Assessment of Effectiveness and Cost-effectiveness of the Quality Improvement (QI) Guide on QI Processes and Maternal and Newborn Care in Uganda

The quality improvement (QI) guide for mothers and babies was developed through the collaboration of Survive and Thrive Global Development Alliance (S&T GDA) partner organizations to demystify the quality improvement process and scale up QI practices globally. To promote the use of the QI guide at the global level, the Office of Maternal and Child Health and Nutrition of USAID’s Bureau for Global Health tasked the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project to assess the effectiveness and cost-effectiveness of strategies to implement the guide in terms of its ability to initiate and establish continuous improvement processes in medical facilities and ultimately improve maternal and newborn care processes and outcomes. Considering high rates of maternal and neonatal mortality in Uganda and tremendous commitment of the Government of Uganda to improving the care of mothers and babies, in agreement with USAID’s global maternal and child health and nutrition and field teams, the effectiveness and cost-effectiveness of the QI guide was tested in service delivery settings in Uganda.

This prospective, non-randomized, controlled study assessed the effectiveness and cost-effectiveness of three QI guide dissemination strategies in participant and control facilities before and after the intervention. The study assessed three different implementation scenarios of the QI guide by comparing the effectiveness and cost-effectiveness across three intervention groups to one control group:

- Intervention group 1 received the QI guide
- Intervention group 2 received the QI guide with a follow-up orientation workshop about the guide
- Intervention group 3 received the QI guide, the orientation workshop, and follow-up coaching support (six coaching visits)
- The control group received evidence-based maternal and newborn health clinical recommendations only. To avoid the possible impact of limited access to clinical guidelines, all intervention groups also received maternal and newborn health (MNH) clinical recommendations.

Over 80% of respondents of intervention group 1 reported essential maternal care and care of sick newborns and mothers with or at risk of sepsis as priority areas of focus for improvement activities. According to the medical documentation review, the intervention did not improve care processes related to essential maternal care except the provision of immediate postpartum family planning method to the mother before discharge, which improved by 12% from baseline, compared to the control group.

All key informants of group 2 reported working on improving newborn resuscitation, prevention and management of postpartum hemorrhage (PPH), care of preeclampsia/eclampsia, and management of obstructed labor. Review of medical documentation showed 10% improvement in uterotonic administration immediately after birth to prevent PPH (p=0.005) compared to the control group and baseline. However, improvements in care outcomes, except institutional MMR, which was reduced to 492 per 100,000 deliveries (p=0.05), were not statistically significant.

According to key informant interviews and coaching reports, the majority of intervention group 3 facilities were focused on improving labor monitoring using the partograph (all four facilities), prevention of PPH (all four facilities), and newborn resuscitation. Routine monitoring of improvement interventions across all sites (where data was available) indicated improved partograph use from 6% at the beginning of February 2018 to 91% at the end of May 2018. Correct partograph use went from 54% to 93% in the same period. Analysis of medical record review showed reduced incidence of
obstructed of labor by 26% and reduced fresh stillbirth rate by 4 per 1000 total birth in intervention group 3 facilities, compared to control facilities and baseline, although the results were not statistically significant (p=0.17 and 0.47, respectively).

Weekly monitoring of PPH incidence per 1000 deliveries, reported by all intervention group 3 facilities showed sizable reduction of PPH cases in group 3 facilities from about 48 to 12. This was confirmed by review of facility statistics according to which, PPH incidence two months after the intervention was reduced by 15 per 1000 (p=0.08) compared to control facilities and the baseline. A statistically significant reduction was also achieved in the institutional MMR by 284 per 100,000 deliveries (p=0.004) and case fatality rate by 8% (p=0.026) in group 3 facilities, compared to control facilities.

Decision tree analysis was used to model the cost-effectiveness of the improvement intervention for each intervention group, compared to the control group. The intervention in group 1 (distribution of QI guide) cost 86.8 USD and was not cost-effective as it reduced institutional MMR, incidence of obstructed labor and case fatality from maternal PPH, however increased the case fatality among babies with asphyxia. The results in intervention group 1 are also difficult to attribute to improvement intervention given that we did not see related improvements in care processes based on the information available in the maternal registries and only half of the respondents reported the use of QI guide. Similarly, intervention in group 2 (QI guide and orientation workshop), which cost 1931.4 USD, was not cost-effective as, in parallel of reducing institutional MMR, incidence of newborn sepsis and case fatalities from maternal PPH and preterm birth, it increased the incidence of newborn asphyxia and stillbirth rate. The intervention 3 was cost-effective as it averted institutional MMR, incidence of PPH and case fatality from maternal PPH. ICER per patient to avert institutional MMR, incidence of PPH and case fatality from PPH was 73.4 USD, 13.9 USD and 215.8 USD respectively. These results were also associated with improvement areas of focus and could be attributed to the intervention as all respondents reported the exposure to the intervention.
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