8: EQUIP Results

Introduction: Why an independent evaluation?

Many quality improvement initiatives are evaluated through data produced by the quality improvement teams themselves, and only in the facilities where such improvement work was done. Such evaluation does not provide robust evidence since it cannot account for general improvements in the health care system, or bias. Also, population-level effects (including in those who do not come to health facilities) cannot be estimated. In EQUIP, we aimed to provide high-quality evidence as to whether the intervention was able to produce the changes it aimed to make, by using independent population based household survey data, linked to health facility data **(see Brief 4)**, and carefully monitoring the context **(see Brief 2)** in both intervention and comparison districts.

Methods: How did we evaluate EQUIP?

In each country, we estimated coverage estimates for utilization, life-saving interventions, quality of care and knowledge along the continuum of care in the intervention and comparison areas at four-monthly intervals during the period of intervention (November 2011 – April 2014) **(see Brief 2)**. We use meta-regression analysis to fit a regression line through the six data points in each district, and estimated the change in outcomes over time between baseline (first data collection round) and endline (last data collection round), comparing this change between intervention and comparison districts using difference-of-differences. We used the delta method to estimate the variance.[1]

Results: What did EQUIP change?

EQUIP implemented changes in response to a range of improvement topics **(see briefs 5-7)** at district, health facility and community level such as improving facility delivery and Active Management of Third Stage of Labour (AMTSL). The results indicate an increase in live births where mothers received uterotonics within one minute after birth in both countries. In Tanzania, the increase over the project period in the proportion of women with a live birth in the year prior to the survey who received AMTSL was 26 percentage points higher (95% CI 25%–28%) in the intervention district compared to the comparison district, adjusted for baseline. In Uganda, the difference was less pronounced at 8% (95% CI 6%–9%). There was some evidence of an increase in preparation of clean birth kits for home deliveries in Tanzania, with the difference adjusted for baseline at 31% (95% CI 2%–60%).

In Tanzania, we saw weak evidence for an increase in the percentage of deliveries (difference-of-difference 7%; 95% CI -7%–21%). We found no evidence of a positive effect for any of our other primary indicators (immediate breastfeeding, or knowledge of danger signs), however the teams did not target these areas specifically (**see briefs 5-7 and discussion below).**

In Tanzania our analysis also indicated weak evidence of improvement in early postnatal care (17%; 95%CI -8%–17%) and availability of key items for infection prevention (21% difference, 95% CI -4%–46%). In Uganda we found no evidence of a positive change for the improvement topics early postnatal care and early vaccination of newborns.

Discussion: Some improvements, but more to do

We successfully implemented a comprehensive quality improvement project over 30 months covering two districts in two countries. We included all facilities providing reproductive health services and reached out to the majority of communities. The intervention was highly appreciated by communities, health providers and the district managers. The positive effect of the intervention on the quality indicator of uterotonics within one minute of birth was encouraging. In both countries this was a result of changes within the facilities **(brief 6)** with strong support from the district health managers (supply side improvement, improved drug management **see brief 5**), and more mothers coming to deliver in facilities (demand side improvement, **brief 7).** This gives some hint that *systemic* approaches to quality improvement might be better able to yield results.

Improvements were not observed for all improvement topics. For example, knowledge of danger signs amongst mothers with a recent birth, and immediate breastfeeding. However, these areas were not prioritised by the quality improvement teams over the period of the study. Teams were encouraged to choose their own improvement topics, rather than being bound by the pre-selected primary outcome indicators. One limitation of our approach was an inability to cover many priority areas within a short period of time.

---

[1] Gertler et al. Impact Evaluation in Practice, Chapter 6 p.95-116, published by The World Bank, available at http://siteresources.worldbank.org/EXTHDOFFICE/Resources/5485726-1295455628620/Impact_Evaluation_in_Practice.pdf
For delta method see Oehlert, G. W. 1992. A note on the delta method. American Statistician 46: 27–29.

Reaching all communities is challenging. We took a population based evaluation approach, which dilutes effects seen in facility users alone. Yet we believe if quality improvement is to be used for systemic quality improvement then a population-based community effectiveness evaluation is preferable to restricting to a participating facilities alone.

On overall we observed smaller improvements in Uganda than in Tanzania. Contextual factors are likely to be important for quality improvement. The population was double in size in Uganda compared to Tanzania **(see brief 2)**. Unlike Tanzania, the district could not give any indication of the available budget, suggesting less financial opportunities in Uganda compared to Tanzania. Importantly District Health Teams in Uganda have very limited non-earmarked funds, while in Tanzania roughly one dollar per capita per year is available. Lack of such "fiscal space" may limit the potential of quality improvement. Also, availability of critical drugs and supplies was better in Tanzania than Uganda. As drugs and supplies are crucial not just to provide quality interventions, but also to keep health workers motivated, this could be a factor explaining the differences observed.

		Tanzania			Uganda		
		Baseline/endline estimates % (95% CI)		Estimated Difference-in-differences (95% CI)	Baseline/endline estimates % (95% CI)		Estimated difference-in difference (95% CI)
		Intervention	**Comparison**		**Intervention**	**Comparison**	
Primary coverage indicators							
Facility delivery	baseline endline	55 (45,65) 87 (77,93)	62 (50,72) 78 (67,86)	7 (-7,21)	56 (47,64) 68 (58,76)	31 (25,39) 42 (33–51)	-3 (-15–9)
Immediate breastfeeding	baseline endline	31 (22,42) 37 (28,47)	32 (21,46) 40 (30,52)	-7 (-21,7)	37 (30,45) 41 (35,46)	20 (16–26) 23 (18–29)	-6 (-17–5)
Primary quality indicator							
Uterotonic administration within 1 minute	baseline endline	29 (16,41) 81 (72,91)	44 (31,58) 70 (58,81)	26 (25,28)	38 (27,50) 59 (48,70)	11 (3–20) 23 (10–36)	8 (6–9)
Primary knowledge indicator							
Knowledge of critical danger signs in pregnancy#	baseline endline	25 (18,33) 45 (36,54)	40 (30,51) 45 (34,56)	4 (-11,18)	36 (30,42) 49 (43,55)	32 (27–39) 43 (35–40)	-2 (-14–11)
Knowledge of critical danger signs for newborns#	baseline endline	36 (29,45) 38 (30,48)	35 (26,45) 34 (26,43)	2 (-12,15)	45 (40,50) 34 (28,40)	38 (33–43) 27 (21–34)	-7 (21–6)
Secondary indicators (reflecting major improvement topics)							
Postpartum care within 7 days (only home deliveries)	baseline endline	19 (11,30) 23 (10,46)	27 (14,47) 23 (7,54)	17 (-8,40)	4 (1,12) 3 (1,10)	3 (1,7) 2 (1,8)	-3 (-8,2)
Clean birth kit for home deliveries	baseline endline	15(7, 29) 62 (23,84)	23 (13,37) 23 (11-41)	31 (2,60)	9 (3,22) 25 (18,33)	5 (2,9) 7 (3,15)	10 (-6,26)
Infection prevention items^ available in health facilities	baseline endline	13 (4,34) 69 (50,83)	48 (27,67) 76 (58,87)	21 (-4,46)			
Immediately drying of babies after birth	baseline endline	43 (33,53) 56 (48,65)	44 (34,56) 33 (25,44)	7 (-21,36)			
BCG Immunization of newborns	baseline endline				81 (73,88) 81 (73,88)	77 (71,83) 84 (78,88)	-8 (-16,0)
ANC 4+	Baseline endline				41 (35-48) 47 (40-54)	34 (28-39) 38 (31-46)	0 (-15,15)

*1st round Nov 2011 to Feb 2012, 6th round Jan 14 to Apr 14; ~ relates to 2nd found (Apr 2012 to Jul 2012) as assessment was not included in first round
Knowledge of 3 critical danger signs in pregnancy (severe vaginal bleeding, oedema of face/hands, blurred vision) and 4 in newborns (convulsions, difficult breathing, lethargy/unconsciousness, very small baby)
^ infection prevention items included clean running water, disinfectant, soap, and gloves

For further info contacts: Stefan Peterson (Stefan.Peterson@ki.se), Claudia Hanson Claudia.Hanson@ki.se), Joanna Schellenberg (Joanna.Schellenberg@lshtm.ac.uk), Tanya Marchant (Tanya.Marchant@lshtm.ac.uk), Barbara Willey (Barbara.Willey@lshtm.ac.uk), Peter Waiswa (pwaiswa@musph.ac.ug) Fatuma Manzi (fmanzi@ihi.co.tz)