Virtual versus in-person quality improvement coaching support in India: A brief analysis of resource expenditures

Introduction
India contributes more than any other country to global under-five and newborn deaths.\(^1\) Remarkable progress has been made to reduce child deaths, but the infant mortality rate has declined at a slower pace. In 2015, an estimated 37 per 1000 infants died, with 68% of those deaths occurring in the first month of life.\(^2\)

Kalawati Saran Children’s Hospital (KSCH) in Delhi conducted a quality audit of newborn care facilities in Meghalaya in August 2015. Nine critical areas of newborn care were identified and assessed with respect to health workforce capacity, essential medical products and technologies, health service delivery and community ownership and partnership. The audit highlighted a number of areas to improve newborn care.

There are many interventions to support frontline workers to save infants from dying.\(^3,4,5\) Quality improvement approaches are one such intervention to help frontline workers solve the problems they are facing in their hospitals and deliver better care to newborns. Based on earlier successes that KSCH had achieved using quality improvement (QI) methods, the hospital suggested that the Government of Meghalaya take the help of the USAID ASSIST Project and a QI network supported by KSCH and ASSIST to apply these methods to improve care.

QI is a management science approach that helps health workers reorganize patient care to ensure that patients receive the appropriate services. ASSIST conducts an initial training with health workers on QI skills and then provides regular on-site support to frontline workers learning to apply those skills and tools to solve real-world problems. However, providing on-site support to all these workers can be expensive.

To meet this challenge in India, the project decided to use mobile technology to facilitate communication between the quality improvement coach and frontline health workers and allow the coach to support improvement efforts remotely. WhatsApp is an instant messaging platform that allows users to send text messages, images, documents and videos to individuals or groups. There are about one billion WhatsApp users worldwide with an estimated 160 million users in India.\(^6\) While conducting the initial QI training, ASSIST staff learned that all participants were currently using WhatsApp, so the project decided to test the use of WhatsApp to coach new QI teams instead of exclusively providing on-site support.

Background
ASSIST started providing support to health workers of three hospitals in Meghalaya in December 2016. Two hospitals are situated in Shillong, the capital of Meghalaya, which is 2000 km from the ASSIST office in New Delhi. There are no direct flights between New Delhi and Shillong, and the quickest way to travel between the two cities is to fly into Guwahati and then take a three-hour bus to...
Shillong, a journey which requires a full day of travel. The third facility is in the district of Tura, which is an additional 300 km – or nine-hours by road – from Shillong.

Within three months of initiating the improvement intervention, these facilities were delivering better care to newborns. During this period, ASSIST had provided in-person support in the form of one training and one on-site coaching visit, conducted in Shillong. The participants from Tura were called to the capital for the training, but did not receive additional in-person support. Virtual support was provided through regular interaction over WhatsApp and weekly phone calls. We evaluated the difference in the cost to the USAID ASSIST Project of providing virtual support to these facilities as compared to on-site support over this three-month period.

Methods

Providing on-site support requires ASSIST staff to travel to facilities. Direct costs associated with on-site support include airfare, lodging, local transport, cost of printing materials and a per diem for staff to cover meals and incidental expenses associated with the trip. The indirect costs include staff time expended in planning the visit, traveling, providing on-site support to the facilities, and preparing trip reports.

Providing virtual support also involves both direct and indirect costs. Direct costs to the project include the cost for the QI coach to maintain a cell phone with a plan that includes sufficient calling time and data to communicate with the QI team through voice calls and WhatsApp. Indirect costs included time the coach spends using WhatsApp and talking over the phone calls with health workers. WhatsApp is a free mobile application, so there is no additional cost to purchase it.

With the use of virtual support, the project carried out one in-person coaching visit. Previously, when providing exclusive on-site support, the project would carry out monthly visits. We calculated the cost and time associated with both approaches. Table 1 details the cost elements associate with each coaching strategy.

Table 1. Cost elements associated with on-site and virtual support

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<tr>
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<th>On-site support</th>
<th>Virtual Support</th>
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<tbody>
<tr>
<td><strong>Direct cost</strong></td>
<td>Airfare</td>
<td>Phone calls</td>
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<tr>
<td></td>
<td>Accommodation</td>
<td>Internet connection</td>
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<td></td>
<td>Taxi</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meals and incidental expenses</td>
<td></td>
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<tr>
<td><strong>Indirect cost</strong></td>
<td>Time spent in planning visit, traveling, providing</td>
<td>Time spent in placing phone calls and</td>
</tr>
<tr>
<td></td>
<td>on-site support, and preparing trip reports</td>
<td>using WhatsApp</td>
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Results

We calculated that the direct unit cost per on-site coaching visit was Rs 46,606 (USD $723.36), which includes expenses for airfare and local travel costs, meals and incidental expenses, and accommodation. During the improvement intervention using virtual coaching, the project required only one on-site coaching visit to achieve measurable, significant improvements within a period of three months. By comparison, typically three on-site coaching visits would have been required to achieve similar results during that same amount of time.

In addition, the project spends Rs 1000 (USD $15.52) per staff member per month to provide their staff with a cell phone and internet connection. However, this resource is provided to support staff in executing all of their work, not just coaching. For the purposes of this calculation, we are attributing 20% of total monthly communication costs – or, Rs 200 (USD $3.10) – to virtual coaching, which is
probably an overestimate, and assuming that the communication costs of in-person coaching are zero, though we also know that this is not entirely accurate.

The two hospitals in Shillong and the health facility in Tura District provided improved care to 1105 newborns during this three-month period. Using these figures, we calculated the approximate cost per baby of providing support using exclusively on-site coaching versus virtual coaching supported by strategic on-site support. By leveraging the power of current information and communication technology to enhance the coach’s ability to support a QI team remotely, the project was able to reduce the cost per baby served from an estimated Rs 127 (USD $1.97) to Rs 42 (USD $0.66) (see Table 2).

Table 2. Comparison of the costs of the two coaching strategies in Meghalaya State

<table>
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<th>Cost of one coaching visit + WhatsApp virtual support</th>
<th>Cost of three coaching visits</th>
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<tr>
<td>Cost of coaching</td>
<td>Rs 46,806 ($726.46 USD)</td>
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<tr>
<td>Total number of newborns that received care in these 3 months</td>
<td>1105</td>
</tr>
<tr>
<td>Cost per baby served</td>
<td>Rs 42 ($0.66 USD)</td>
</tr>
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</table>

More importantly, the staff time required to provide on-site support is much higher compared to the time required to provide virtual support. Monthly on-site visits in Meghalaya take almost 30 hours of staff time, and the majority of this time is spent travelling – one coaching visit required two days of travel and one day of coaching – rather than supporting QI team members to increase their skills and ability to conduct improvement work. Weekly phone calls and twice a week WhatsApp chats take an average of 75 minutes per week or 5 hours per month of the coach’s time, thereby freeing up 25 hours per month for the coach to assist other teams.

Discussion

The main objective of this report is to compare the cost to the USAID ASSIST Project of providing exclusively in-person versus strategic virtual support to health workers learning QI skills in three facilities of Meghalaya. All facilities improved care after receiving initial in-person training followed by virtual support, demonstrating that virtual support can be both efficient and effective.\textsuperscript{7,8} Figures 1 and 2 show results achieved by all three of the improvement teams during the period of study.

Figure 1. Ganesh Das Hospital in Shillong increased kangaroo mother care (KMC) that babies in the Sick Newborn Care Unit (SNCU) received per week (Dec 2016 – Feb 2017)
Figure 2. Both North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRHIMS) in Shillong and MCH Tura increased and sustained breastfeeding performance

This report on the cost of providing virtual QI support has some limitations. We only examined the costs to the project in implementing these activities, and not the time and cost to the participants of attending the training session and coaching visit, or participating in WhatsApp interactions. The participants did receive a per diem, meals and incidental payment plus their salary for time spent to attend training sessions and coaching visit.

While it is important to know the relative cost of providing virtual support compared to more intensive on-site support, it may be more useful for policymakers to know the cost-effectiveness of this intervention. Comparing the relative effectiveness of the two approaches to providing QI support and combining this with the differences in costs is a logical next step for future evaluation of this program or successor programs.

Conclusion

It should be noted that virtual coaching support is not a replacement for on-site support. In-person support is still important for the QI coach to see the facility where the improvement is being conducted, meet QI team members to develop relationships, and perform other QI support that is difficult to achieve virtually. However, the constant exchanges held over virtual platforms hold many advantages as well and allow the
coach to better understand the team dynamics, address teamwork and hierarchies, and provide prompt responses to the change ideas that teams are testing and their results.

Presently, ASSIST is supporting 126 facilities in India, which together provide care for 379,000 deliveries per year. The QI network formed by KSCH hospital along with ASSIST is providing virtual support to health workers at many of these facilities. Traveling to these facilities and providing exclusively on-site coaching support increases the cost of doing this important work by many times. In Meghalaya, virtual coaching support helped in reducing the cost per baby by 67% and, most significant, saved 25 hours of time of the QI coach’s time per month – time which can be utilized to coach an additional three facilities. In order to scale up at a faster level and achieve the project goals, it is essential to explore such low-cost interventions, and efforts should be made to strengthen these platforms.

References


