*. Belmopan, Belize and Bethesda, MD: Ministry of Health and University Research Co., LLC. Retrieved August 17, 2015. <<http://www.urc-chs.com/resources/improving-maternal-care-belize-results-ministry-health%E2%80%99s-quality-initiative>>.

Necochea, E., V. Tripathi, Y.M. Kim, N. Akram, Y. Hyjazi, M. da Luz Vaz et al. 2015. "Implementation of the Standards-Based Management and Recognition Approach to Quality Improvement in Maternal, Newborn, and Child Health Programs in Low-Resource Countries." *International Journal of Gynaecology and Obstetrics* 130(Suppl 2):S17-24. doi: 10.1016/j.ijgo.2015.04.003.

Necochea, E., and D. Bossemeyer. 2005. *Standards-Based Management and Recognition: A Field Guide*. Baltimore, MD: Jhpiego. Retrieved August 17, 2015. <<http://www.jhpiego.org/files/SBMR%20FieldGuide.pdf>>.

Rawlins, B.J., Y.M. Kim, A.M. Rozario, E. Bazant, T. Rashidi, S.N. Bandazi et al. 2013. "Reproductive Health Services in Malawi: An Evaluation of a Quality Improvement Intervention." *Midwifery* 29(1):53-9. doi: 10.1016/j.midw.2011.10.005.

Shelton, JD. 2014. "Evidence-based Public Health: Not Only Whether It Works, But How It Can Be Made to Work Practicably at Scale." *Global Health Science and Practice* 2(3):253-258. doi: 10.9745/GHSP-D-14-00066.

Srivastava, A., S. Bhattacharyya, C. Clar and B.I. Avan. 2014. "Evolution of quality in maternal health in India: Lessons and priorities." *International Journal of Medicine and Public Health* 4(1):33-39.

Tawfik, Y., M. Segall, E. Necochea and T. Jacobs. 2010. *Finding Common Ground: Harmonizing the Application of Different Quality Improvement Models in Maternal, Newborn, and Child Health Programs. Technical Report*. Bethesda, MD: Published for the USAID Health Care Improvement Project by University Research Co., LLC (URC). Retrieved August 17, 2015. <[http://www.coregroup.org/storage/documents/ME/Finding\\_common\\_ground.pdf](http://www.coregroup.org/storage/documents/ME/Finding_common_ground.pdf)>.

United Nations. 2015. *The Millennium Development Goals Report 2015*. New York: United Nations. Retrieved August 19, 2014. <<http://www.undp.org/content/undp/en/home/librarypage/mdg/the-millennium-development-goals-report-2015.html>>.

# HealthcarePolicy.net

Health Services, management and policy research |

> SUBSCRIBE TODAY

A decade of healthcare policy research and translation. Peer reviewed. For health system managers, practitioners, politicians and their administrators, and educators and academics.

Authors come from a broad range of disciplines including social sciences, humanities, ethics, law, management sciences, and knowledge translation.

*Edited by Dr. Jennifer Zelmer, University of Victoria*