

A New Approach to Teaching Obstetric Anaesthesia in Low-Resource Areas

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Abstract

Maternal mortality is high in many low- and middle-income countries. Unsafe anaesthesia contributes to this, especially for women requiring Caesarean section. Anaesthesia providers with limited skills and poor resources are often faced with complicated obstetric patients. A new course called SAFE-OB teaches a systematic approach to anticipating, preparing for, and dealing with obstetric anaesthetic emergencies. The course has now been taught in many African, Asian, and Latin countries. Initial follow-up suggests improvement in skills and knowledge, and effective translation of these to the workplace. Efforts are made to make the course locally owned and sustainable.

We feel that SAFE-OB is an effective method of improving obstetric anaesthesia care.

Résumé

La mortalité maternelle est élevée dans de nombreux pays à faible revenu et à revenu intermédiaire. La tenue d'une anesthésie dans des conditions peu sûres contribue à cette mortalité, particulièrement pour les femmes qui nécessitent une césarienne. Les fournisseurs d'anesthésie aux compétences limitées qui ne disposent que de faibles ressources ont souvent face à des cas obstétricaux complexes. Un nouveau cours, intitulé SAFE-OB, enseigne une approche systématique envers l'anticipation des urgences anesthésiques en obstétrique, la façon de s'y préparer et la prise en charge de telles urgences. Ce cours a maintenant été offert dans de nombreux pays d'Afrique, d'Asie et d'Amérique latine. Le suivi initial semble indiquer des améliorations au niveau des compétences et des connaissances, ainsi que leur intégration efficace en milieu de travail. Des efforts sont déployés pour assurer la durabilité du cours et sa prise en charge par des intervenants locaux.

Nous sommes d'avis que le cours SAFE-OB constitue un moyen efficace d'améliorer les soins anesthésiques en obstétrique.

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INTRODUCTION

The death of a pregnant woman is a tragedy not only for her family but also for her community. The World Health Organization estimates worldwide maternal mortality to be approximately 289 000 per annum.¹ Most of these deaths occur in low- and middle-income countries (LMICs). Approximately four fifths of the world's maternal deaths occur in Sub-Saharan Africa and South Asia. Adolescents and poor women are most at risk.

In 2013, maternal mortality varied between 1/100 000 live births in Belarus and 1100/100 000 in Sierra Leone.² These numbers are significantly improved from 1990, when the rate in Sierra Leone was 2300/100 000 live births. The focus on maternal health in Millennium Development Goal 5, whereby countries committed to reducing maternal mortality by 2015, has probably contributed to this improvement.

Why do these women die? The most common causes are bleeding, infection, hypertensive disorders (preeclampsia and eclampsia), complications of delivery, and unsafe abortion.² These conditions are compounded by difficulty in accessing hospital care, which results in delays in treatment, and by inadequate care in the hospital setting. The medical problems are frequently complicated by pre-existing poor maternal health arising from anemia or malnutrition.

What is the role of anaesthesia in addressing these issues? Anaesthesia providers are essential in at least four areas of maternal health: optimizing maternal condition for obstetric intervention, providing safe anaesthesia for Caesarean section, resuscitation of the mother, and

resuscitation of the newborn. However, anaesthesia in LMICs is often given by non-medical providers or by junior physicians with little or no training in anaesthesia.³ Fully trained anaesthesiologists are scarce and generally found only in major centres.⁴

There is a wide variety of nomenclature for the non-physicians who give anaesthesia: terms include clinical officers, nurse anaesthetists, anaesthesia technicians, and anaesthesia assistants among others. They may have between six months and three years of training in anaesthesia after high school, or may have some or complete nursing training prior to receiving basic training in anaesthesia; some may have just learned “on the job.” What they all have in common is a lack of supervision by a qualified anaesthesiologist, a dearth of the resources required to deliver safe anaesthesia, and little or no ongoing continuing medical education.⁵ Because of these factors, their ability to anticipate, prepare for, and effectively treat the complications of pregnancy is very limited. In addition, there is often little communication between the medically qualified surgeon (obstetrician) and the non-physician anaesthesia provider. When errors occur, it is common to blame the non-physician. Recognizing this, anaesthesiologists in the United Kingdom have developed a course (the SAFE-OB Course) with the objective of bringing participants to a level of practice whereby they can safely manage a sick mother for a Caesarean section. SAFE is an acronym for Safer Anaesthesia From Education.

CONCEPTS OF THE SAFE COURSE

The SAFE course concept was first presented at the International Relations Committee of the Association of Anaesthetists of Great Britain and Ireland (AAGBI) in 2010, when the global need for improvement in the standard of obstetric anaesthesia was identified. The challenge was how to meet that need. It is well accepted that anaesthesia for the pregnant patient is more complex than for the non-pregnant, with greater risk of anaesthetic morbidity and mortality. To meet this need, it was decided to develop additional obstetrical training for those individuals already practising anaesthesia but requiring improvement in the skills of *obstetric* anaesthesia.

The SAFE-OB course focuses on the specific anaesthetic needs of the obstetric anaesthesia providers by teaching a systematic approach to managing major life-threatening obstetric emergencies such as hemorrhage, sepsis, pre-eclampsia, and eclampsia.⁶ These challenging obstetrical emergencies constitute over 50% of the causes of maternal death and, in many cases, could be easily treated. Optimal

outcome depends on good teamwork, and the anaesthetist is an integral part of the obstetric emergency team.

It is recognized that approximately 15% of all deliveries result in complications. Access to safe anaesthesia is an essential requirement in the management of the complications of pregnancy;^{7,8} unskilled anaesthesia can result in death.^{9,10} This is rare in sophisticated environments with properly trained personnel, but is more frequent in less economically well-resourced countries. The SAFE-OB course attempts to remedy these deficiencies.

THE COURSE

SAFE-OB is designed as a three-day refresher course aimed at anaesthesia providers in the low-resource setting. It focuses on anticipation and prevention of common obstetrical problems while addressing the potential extended roles and the demands placed on the anaesthesia practitioner. It is based on the principles of adult learning. For many course participants, the language of course delivery will not be their mother tongue; therefore, lectures are short and supported by visual aids. There is a “no humiliation” culture, supported learning, no pass/fail and a system of mentoring to provide support outside the more formal course process.

The course is modular. Each module focuses on a central topic, with breakout sessions addressing particular aspects of that topic from the theoretical through to the more practical.

Topics include:

- physiology of pregnancy,
- basic and advanced airway management,
- general anaesthesia (including complications and an introduction to the Surgical Safety Checklist),
- spinal anaesthesia (including difficulties and complications),
- critical care,
- neonatal resuscitation,
- obstetrical hemorrhage,
- preeclampsia/eclampsia, and
- maternal sepsis.

Unlike traditional refresher courses, which are primarily didactic, the SAFE-OB program is intended to be interactive, with participants spending the majority of their time rotating through small group stations. A variety of educational strategies are employed, such as lectures,

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