Using the TeamSTEPPS® approach to improve teamwork and communication for abortion care:

Lessons from pilots in Bolivia and Ghana

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Using the TeamSTEPPS® approach to improve teamwork and communication for abortion care: Lessons from pilots in Bolivia and Ghana

Purpose

This technical brief was developed to support work by Ipas, frontline service providers and other stakeholders to create safety culture when integrating TeamSTEPPS into comprehensive abortion care (CAC).

Background

During the past three decades, patient safety has emerged as a critical global public health and human rights issue with considerable implications for low- and middle-income countries (LMIC) [1]. Approximately 43 million adverse events occur among hospitalized patients each year, resulting in an annual loss of 23 million disability-adjusted life-years (DALYs) [2]. Two-thirds of this staggering global burden of unsafe medical care occurs in low- and middle-income countries [3]. In this context, teamwork improvement training has emerged as a powerful component of global recommendations to enhance patient safety in both hospital and ambulatory settings. Teamwork training has been shown to have a positive effect on team attitudes and behaviors, teamwork climate, clinical processes and patient outcomes [4-27]. Medical teamwork training improves safety by producing high-performing, collaborative teams and encouraging institutional processes that foster team learning, transparency and open communication to reduce errors. Recognizing these benefits, the WHO, the Institute of Medicine, the Agency for Healthcare Research and Quality (AHRQ), and the American College of Obstetricians and Gynecologists (ACOG) recommend teamwork as a key strategy for reducing medical errors and adverse events [28-31].

Despite the promise of effective teamwork to improve patient safety, little has been done to incorporate teamwork improvement training into health-care systems in developing and transitional economies (Jha et al., 2010). In 2017, Ipas piloted a teamwork improvement intervention in Bolivia and Ghana based on Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS), an evidence-based teamwork system developed by AHRQ and the U.S. Department of Defense's Patient Safety Program to improve communication and teamwork skills among health-care workers (Sheppard, 2013). This study evaluates the effectiveness, feasibility and acceptability of an adapted TeamSTEPPS model for low- and middle-income countries (LMICs) through evaluation of the model in two LMICs.

Potential benefits of TeamSTEPPS for CAC service delivery

- Improves quality of care and patient safety
- Improves communication and teamwork within units and across units of a health facility
- Reduces medical errors and costs to facilities
- Improves safety culture to report serious adverse events
- Improves patient satisfaction

In recent years, reproductive health programming in resource-restricted countries has consisted of health system interventions that predominantly focused on clinical training for a particular cadre or quality

improvement measures using a checklist. There has not necessarily been a focus on interprofessional training or team work training on leadership, communication, situation monitoring and mutual support to improve patient safety and thereby improve reproductive health outcomes [32, 33]. Ipas decided to pilot the TeamSTEPPS approach to reproductive health services, specifically abortion and contraception. We evaluated whether the TeamSTEPPS intervention model can be implemented in LMIC and achieve outcomes related to communication and teamwork within the reproductive health outpatient and inpatient facilities, improve quality of care and patient safety and improve a safety culture to report serious adverse events.

Overview of the pilot

The TeamSTEPPS approach originated in the United States and is utilized worldwide in high-income counties. TeamSTEPPS has never been implemented in LMICs for reproductive health programs. Given the complexity of the TeamSTEPPS 10-step implementation approach (Appendix 1), Ipas with partners adapted the training curriculum and, to the extent possible, maintained fidelity to the TeamSTEPPS model. We conducted an evaluation to determine if this adapted TeamSTEPPS approach was acceptable and feasible, and whether it created positive changes in team safety culture in LMIC settings where Ipas works.

Ipas implemented the TeamSTEPPS initiative over a nine-month time period in the obstetrics/gynecology departments at the Regional Hospital San Juan de Dios de Tarija in Bolivia (starting in Oct 2017) and Koforidua Polyclinic in Ghana (starting in January 2018). After obtaining buy-in from key leaders and stakeholders in each setting through outreach and evidence-sharing, each site organized a multidisciplinary “Change Team” (director of facilities, head of reproductive health departments, charge nurse, physicians, nurses, pharmacists, trainers, social workers, finance and administrative staff) to spearhead the implementation of the TeamSTEPPS initiative. This involved action planning on themes such as empowering the team to speak up when they identify patient safety concerns and opportunities to improve; fostering a "safety culture" to report and review adverse events and near misses; and adhering to safe abortion clinical guidelines. The Change Teams then facilitated the roll-out of the adapted TeamSTEPPS model in three distinct phases over nine months:

- **Phase 1:** A baseline site assessment identifying priority areas for improvement in patient safety through team training that could be addressed using the Change Team approach.

- **Phase 2:** A four-day Train the Trainer (TOT) workshop for the Change Team and additional facility staff from each participating pilot facility, to build a pool of TeamSTEPPS Master Trainers and representatives from each facility.

- **Phase 3:** A follow-up four months later with the Change Teams to tailor the training curricula, with specific attention to recurrent facility problems amenable to improvement through teamwork training and program sustainability.

The endline evaluation of the TeamSTEPPS approach was undertaken immediately after the implementation phase ended at nine months, with an analysis of the pilot phase.

Integration in Practice

The TeamSTEPPS pilot implementation was structured according to the process described above. But in reality, each country initiated the process differently due to the varied challenges and opportunities identified in the Phase 1 baseline assessment. Table 1 compares and contrasts the challenges, vision, methods and core activities launched in each country. Bolivia and Ghana registered different challenges in communication and processes. However, they had similar visions of a team culture that reduces medical errors, improves team performance and increases patient satisfaction. Both countries used briefs/debriefs and the SBAR (situation–background–assessment–recommendation/request) communication technique for relaying critical information that requires immediate attention and action concerning a patient's condition. In addition, Bolivia used night-shift handoffs to update incoming providers on a patient's status, thereby improving performance and communication among caregivers. Each country implemented different core activities aimed at addressing issues in staff orientation, team communication, patient reviews, monitoring and hand-offs, based on the facility's identified needs.

Table 1: TeamSTEPPS implementation plan, by country

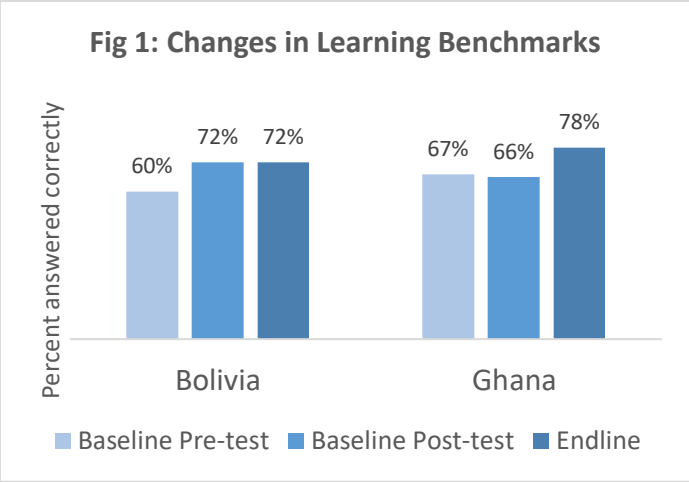
Implementation plan	BOLIVIA	GHANA
Challenges	- Limited communication b/w different cadres - Shift- change is not cohesive - QI processes limited to none	- Limited/no intra- and inter-unit communication and teamwork between comprehensive abortion care/family planning), maternity, outpatient department, antenatal care, and admin units - Limited/no referral system - Serious Adverse Events (SAE) reporting system non-existent
Vision	Create a team culture to reduce medical errors and improve team performance and patient satisfaction	Create a team culture to reduce medical errors and improve team performance and patient satisfaction
Methods	- Brief and debriefs - SBAR - Handoffs	- Brief and debriefs - SBAR
Core activities	- Orientation workshops and meetings with ob/gyn ward, pharmacy, and social workers - Institutionalized checklists for safe abortion care and SAE reporting - Daily morning and evening shift change handoffs with attendings, nurses and residents - Team briefs/debriefs before and after every client receiving abortion services - Monitor patient satisfaction and perception of team work	- Meeting with senior management - All staff CAC/FP meetings - Orientation workshop - Monthly supportive supervision to FP/CAC - Daily intra-unit briefs in FP/CAC unit - Biweekly intra-unit debriefs - Recording brief/debrief sessions - Monthly inter-unit briefs

Evaluation and Results of TeamSTEPPS implementation

The Ipas team used a number of evaluation tools—applied at baseline, mid-project, and/or at the end—to determine the effectiveness, feasibility and acceptability of the TeamSTEPPS approach in LMIC and measured the following outcomes:

- Uptake of TeamSTEPPS tools and strategies by clinical and administrative teams
- Changes in staff knowledge of TeamSTEPPS practices
- Changes in observed team performance
- Changes in patient safety culture among staff
- Satisfaction with TeamSTEPPS model among participating staff

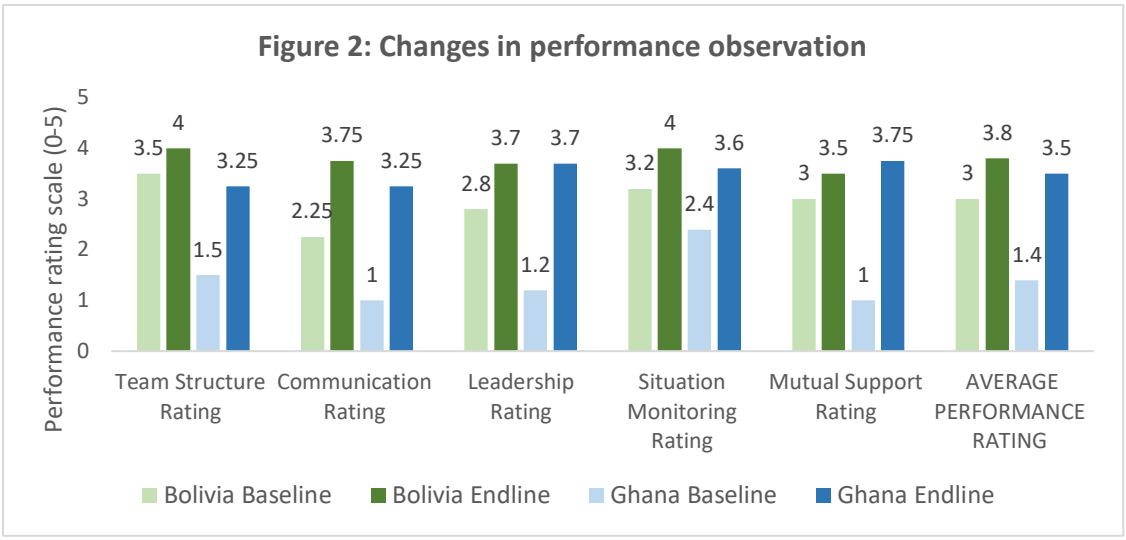
The evaluation tools were the TeamSTEPPS Learning Benchmarks; the TeamSTEPPS Team Performance Observation Tool; the Survey on Patient Safety Culture (developed by AHRQ); a Communication Assessment tool developed and validated by researchers at Beth Israel Deaconess Medical Center; and interviews with key health systems stakeholders (a description of each tool is outlined in Annex 2). This mixture of tracking tools allowed for a comprehensive look at the successes and challenges of the TeamSTEPPS approach. The time between baseline and end data collection was approximately 10 months for both sites. (See Appendix 1 for details on the evaluation timelines and tools.)



Learning Benchmark knowledge in both Bolivia and Ghana were relatively high at baseline, with only small increases after the intervention (Figure 1).

Overall, for every performance measure, observed team performance[1] improved in both countries with the intervention (Figure 2). In Bolivia, the greatest improvements in ratings were in the areas of communication and leadership, specifically with the TeamSTEPPS techniques of SBAR, call-outs, and handoffs to communicate effectively and to balance workload within the team (data not shown). In Ghana, communication and mutual support were the areas with the biggest increases in ratings from baseline to endline, specifically in the areas of assigning or identifying team members' roles and responsibilities and providing task-related support and assistance (data not shown).

[1] Evaluations at baseline and endline were conducted by third-party consultants, while midline data were collected by an Ipas global staff member.



The Communication Assessment tool, completed monthly, tracked participants' ratings of each criterion based on frequency of occurrence at their facility: >0 to <25%; 25 to <50%; 50 to <75%; or ≥75% of the time (data not shown). Prior to the intervention in the Bolivia facility, meetings before each clinical session, pausing to identify the patient and procedure, and meeting after routine clinic sessions to discuss what went well and what should be improved were happening *infrequently (>0 to 25%)* among the health team. In Ghana, the items occurring *infrequently* at baseline were: using a standardized format for patient handoffs, meeting after routine clinic sessions to discuss what went well and what should be improved, and using standardized language for communications. After the intervention, by month five all of these items in both countries were rated as occurring at least 75% of the time, and this rating persisted through the end of the project (note that Bolivia was missing data on using standardized formats for patient handoffs).

The patient safety survey relays healthcare providers' perceptions of patient safety; for example, working in this facility, teamwork and training, organizational learning and response to mistakes, near-miss documentation, management support for patient safety, overall rating. The analysis had some separate domains (pulling out certain questions to be analyzed) and those are also represented in Table 2. A higher score indicates a more positive view of the domain. For Bolivia, scores in almost all areas of patient safety increased from baseline to endline. The greatest increase was in the overall patient safety rating. Although staff ratings on "staffing, work pressure, and pace" and "near-miss documentation" decreased slightly over time, we actually saw an increase in adverse event reporting.

In Ghana, the results of the patient survey were more mixed, with five domains improving and five not. Communication about patient information, communication openness, staffing/work pressure/pace, near-miss documentation, and overall patient safety rating all improved. Teamwork, staff training, organizational learning, response to mistakes and management support for patient safety worsened with the intervention. In further conversation with staff, evaluators concluded that this was due to an improved understanding of patient safety culture at endline as opposed to baseline. Furthermore, the Ghana facility

had support from an external consultant for the first six months of implementation, but the final three months relied on leadership takeover, which never materialized to the extent necessary for active continuation of the intervention.

Table 2: Results of the Patient Safety Survey, Baseline to Endline

	Bolivia		Ghana	
	Baseline	**Endline**	**Baseline**	**Endline**
	n=30	**n=16**	**n=15**	**n=13**
	% Positive	% Positive	% Positive	% Positive
Communication About Patient Information	74%	89%	79%	89%
Communication Openness	64%	79%	80%	95%
Staffing, Work Pressure, and Pace	49%	44%	65%	76%
Teamwork	87%	91%	95%	77%
Staff Training	63%	78%	88%	55%
Organizational Learning	93%	98%	98%	58%
Response to Mistakes	73%	88%	91%	58%
Management Support for Patient Safety	75%	90%	87%	37%
Near-Miss Documentation	52%	44%	57%	75%
Overall Patient Safety Rating	27%	56%	53%	92%

Finally, based on a review of all data and interviews with key stakeholders, Ipas evaluators were able to identify specific successes and challenges of TeamSTEPPS in each country (Table 3). In Bolivia, staff and stakeholders reported improved handoffs, increased use of briefs/debriefs, increased confidence and appreciation among nursing and social work staff, and improved client satisfaction and wait times. However, buy-in from all staff within the ob/gyn ward was initially limited, there were issues in timing and consistency of handoffs, and measurement of their progress was challenging. Achievements in Ghana included marked buy-in from other facility staff, reduced NIHS claim forms, increased referrals, shift from siloed to team-based work, spread of TeamSTEPPS to other units, and decreased patient wait times; challenges included a high burden of trainings and workload, time-consuming intra-unit briefs, and lack of CAC unit representation at debriefs. In the short period of implementation, both countries were able to report SAEs, with Ghana's being the first national SAE for abortion ever reported.

Table 3: Successes and challenges of TeamSTEPPS in each country

	Bolivia	Ghana
Successes	▫ Two SAEs reported ▫ Morning handoffs conducted ▫ SBAR utilized ▫ Briefs and debriefs before and after client care conducted with nurses, attendings, and residents ▫ Nurses feel more confident speaking up ▫ Social workers appreciate their new role and initiated client satisfaction surveys with every client ▫ Clients indicate satisfaction of care and perceive teamwork among healthcare team[a] ▫ Recognition for achievement to the team and facility by local authorities and improved relationship with MOH	▫ One SAE reported–first SAE reported nationally ▫ Morning briefs conducted daily and debriefs conducted end of the week ▫ Significant buy-in from other facility staff – intra and inter unit referrals ▫ Reduced # of NIHS claim forms and thereby reducing cost to the facility ▫ Increased # of referrals ▫ Manual Vacuum Aspiration (MVA) procedure conducted with two staff—one trained CAC provider and one support staff. Prior to the intervention the CAC provider would provide MVA services on their own. ▫ Work culture shifted from working in silos to working in teams ▫ Additional units outside of FP/PAC are using TeamSTEPPS ▫ Decreased patient wait times[b]
Challenges	▫ Measurement ▫ Buy-in from all staff is limited ▫ Morning handoffs time-consuming ▫ Evening handoffs inconsistent	▫ Intra-unit briefs time-consuming ▫ Multiple trainings and initiatives ongoing at the facility ▫ Lead CAC provider overworked ▫ Representation of CAC unit at inter-unit and intra-unit debriefs

a. The TeamSTEPPS evaluation did not include a client satisfaction survey. These results were part of an independent initiative on the part of social workers in this context, whose findings were relayed through interviews.
b. The TeamSTEPPS evaluation did not measure patient wait times; this is an anecdotal observation offered by key informants during interviews.

Lessons learned

Piloting of an adapted TeamSTEPPS approach in Bolivia and Ghana showed that the methodology is acceptable and effective in strengthening teamwork and communication skills among reproductive health care workers. The evaluation showed improvements in a number of team functions and performance over the short intervention period, measured and validated from multiple sources from baseline to endline. The year-long implementation and evaluation yielded several lessons for implementation and integration of the approach across Ipas's continuing work.

- **TeamSTEPPS can yield tangible change:** In the context of reproductive health care services, particularly safe abortion care, the evaluation showed promising results in some important aspects of patient safety culture. Findings showed marked developments in team performance related communication, leadership, support and structure, as well as positive changes in operational procedures such as briefs/debriefs, hand-offs and reporting of SAEs. The reporting of SAEs within a nine-month implementation period demonstrates an increase in teams's confidence to make suggestions and report issues that could lead to complications. The daily practice of the TeamSTEPPS methods by other units and referrals also demonstrates a level of buy-in by those

who did not participate in the training. Overall, the evaluation showed improvements in provider confidence, buy-in from other facility staff and team-based work culture.

- **Local ownership and leadership is key:** Buy-in from health facility leadership is critical to TeamSTEPPS sustainability and success. In Bolivia, local facility staff led the implementation and have since integrated changes in briefs/debriefs and handoffs into their routine work. In Ghana, an external consultant was required to implement the pilot due to time-constraints from facility leadership. While daily briefs/debriefs were led by the CAC/FP unit, the local consultant played an integral role in the first six months, providing monthly technical support visit with facility leadership and staff, ensuring they were actively engaged and communicating with one another and supporting processes for implementing their action plan. After the consultant refrained from conducting monthly visits, the daily methods were led by staff in the CAC/FP unit; however, competing priorities negated involvement from other staff on the team. This is reflected in Table 2 with staff from Ghana grading management support for patient safety much harder, as they were not receiving that continuous support. The TeamSTEPPS model is designed with sustainability in mind, making ownership and implementation at the facility level all the more essential.

Lessons learned

Future program implementers should ensure intervention sites meet the following minimum requirements:

- Current health system programming and relationship with MoH and relevant line agencies
- Facility leadership takes ownership of implementing the TeamSTEPPS approach
- Facility has strong QI implementation experience
- TeamSTEPPS program complements current facility workplan and workload of all staff

- **Reach for low-hanging fruit:** The TeamSTEPPS -10-step implementation model and resources are comprehensive but time consuming. Replicating the model completely may not be feasible or cost effective in LMIC. It was imperative to adapt the standard TeamSTEPPS resources to the context, which included simplifying it ensure it is user-friendly. It was also important in ensuring the intervention action plans did not utilize too many methods at one time and instead focus on quick wins or low-hanging fruit, as determined by baseline assessment and stakeholder inputs. This approach may reduce pressure on staff to perform and become frustrated plus limit the time taken away from service delivery and support sustaining and institutionalizing the intervention. Simplifying the process even more may provide similarly positive results. However, we did not want to deviate from the original proven program too much without testing it first.

- **Scale-up and Sustainability:** Given the support required of MoH, NGOs and CBOs on health system strengthening activities in both public and private facilities, the scale-up of the TeamSTEPPS 10-step model simultaneously across a number of facilities may not be feasible due to its predominant focus on facility-level implementation. Each facility implementing the TeamSTEPPS model will require a five-day training of trainers workshop and technical assistance

to support the initial year for additional adaptations to resources. Where leadership does not have the time or capability to prioritize this comprehensive process, an external consultant was necessary. The investments pertaining to adaptation of the TeamSTEPPS model, the external technical assistance and the time commitment by staff at the facilities to improve health outcomes via TeamSTEPPS as opposed to other QI initiatives may not be recognized cost effective. Scale-up may also be hindered due to varying priorities, time and budget constraints at facility and system levels.

Sustainable Programmatic integration models for TeamSTEPPS programming in restricted settings include:

- Changing the 10-step model to a 5-step implementation model for action planning that includes:
    1. Creating a change team
    2. Conducting a baseline assessment using HF data and 5 evaluation tools
    3. Defining the problem, challenge or opportunity and aims of the intervention
    4. Design intervention
    5. Communicate intervention with relevant stakeholders.

  Health Facility Management Committees can implement the adapted TeamSTEPPS 5-step process into existing meetings and develop with their staff either facility level and/or department level interventions. This would address facility level concerns or unit concerns pertaining to a specific health concern.

- Selecting a small handful of TeamSTEPPS methods to begin practicing in a health facility's daily, weekly or monthly activities, instead or applying the 5-step model This approach can be applied to clinical procedures, supply chain, infection prevention and instrument processing of abortion and contraception equipment, referrals between facilities or intraunit referrals, and SAE reporting and support processes.

- Integration of TeamSTEPPS principles and methods as a module in standard comprehensive abortion care and family planning clinical trainings and integrating specific methods in the complication and adverse event module, whole site orientations at the facilities with different health facility team members and health facility management committee meetings.

- Implementing the standard TeamSTEPPS implementation model at select facilities, such as one tertiary center and/or up to two lower-level facilities (maximum 20 participants) per training. Provide a longer timeframe for implementation and evaluation, between 1-3 years depending on facility needs for complete scale-up within the reproductive health departments and then additional 3-5 years within the facility, independent of Ipas support.

Conclusion

Ipas's implementation of the TeamSTEPPS approach in primary and tertiary facilities in LMIC settings demonstrates the promise this methodology for improving team functions for safe abortion care. The lessons learned in this pilot show that while the TeamSTEPPS 10-step approach may not be conducive to implementing comprehensively, the TeamSTEPPS methods can be utilized within existing training or health system strengthening activities and can increase effective communication, leadership, mutual support, confidence and satisfaction in team performance and care in the obstetric/gynecology departments offering abortion services. By improving basic team performance at the facility level, TeamSTEPPS can increase the quality of abortion care, and, more broadly, reproductive health care for all women.

Useful resources

- Team STEPPS summary brief English and Spanish
- ToT training materials (English /Spanish)

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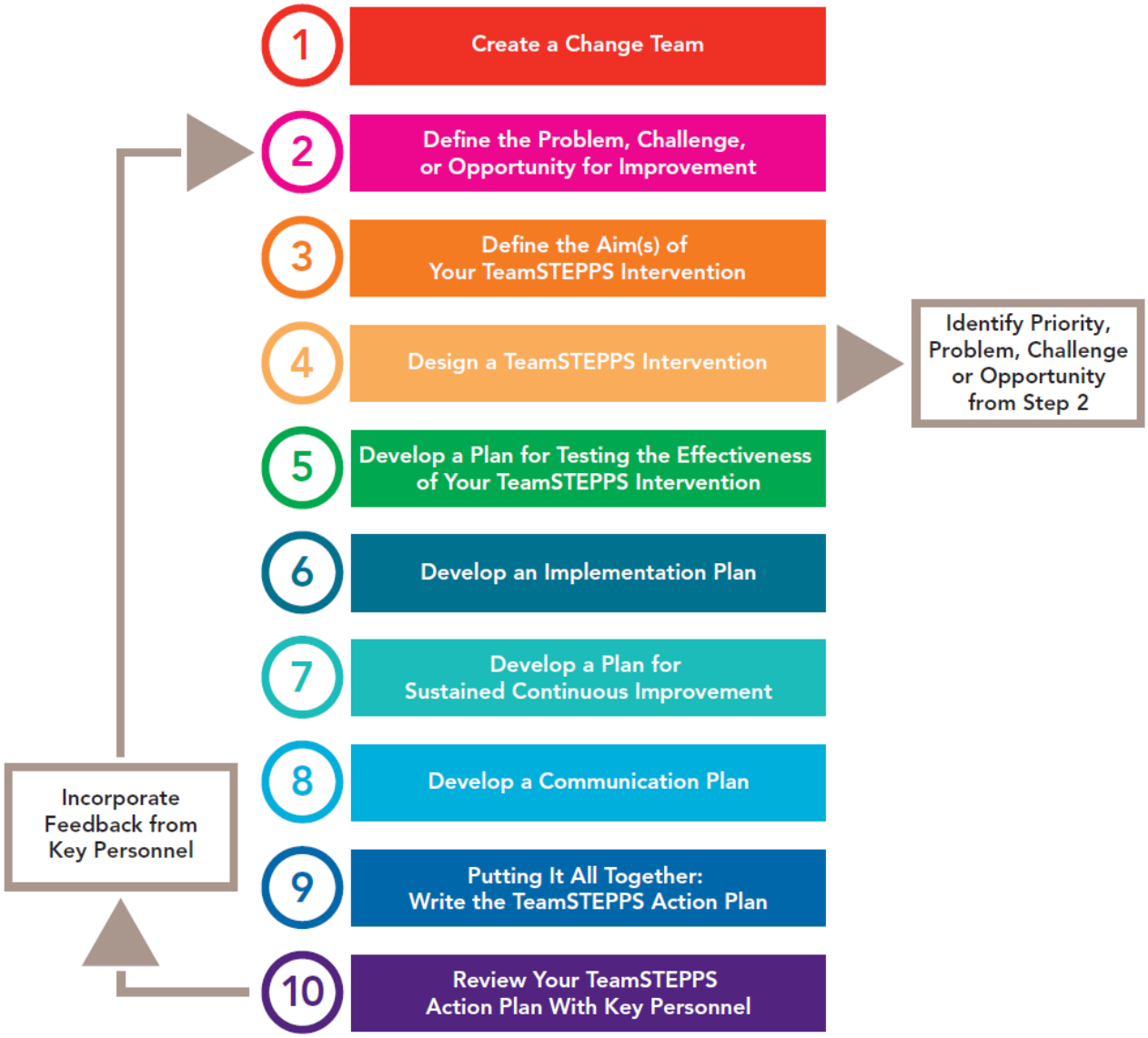
References

1. Galadanci, H. S. (2013). Protecting patient safety in resource-poor settings. Best Practice & Research Clinical Obstetrics & Gynaecology, 27(4), 497-508.
2. Jha AK, Larizgoitia I, Audera-Lopez C, Prasopa-Plaizier N, Waters H, Bates DW (2013). The global burden of unsafe medical care: analytic modelling of observational studies. *BMJ Qual Saf, 22,* 809-815.
3. Wilson RM, Michel P, Olsen S, Gibberd RW, Vincent C, El-Assady R, et al; WHO Patient Safety EMRO/AFRO Working Group (2012). Patient safety in developing countries: retrospective estimation of scale and nature of harm to patients in hospital. *BMJ, 344*, 832.
4. Buljac-Samardzic M, Dekker-van Doom CM, van Wijngaarden JDH, van Wijk KP (2010). Interventions to improve team effectiveness: a systematic review. Health Policy *94*,183-95.
5. Bunnell CA, Gross AH, Weingart SN, et al (2013). High performance teamwork training and systems redesign in outpatient oncology. *BMJ Qual Saf, 22*, 405-13.
6. Carney BT, West P, Neily JB, Mills PD, Bagian JP (2011). Improving perceptions of teamwork climate with the Veterans Health Administration medical team training program. *Am J Med Qual, 26*, 480-84.
7. Fuhrmann L, Pedersen TH, Atke A, Moller AM, Ostergaard D (2015). Multidisciplinary team training reduces the decision-to-delivery interval for emergency Caesarean section. *Acta Anaesthesiol Scand, 59*, 1287-95.

8. Gillespie BM, Chaboyer W, Murray P (2010). Enhancing communication in surgery through team training interventions: a systematic literature review. *AORN J, 92*, 642-57.
9. Haller G, Garnerin P, Morales MA, et al (2008). Effect of crew resource management training in a multidisciplinary obstetrical setting. *Int J Qual Health Care, 20,* 254-63.
10. Jones KJ, Skinner AM, High R, Reiter-Palmon R (2013). A theory-driven, longitudinal evaluation of the impact of team training on safety culture in 24 hospitals. *BMJ Qual Saf, 22*, 394-404.
11. Mayer CM, Cluff L, Lin W-T, et al (2011). Evaluating efforts to optimize TeamSTEPPS implementation in surgical and pediatric intensive care units. *Jt Comm J Qual Patient Saf, 37*, 365-74.
12. Mazzocco K, Petitti DB, Fong KT, et al (2009). Surgical team behaviors and patient outcomes. *Am J Surg, 197*, 678-85.
13. Morey JC, Simon R, Jay GD, et al (2002). Error reduction and performance improvement in the emergency department through formal teamwork training: evaluation results of the MedTeams project. *Health Serv Res, 37*, 1553-81.
14. Neilsen PE, Goldman MB, Mann S, et al (2007). Effects of teamwork training on adverse outcomes and process of care in labor and delivery: a randomized controlled trial. *Obstet Gynecol, 109*, 48-55.
15. Neily J, Mills PD, Young-Xu, et al (2010). Association between implementation of a medical team training program and surgical mortality. JAMA, 304, 1693-1700
16. Pratt SD, Mann S, Salisbury M, et al. John M. Eisenberg Patient Safety and Quality Awards (2007). Impact of CRM-based training on obstetric outcomes and clinicians' patient safety attitudes. Jt Comm J Qual Patient Saf, 33, 720-5.
17. Sacks GD, Shannon EM, Dawes AJ, et al (2015). Teamwork, communication and safety climate: a systematic review of interventions to improve surgical culture. BMJ Qual Saf, 24, 458-67.
18. Salas E, Almeida SA, Salisbury M et al (2009). What are the critical success factors for team training in health care? Jt Comm J Qual Patient Saf, 35, 398-405.
19. Salas E, Rosen MA (2013). Building high reliability teams: progress and some reflections on teamwork training. BMJ Qual Saf, 22, 369-73.
20. Schmutz J, Manser T (2013). Do team processes really have an effect on clinical performance? A systematic literature review. *Br J Anaesth, 110*, 529-44.
21. Singer S, Lin S, Falwell A, Gaba D, Baker L (2009). Relationship of safety climate and safety performance in hospitals. *Health Serv Res, 44*, 399-421.
22. Starmer AJ, Spector ND, Srivastava R, et al; I-PASS Study Group (2014). Changes in medical errors after implementation of a handoff program. *N Engl J Med, 371*, 1803-12.
23. Weaver SJ, Dy SM, Rosen MA (2014). Team-training in healthcare: a narrative synthesis of the literature. *BMJ Qual Saf, 23*, 359-72.
24. Weaver SJ, Rosen MA DiazGranados D, et al (2010). Does teamwork improve performance in the operating room? A multilevel evaluation. *Jt Comm J Qual Patient Saf, 36*, 133-42.
25. Weld LR, Stringer MT, Ebertowski JS, et al (2015). TeamSTEPPS improves operating room efficiency and patient safety. *Am J Med Qual*
26. Wolf FA, Way LW, Stewart L (2010). The efficacy of medical team training: improved team performance and decreased operating room delays: a detailed analysis of 4863 cases. *Ann Surg, 252*, 477-83.
27. Young-Xu Y, Neilly J, Mills PD, et al (2011). Implementation of a medical team training program and surgical morbidity. *Arch Surg, 146*, 1368-73.
28. Agency for Healthcare Research and Quality (AHRQ) (2011). TeamSTEPPS Guide to Action: Creating a Safety Net for your Healthcare Organization. Available at:

https://www.onlineregistrationcenter.com/company_images/347/TeamSTEPPS_GuideToAction.pdf. Accessed December 21, 2015.
29. American Congress of Obstetricians and Gynecologists (2015). Patient safety in obstetrics and gynecology. ACOG Committee Opinion no. 447, December 2009, reaffirmed 2015. *Obstet Gynecols, 114*:1424-7. (Original work published 2009)
30. Erickson TB, Kirkpatrick DH, DeFrancesco MS, Lawrence HC. Executive summary of the American Congress of Obstetricians and Gynecologists Presidential Task Force on Patient Safety in the Office Setting (2008). Does team training improve team performance? A meta-analysis. *Hum Factors, 50,* 903-33.
31. Institute of Medicine (1999). To Err is Human: Building a Safer Health Care System. Washington DC: *National Academy Press*, November 1999.
32. Bhutta, Z. A., Salam, R. A., Lassi, Z. S., Austin, A., & Langer, A. (2014). Approaches to improve quality of care (QoC) for women and newborns: conclusions, evidence gaps and research priorities. *Reproductive health*, *11*(S2), S5.
33. Paul, M. E., Dodge, L. E., Intondi, E., Ozcelik, G., Plitt, K., & Hacker, M. R. (2017). Integrating TeamSTEPPS® into ambulatory reproductive health care: early successes and lessons learned. *Journal of Healthcare Risk Management*, *36*(4), 25-36.

Appendix 1: TeamSTEPPS Action Planning at a glance



Appendix 2: Evaluation tools

TeamSTEPPS® Learning Benchmarks describes teamwork scenarios and proposed responses based on the TeamSTEPPS approach. The tool was used pre- and post-training and at midline and endline with health facility staff who underwent the TeamSTEPPS training to assess training effectiveness and knowledge retention over time.

The ***TeamSTEPPS® Team Performance Observation Tool*** is a reliable, validated tool that will be used to provide an objective assessment of changes to team performance resulting from training and implementation of the TeamSTEPPS® model. The tool was administered by a trained third-party observer pre- and post-training and at endline to rate team performance in the areas team structure, leadership, situation monitoring, team support, and communication. This tool was used by the master trainer to observe team performance at baseline (pre- and post-training), midline and endline to observe changes over the implementation period.

The ***Survey on Patient Safety Culture*** is a survey developed by the Agency for Healthcare Research and Quality (AHRQ) in the United States. The survey was administered at baseline and endline with all staff engaged in abortion care at the facility. It helps health care facilities assess how their staff perceive various aspects of patient safety culture in different settings. The survey for the ambulatory surgery center was selected for use in this study since it most closely matched the patient care and teamwork environment in intervention facilities. Open-ended questions were added to the standard tool to gain additional insight on team dynamics and communication relating to patient safety culture and outcomes. The sample sizes for the survey at each timepoint were as follows: Bolivia: Baseline= 30, Endline = 16; Ghana: Baseline=15, Endline=13

The ***Communication Assessment tool*** has been developed and validated by researchers at Beth Israel Deaconess Medical Center, to measure the frequency of team-related site practices including briefs, debriefs, huddles, timeouts, and other team communication techniques. The TeamSTEPPS® change team will complete the survey for the facility at baseline and once monthly over the period of implementation of the intervention to assess use of the TeamSTEPPS® model.

Interviews with key health systems stakeholders were developed by Ipas for use at endline with staff engaged in abortion care at the facility to assess overall satisfaction with the intervention, barriers and facilitating factors for implementation, areas for improvement, and ongoing use of the TeamSTEPPS model.

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