

Global Health Initiatives for Obstetrical Care

Shahla Y. Namak, M.D.¹, Aleksandra Vejnovic, M.D.², Tihomir Vejnovic, M.D.²,
Julienne K. Kirk, Pharm.D.¹, Justin B. Moore, Ph.D., M.S.¹

Background

Global health initiatives involve addressing the health of populations and achieving equity in health using the best evidence-based practices for patient safety and health professional education. Opportunities to aid in the improvement of global healthcare delivery are abundant. U.S. clinicians have multiple opportunities to be involved with global health initiatives.¹ Gaining familiarity with international practice and culture will aid interested clinicians in their quest to engage in global health initiatives.

One humanitarian organization is Kybele, Inc. and is dedicated to improving childbirth safety through innovative partnerships in low-resource settings.² Previous projects demonstrate the impact of collaborative programs to strengthen clinical practice and service through reinforcement of taught skills in the area of obstetrical care.³ The purpose of this article is to highlight lessons learned from two global health initiatives targeting obstetrical care that demonstrate how primary care providers can engage with their colleagues in low-income countries to implement best practices.

Adding Postpartum Uterine Massage in a Rural Armenia Hospital

One outreach project conducted at Akhuryan Maternity Hospital, Gyumri, Armenia was undertaken where there are limited resources for labor and delivery. The unavailability of uterotonic medications, the inability to measure coagulation defects by blood test, and lack of access to coagulation products are a common scenario in everyday care. Unreliable access to blood bank services or blood products for management of coagulopathy in severe postpartum hemorrhages can make a complicated delivery challenging. The shortage of supplies for intravenous access and intravenous fluid for hydration is also an obstacle to care.⁴ The standard of care is to use active management of the third stage of labor starting with ten units of intramuscular oxytocin given immediately after the shoulder delivery of the newborn.^{5,6} Due to the risk of uterine hemorrhage in the early postpartum period, uterine massage was introduced as part of active management of third stage of labor (AMTSL) (Table 1).^{4,5,7,8} As part of the AMTSL maneuver, adding uterine massage can provide close observation of women in labor to detect and prevent early postpartum bleeding. In low-resource settings, women with anemia who may be vulnerable to even small amounts of bleeding can benefit from AMTSL, which may reduce the risk of postpartum maternal hemoglobin lowering.^{4,7,8}

¹Department of Family & Community Medicine, Wake Forest School of Medicine, Winston Salem, North Carolina

²Department of Gynecology and Obstetrics, University of Novi Sad, Faculty of Medicine, Novi Sad, Serbia

Address Correspondence To:
Shahla Y. Namak, MD
Department of Family & Community Medicine
Wake Forest School of Medicine
Medical Center Boulevard
Winston-Salem, NC 27157
snamak@wakehealth.edu

Table 1. Active Management of Third Stage of Labor (AMSTL)

| Components of this Practice | Benefits of AMSTL |
|---|--|
| <ol style="list-style-type: none"> 1. Administer Oxytocin (Pitocin) with or soon after the delivery of the anterior shoulder 2. Controlled cord traction to deliver the placenta 3. Uterine massage after the delivery of the placenta | <ul style="list-style-type: none"> • Prevention of postpartum hemorrhage • Reduced risk of bleeding when maternal hemoglobin level is lower than 9 g per dl • Reduced need for manual removal of the placenta |

Through a global health initiative (Table 2), the addition of uterine massage was investigated. At baseline prior to adding the uterine massage maneuver, there were 1125 total deliveries with 864 vaginal deliveries (77%), resulting in 23 cases of postpartum hemorrhaging (2.6% of vaginal deliveries). The following year, there were 1148 total deliveries with 883 vaginal deliveries (77%), resulting in 10 cases of postpartum hemorrhaging (1% of vaginal deliveries). Chi-square tests were performed to determine changes in the incidence of postpartum complications. In the year following the implementation of the uterine massage maneuver less uterine atony was observed, with incidence decreasing from 1.7% to 0.6% (P=0.02). In addition, bleeding less than 24 hours decreased from 2.2% to 0.8% (P=0.02) and blood loss greater than 500 ml decreased from 1.9% to 0.8% (P=0.02). Uterine massage did not significantly decrease bleeding after 24 hours, blood loss greater than 1000 ml, or genital tract trauma from delivery or endometritis. Adding postpartum uterine massage as a standard of care included in the final step in the AMSTL is associated with positive outcomes. This example demonstrates that the development of a protocol to improve care can have a lasting impact on the populations served.

Serbia Electronic Fetal Monitoring

Another global health project conducted in Serbia (Table 3) aimed to improve teaching programs for medical residents caring for laboring patients, using simulation exercises and didactics. Often, medical residents are only observers during training. We developed an electronic fetal monitoring (EFM) seminar for residents with objectives to discuss basic fetal heart monitoring, interpretation, documentation of fetal heart monitor strips, and management of fetal intolerance to labor or distress.^{9,10}

Thirty-three residents in training completed the educational intervention. Obstetric (n=20) and non-obstetric residents (eight from anesthesia, one from pediatrics, and four not specified) received the training. A local Institutional Review Board approved all materials and procedures. Participants answered ten multiple-choice pre-test questions regarding EFM. Training via an interactive slide presentation, case studies, and hands-on simulation practice was undertaken. We administered a post-test using the same 10 questions from the pre-test. We created a 2x2 ANOVA with residency type and time as independent variables and test score as the dependent variable. Statistically significant improvements were seen overall between pre- and post-test ($\Delta 1.7$, $P < 0.01$) and for non-OB ($\Delta 3.0$, $P < 0.01$) and OB residents ($\Delta 0.7$, $P < 0.05$). A significant interaction was observed, with non-OB residents displaying greater gains than obstetric residents ($P < 0.05$). Utilizing an interactive lecture, cases, and hands-on simulation improved the educational experience and enhanced the acquisition of knowledge in Serbian residents.

Challenges and Opportunities

There are some challenges to consider with any global health initiative. For the projects outlined, funding was an obstacle as it is expensive to travel and time is necessary to coordinate teaching and logistics. Even when a positive outcome occurs, decision makers and leaders are pivotal to allocate necessary funding. In the projects described, there was a general resistance to change observed among more senior providers and administrators. In some countries, for example, approval is necessary to use certain lifesaving obstetrics medications such as misoprostol. In a given region, policy change may require approval at the district or national level.

Table 2. Adding Postpartum Uterine Massage to Active Management of Third Stage of Labor in a Rural Armenia Hospital

| Country | Location | Observed Need | Intervention | Outcomes |
|--------------|---------------------------------|---|--|---|
| Armenia 2014 | Rural Akhurian Hospital, Gyumri | <ul style="list-style-type: none"> • Postpartum hemorrhage (PPH): 23 per 864 vaginal deliveries • Active Management of Third Stage of Labor (AMSTL) lacked the postpartum uterine massage maneuver recommended by most guidelines and the WHO • Lack of availability of a blood bank | <ul style="list-style-type: none"> • Palpating and massaging the uterus every 10-15 minutes for about 2 hours after delivery of the placenta that stimulates uterine contractions and expresses blood and blood clots • Physicians and midwives instructed on the maneuver • Uterine massage was added as a standard part of care | <ul style="list-style-type: none"> • Ten cases of PPH per 883 vaginal deliveries • Significant decreased blood loss > 500 ml and bleeding less than 24 hours • No blood transfusions were needed for 2015 |

Table 3. Electronic Fetal Monitoring During Vaginal Delivery in Serbia

| Country | Location | Observed Need | Intervention | Outcomes |
|-------------|--|---|--|--|
| Serbia 2016 | Novi Sad Department of Obstetrics and Gynecology, University of Novi Sad | <ul style="list-style-type: none"> • OB residents were not confident with fetal heart monitoring interpretation during labor • Lack of simulation and hands-on educational sessions | <ul style="list-style-type: none"> • Educational seminars presented with skills assessment for teaching intrapartum fetal monitoring to OB and anesthesia residents • Simulation and hands-on educational sessions assessed and competently completed for all participants | <ul style="list-style-type: none"> • Advanced Life Support of Obstetrics Courses presented and completed for 2017 and 2018 with Serbian, Romanian, and Bosnian participants |

By working side-by-side with the local medical providers abroad to improve patient care, innovative teaching and practice models like those described can be successfully implemented. Working together and creatively within the infrastructure in resource-limited areas requires partnership and leadership willing to support the help of U.S. providers. It is also necessary to recognize that change may be a slow process.

Conclusion

Introducing a new culture of learning or clinical practice in a low- or middle-income country requires intentional steps. Global health initiatives are part of many academic institutions and are a first step for clinicians to reach out to local resources. Models of teaching have demonstrated improved provider confidence and competence as well as patient outcomes in resource-stable countries.¹¹ Unique challenges within each country require different approaches and creativity to identify local healthcare needs within a system, hospital, clinic, or medical provider and staff. Finding solutions customized to specific needs in areas of education or patient care with the help and support of local partners and champions can lead to long-term results and sustainability.¹² Progress continues in reducing maternal and newborn mortality worldwide, but disparity in maternal and infant health outcomes remains evident between low- and high-income countries and much work remains to decrease this disparity.

Acknowledgements

The authors thank the individuals who supported this work including Kybele, Inc.; Medge Owen, MD, Department of Anesthesiology and founder of Kybele, Inc.; Avinash Shetty, MD, and Lynn Snyder, Office of Global Health; Richard Lord, MD, MA, Chair, Amanda Burton, and Stephen Davis, Department of Family & Community Medicine; the faculty and residents who donated their time to outreach trips and teaching at the Wake Forest School of Medicine.

We also thank anesthesiology colleagues, Gordon Yuill MBCh.B; Simon Müller, MD; Ivan Velickovic, MD; Curtis L. Baysinger, MD; Ashot Amroyan, MD; Emil Vardapetyan Victor Tregubov, MD; Akhuryan Maternity Hospital physicians and staff. Tonikyan Valdimid, MD; Mirzoyan Ashot, MD; Mirzoyan Sergey, MD; and the Department of Gynecology and Obstetrics, Department of Obstetric Anesthesia, and medical faculty at University of Novi Sad; along with Borislava Pujic, MD, and the faculty, residents, and staff.

Disclosures

A funding collaboration exists between Kybele Organization (www.kybeleworldwide.org), the Office of Global Health at the Wake Forest School of Medicine, and the Department of Family and Community Medicine. No conflict of interest to disclose.

References

1. Syed SB, Dadwal V, Rutter P, et al. Developed-developing country partnerships: benefits to developed countries? *Global Health*. 2012;8:17.
2. Kybele for safe childbirth worldwide. www.kybeleworldwide.org Access on October 2, 2019.
3. David M. Goodman, Rohit Ramaswamy, Marc Jeuland, et al. The cost effectiveness of a quality improvement program to reduce maternal and fetal mortality in a regional referral hospital in Accra, Ghana. *PLoS ONE*. 2017;12(7). doi.org/10.1371/journal.pone.0180929
4. Evensen A, Anderson JM, Fontaine P. Postpartum Hemorrhage: Prevention and treatment. *Am Fam Physician*. 2017;95(7):442-449.
5. Stanton C, Armbruster D, Knight R, et al. Use of active management of the third stage of labour in seven developing countries. *Bull World Health Organ*. 2009;87(3):207-15.
6. Begley CMI, Gyte GM, Devane D, McGuire W, Weeks A. Active versus expectant management for women in the third stage of labour. *Cochrane Database Syst Rev*. 2015;2(3):CD007412. doi: 10.1002/14651858.CD007412.pub4.
7. FIGO / ICM Global Initiative to Prevent Post-Partum Hemorrhage. [https://www.jogc.com/article/S1701-2163\(16\)30440-6/pdf](https://www.jogc.com/article/S1701-2163(16)30440-6/pdf). Accessed October 2, 2019.
8. Lalonde A; International Federation of Gynecology and Obstetrics. Prevention and treatment of postpartum hemorrhage in low-resource settings. *Int J Gynaecol Obstet*. 2012 May;117(2):108-18. doi: 10.1016/j.ijgo.2012.03.001.
9. Sweha A, Haker TW, Nuovo J. Interpretation of the electronic fetal heart rate during labor. *Am Fam Physician*. 1999;59(9):2487-506.
10. Bailey RE. Intrapartum fetal monitoring. *Am Fam Physician*. 2009;80(12):1388-96.
11. Walker DM, Cohen SR, Fritz J, Olvera-García M, Zelek ST, Fahey JO, et al. Impact Evaluation of PRONTO Mexico: A simulation-based program in obstetric and neonatal emergencies and team training. *Simul Healthcare*. 2016;11(1):1-9. doi: 10.1097/SIH.000000000000106
12. Ramaswamy R, Kallam B, Kopic D, Pujic B, Owen MD. Global health partnerships: building multi-national collaborations to achieve lasting improvements in maternal and neonatal health. *Globalization Health*. 2016;12(1):22. doi: 10.1186/s12992-016-0159-7