



www.figo.org

Contents lists available at [SciVerse ScienceDirect](#)

International Journal of Gynecology and Obstetrics

journal homepage: www.elsevier.com/locate/ijgo

EDITORIAL

Implementing evidence-based science to improve women's health globally[☆]

Timothy R.B. Johnson, MD
Editor, IJGO

For over 25 years, the leaders of our specialty and of FIGO have eloquently directed the world's attention to the global plight of women's health. In his landmark article "Where is the M in MCH?" [1], Allan Rosenfield highlighted the unacceptably high toll of maternal mortality and gave fuel to the subsequent Safe Motherhood Initiative. FIGO President Mahmoud Fathalla [2] spoke eloquently and often of the importance of enhancing the role and privileges given to women by society. Subsequent FIGO Presidents have all added their voices in this call to action [3–6]. Increasingly, the inequity of high maternal mortality—as well as such horrors as genocidal and systematic rape, fistula, female genital mutilation, interpersonal violence, and the high burden of AIDS and HPV—is being recognized by governments and international bodies.

[☆] Presented in part as the Donald F. Richardson Memorial Lecture, American College of Obstetricians and Gynecologists (ACOG) Annual Clinical Meeting; May 2012; San Diego, CA, USA.

It is now clear that we have evidence-based interventions and programs [7,8]—many of which have been reported and described in the pages of the International Journal of Gynecology and Obstetrics (IJGO)—that can substantially improve women's health (Box 1). Since 1994 [9], we have known that modern perinatal antiretroviral therapy (ART and subsequent HAART) can reduce the mother-to-child transmission of HIV from 25% to less than 1% [10]. Despite scientific denial by prominent leaders—including physician health ministers—that HIV causes AIDS [11], important implementation programs with support from such entities as PEPFAR and the Gates Foundation have demonstrated reduction in perinatal transmission and have extended the lives of women found to be HIV positive after voluntary counseling and testing. The joint campaign by FIGO and the International Confederation of Midwives to implement active management of the third stage of labor worldwide is also a strongly evidence-based practice [12], and the application of routine uterotonics, cord traction, and uterine massage is now becoming the standard of practice across the world [13–16].

Implementation science has been defined as programs and processes that "promote the uptake of research findings into routine healthcare in both clinical and policy contexts" [17].

Management of postpartum hemorrhage (PPH) using bimanual compression [18] and such techniques as B-Lynch and other compressive/hemostatic sutures and Bakri balloons [19–22] has been shown to impact the problem of PPH significantly. Misoprostol has now been shown in a variety of studies to be an effective intervention for reducing

Box 1

Implementation science: Evidence-based practices to improve women's health globally

- Highly active antiretroviral therapy for preventing mother-to-child transmission of HIV [9,10]
- Active management of the third stage of labor [12]
- Bimanual compression [18]
- Tamponade/compression sutures (e.g. B-Lynch) [19–22]
- Safer cesarean (tranexamic acid) [40,41]
- Magnesium sulfate (Magpie Trial) [37–39]
- Manual vacuum aspiration [35,36]
- Misoprostol [23–34]
- Cervical cancer: visual inspection with acetic acid/see and treat/HPV capture/HPV vaccine
- Breastfeeding (bleeding, neonatal, contraceptive benefits)
- Family planning (postpartum, postabortion care, long-acting contraception, non-contraceptive benefits) [42]

PPH in both primary and tertiary healthcare facilities, and with skilled-birth-assisted and home deliveries [23–25]. Misoprostol and manual vacuum aspiration (MVA), both individually and in combination, can be major contributors to reducing complications associated with incomplete abortion and improve access to care for women with requirements for all types of postabortion care [26–36]. Now that the science has demonstrated efficacy across multiple uses, many non-governmental organizations and national/health entities are stepping up to implement access to these life-saving interventions through acquisition, supply chain distribution, and access/provision of services.

There has been substantial frustration with delays in the implementation of clear and evident scientific findings into practice. The Magpie Trial demonstrated that magnesium sulfate ($MgSO_4$) is effective in reducing the risks and complications of eclampsia and pre-eclampsia [37], yet the drug is not even widely available in some of the countries and even some of the sites in the low-income countries where the Magpie Trial was carried out. One could propose that one of the requirements for ethical approval of important randomized clinical trials is a communication and implementation arm, especially for trials that could have significant international impact on morbidity and mortality. $MgSO_4$ has only recently been added to the WHO list of essential drugs, but given the high toll of hypertensive complications of pregnancy it must now urgently become a priority focus for health services worldwide [38,39]. There is strong evidence that tranexamic acid (TXA) can reduce blood loss and hemorrhagic complications of cesarean delivery [40,41], yet the drug is not available in many countries, including the USA. We must be prepared for widespread distribution and uptake of TXA if current ongoing trials demonstrate efficacy in broadly reducing the risks of PPH.

We have long known that family planning prevents unwanted pregnancy—thereby reducing maternal mortality—and permits birth spacing, yet comprehensive, continuous, and coordinated services are often lacking and/or confounded by the compartmentalization of family-planning services separate from other services that women need and want [11]. International guidelines are available to guide best practices [42]. Uptake of breastfeeding to reduce postpartum bleeding, improve infant survival, and provide the contraceptive benefits of lactational amenorrhea would increase with strongly designed and supported implementation programs.

Implementation science as defined above must include capacity building, operational planning, behavioral psychology, logistics, operations research, and business marketing. Implementation engineering will develop and introduce evidence-based devices that will improve wellness and health. As obstetricians and gynecologists devoted to the best care and services for our patients, we must heed the call to action by our articulate and visionary leaders. We need to embrace and champion programs that implement scientific discovery and evidence-based practice, especially those most likely to have significant impact on saving women's lives [43–49].

It is clear that the implementation of evidence-based science programs has now developed models of infrastructure and human capacity distribution that can optimize women's health services. Programs have been developed for the effective distribution of drugs to treat HIV/AIDS and for drug-impregnated nets to control malaria. These exemplars will be useful as we implement new therapies and programs targeted at key areas of women's health. Pre-pregnancy contraception requires distribution of both knowledge and contraceptive methods. These need to be available, accessible, affordable, and acceptable. This will require an "operating system," which means developing informed and skilled human resources. *It is not possible to immunize women against PPH. It is unlikely there will ever be a drug to prevent obstructed labor.* A spectrum of skilled birth attendants with the capacity to identify and manage PPH, pre-eclampsia, and labor dystocia; systems of referral and transportation; and access to essential drugs (including misoprostol, oxytocin, $MgSO_4$, and blood products) and therapies (including the ability to remove a retained placenta and

perform MVA and cesarean delivery) will be required to meet our implementation goals.

IJGO will continue to publish scientific papers presenting interventions that can save women's lives. The journal has been a major source of scientific and medical therapy concerning PPH and the obstetric and gynecologic applications for misoprostol (see references). IJGO maintains a particular interest in articles addressing medical and psychosocial issues that remain a major burden to women in low- and middle-income countries. We also solicit submissions that carefully describe effective programs and methods for implementing evidence-based best practices to allow all women everywhere to live in health and safety and that help to achieve the goals and aspirations of FIGO.

References

- [1] Rosenfield A, Maine D. Maternal mortality—a neglected tragedy. Where is the M in MCH? *Lancet* 1985;2(8446):83–5.
- [2] Fathalla MF. Health and being a mother in the twenty-first century. *Int J Gynecol Obstet* 2007;98(3):195–9.
- [3] Faúndes A, Shaw D. Universal access to reproductive health: opportunities to prevent unsafe abortion and address related critical gaps. *Int J Gynecol Obstet* 2010;110:S1–2 Suppl.
- [4] Shaw D. The FIGO initiative for the prevention of unsafe abortion. *Int J Gynecol Obstet* 2010;110:S17–9 Suppl.
- [5] Shaw D, Cook RJ. Applying human rights to improve access to reproductive health services. *Int J Gynecol Obstet* 2012;119(Suppl. 1):S55–9.
- [6] Serour GI. The role of FIGO in women's health and reducing reproductive morbidity and mortality. *Int J Gynecol Obstet* 2012;119(Suppl. 1):S3–5.
- [7] Peterson HB, d'Arcangues C, Haidar J, Curtis KM, Merialdi M, Gülmezoglu AM, et al. Accelerating science-driven solutions to challenges in global reproductive health: a new framework for moving forward. *Obstet Gynecol* 2011;117(3):720–6.
- [8] Peterson HB, Haidar J, Merialdi M, Say L, Gülmezoglu AM, Fajans PJ, et al. Preventing maternal and newborn deaths globally: using innovation and science to address challenges in implementing life-saving interventions. *Obstet Gynecol* 2012;120(3):636–42.
- [9] Connor EM, Sperling RS, Gelber R, Kiselev P, Scott G, O'Sullivan MJ, et al. Reduction of maternal-infant transmission of human immunodeficiency virus type 1 with zidovudine treatment. *Pediatric AIDS Clinical Trials Group Protocol 076 Study Group*. *N Engl J Med* 1994;331(18):1173–80.
- [10] Moran NF, Moodley J. The effect of HIV infection on maternal health and mortality. *Int J Gynecol Obstet* 2012;119(Suppl. 1):S26–9.
- [11] Johnson TR. Terrorism, fundamentalism, and compartmentalism. *Int J Gynecol Obstet* 2013;121(2):101–2.
- [12] International Federation of Gynecology and Obstetrics. Post-partum haemorrhage. <http://www.figo.org/projects/prevent/PPH>. Accessed April 2013.
- [13] Ouma MN, Chemwolo BT, Pastakia S, Christoffersen-Deb A, Washington S. Pilot study of single-use obstetric emergency medical kits to reduce maternal mortality. *Int J Gynecol Obstet* 2012;119(1):49–52.
- [14] Tsu VD, Sutanto A, Vaidya K, Coffey P, Widjaya A. Oxytocin in pre-filled Uniject injection devices for managing third-stage labor in Indonesia. *Int J Gynecol Obstet* 2003;83(1):103–11.
- [15] Flandermeier D, Stanton C, Armbruster D. Uterotonic use at home births in low-income countries: a literature review. *Int J Gynecol Obstet* 2010;108(3):269–75.
- [16] Puri M, Taneja P, Gami N, Rehan HS. Effects of different doses of intraumbilical oxytocin on the third stage of labor. *Int J Gynecol Obstet* 2012;118(3):210–2.
- [17] Madon T, Hofman KJ, Kupfer L, Glass RI. Public health. Implementation science. *Science* 2007;318(5857):1728–9.
- [18] Andreatta P, Perosky J, Johnson TR. Two-provider technique for bimanual uterine compression to control postpartum hemorrhage. *J Midwifery Womens Health* 2012;57(4):371–5.
- [19] Bakri YN, Amri A, Abdul Jabbar F. Tamponade-balloon for obstetrical bleeding. *Int J Gynecol Obstet* 2001;74(2):139–42.
- [20] Allam MS, B-Lynch C. The B-Lynch and other uterine compression suture techniques. *Int J Gynecol Obstet* 2005;89(3):236–41.
- [21] Arduini M, Epicoco G, Clerici G, Bottaccioli E, Arena S, Affronti G. B-Lynch suture, intrauterine balloon, and endouterine hemostatic suture for the management of postpartum hemorrhage due to placenta previa accreta. *Int J Gynecol Obstet* 2010;108(3):191–3.
- [22] Huang YY, Zhuang JY, Bao YR, Ying H, Wang DF. Use of early transverse annular compression sutures for complete placenta previa during cesarean delivery. *Int J Gynecol Obstet* 2012;119(3):221–3.
- [23] Alfrevic Z, Blum J, Walraven G, Weeks A, Winikoff B. Prevention of postpartum hemorrhage with misoprostol. *Int J Gynecol Obstet* 2007;99(Suppl. 2):S198–201.
- [24] Rajbhandari S, Hodgins S, Sanghvi H, McPherson R, Pradhan YV, Baqui AH, et al. Expanding uterotonic protection following childbirth through community-based distribution of misoprostol: operations research study in Nepal. *Int J Gynecol Obstet* 2010;108(3):282–8.
- [25] Raghavan S, Abbas D, Winikoff B. Misoprostol for prevention and treatment of postpartum hemorrhage: what do we know? What is next? *Int J Gynecol Obstet* 2012;119(Suppl. 1):S35–8.

- [26] Bartusevicius A, Barcaite E, Nadisauskiene R. Oral, vaginal and sublingual misoprostol for induction of labor. *Int J Gynecol Obstet* 2005;91(1):2–9.
- [27] Elsedek MS. Impact of preoperative rectal misoprostol on blood loss during and after elective cesarean delivery. *Int J Gynecol Obstet* 2012;118(2):149–52.
- [28] Tang J, Kapp N, Dragoman M, de Souza JP. WHO recommendations for misoprostol use for obstetric and gynecologic indications. *Int J Gynecol Obstet* 2013;121(2):186–9.
- [29] Shaw D. Misoprostol for reproductive health: Dosage recommendations. *Int J Gynecol Obstet* 2007;99(Suppl. 2):S155.
- [30] Blum J, Winikoff B, Gemzell-Danielsson K, Ho PC, Schiavon R, Weeks A. Treatment of incomplete abortion and miscarriage with misoprostol. *Int J Gynecol Obstet* 2007;99(Suppl. 2):S186–9.
- [31] Philip NM, Winikoff B, Moore K, Blumenthal P. A consensus regimen for early abortion with misoprostol. *Int J Gynecol Obstet* 2004;87(3):281–3.
- [32] Blandine T, Ouattara AZ, Coral A, Hassane C, Clotaire H, Dao B, et al. Oral misoprostol as first-line care for incomplete abortion in Burkina Faso. *Int J Gynecol Obstet* 2012;119(2):166–9.
- [33] Dabash R, Ramadan MC, Darwish E, Hassanein N, Blum J, Winikoff B. A randomized controlled trial of 400-µg sublingual misoprostol versus manual vacuum aspiration for the treatment of incomplete abortion in two Egyptian hospitals. *Int J Gynecol Obstet* 2010;111(2):131–5.
- [34] Fernandez MM, Coeytaux F, de León RG, Harrison DL. Assessing the global availability of misoprostol. *Int J Gynecol Obstet* 2009;105(2):180–6.
- [35] Dalton VK, Castleman LL. Manual vacuum aspiration for treatment of early pregnancy loss. *Postgrad Obstet Gynecol* 2002;22(19):1–5.
- [36] Harris LH, Dalton VK, Johnson TR. Surgical management of early pregnancy failure: history, politics, and safe, cost-effective care. *Am J Obstet Gynecol* 2007;196(5):445.e1–5.
- [37] Altman D, Carroli G, Duley L, Farrell B, Moodley J, Neilson J, et al. Do women with pre-eclampsia, and their babies, benefit from magnesium sulphate? The Magpie Trial: a randomised placebo-controlled trial. *Lancet* 2002;359(9321):1877–90.
- [38] von Dadelszen P, Ansermino JM, Dumont G, Hofmeyr GJ, Magee LA, Mathai M, et al. Improving maternal and perinatal outcomes in the hypertensive disorders of pregnancy: a vision of a community-focused approach. *Int J Gynecol Obstet* 2012;119(Suppl. 1):S30–4.
- [39] van Dijk MG, Díaz Olavarrieta C, Zuñiga PU, Gordillo RL, Gutiérrez ME, García SG. Use of magnesium sulfate for treatment of pre-eclampsia and eclampsia in Mexico. *Int J Gynecol Obstet* 2013;121(2):110–4.
- [40] Roberts I, Ker K. Tranexamic acid for postpartum bleeding. *Int J Gynecol Obstet* 2011;115(3):220–1.
- [41] Movafegh A, Eslamian L, Dorabadi A. Effect of intravenous tranexamic acid administration on blood loss during and after cesarean delivery. *Int J Gynecol Obstet* 2011;115(3):224–6.
- [42] Centers for Disease Control and Prevention (CDC). Update to CDC's U.S. Medical Eligibility Criteria for Contraceptive Use, 2010: revised recommendations for the use of contraceptive methods during the postpartum period. *MMWR Morb Mortal Wkly Rep* 2011;60(26):878–83.
- [43] Lalonde AB, Grellier R. FIGO saving mothers and newborns initiative 2006–2011. *Int J Gynecol Obstet* 2012;119(Suppl. 1):S18–21.
- [44] Taylor DJ. Professional leadership in obstetrics and gynecology and its contribution to Millennium Development Goal 5. *Int J Gynecol Obstet* 2012;119(Suppl. 1):S42–4.
- [45] Santana DS, Cecatti JG, Parpinelli MA, Haddad SM, Costa ML, Sousa MH, et al. Severe maternal morbidity due to abortion prospectively identified in a surveillance network in Brazil. *Int J Gynecol Obstet* 2012;119(1):44–8.
- [46] Nair N, Tripathy P, Costello A, Prost A. Mobilizing women's groups for improved maternal and newborn health: evidence for impact, and challenges for sustainability and scale up. *Int J Gynecol Obstet* 2012;119(Suppl. 1):S22–5.
- [47] Haththotuwa R, Senanayake L, Senarath U, Attygalle D. Models of care that have reduced maternal mortality and morbidity in Sri Lanka. *Int J Gynecol Obstet* 2012;119(Suppl. 1):S45–9.
- [48] Mbizvo MT, Say L. Global progress and potentially effective policy responses to reduce maternal mortality. *Int J Gynecol Obstet* 2012;119(Suppl. 1):S9–S12.
- [49] Clinton Y, Anderson FW, Kwawukume EY. Factors related to retention of post-graduate trainees in obstetrics-gynecology at the Korle-Bu Teaching Hospital in Ghana. *Acad Med* 2010;85(10):1564–70.

Timothy R.B. Johnson
 Editor, *IJGO*

University of Michigan, Ann Arbor, USA
 E-mail address: trbj@med.umich.edu.