Transforming Maternal and Neonatal Outcomes in Tertiary Hospitals in Ghana: An Integrated Approach for Systems Change

Rohit Ramaswamy, PhD, MPH, Grad Dipl (Bios),[1] Sarah Iracane, MPH,[1] Emmanuel Srofenyoh, MD,[2] Fiona Bryce, MD,[3] Liz Floyd, RM,[3] Brianne Kallam, MPH,[4] Adeyemi Olufolabi, MD,[5] Romeck Van Zeyl,[6] Medge Owen, MD[7]

[1]University of North Carolina at Chapel Hill, Gillings School of Global Public Health, Chapel Hill NC

[2]Department of Obstetrics and Gynecology, Ridge Regional Hospital, Accra, Ghana

[3]Department of Obstetrics and Gynaecology, South Tees National Health Service Trust, UK

[4]Kybele, Inc., Winston-Salem, NC

[5]Department of Anesthesiology, Duke University Medical Center, Durham NC

[6]Leadership Consultant, Berlin, Germany

[7]Department of Anesthesiology, Wake Forest School of Medicine, Winston-Salem NC

Abstract

Objective: In Ghana, regional referral facilities by design receive a disproportionate number of high-risk obstetric and neonatal cases and therefore have mortality rates higher than the national average. High volumes and case complexity result in these facilities experiencing unique clinical, operational, and leadership challenges. In order to improve outcomes in these settings, an integrated approach to strengthen the overall system is needed.

Methods: Clinical skills strengthening, quality improvement training, and leadership skill building have all been used to improve maternal and neonatal outcomes with some degree of success. We present here a customized model tailored to the particular context of tertiary referral hospitals that develops these three skills simultaneously, so that the complex interaction between clinical conditions, resource constraints, and organizational issues that affect the lives of mothers and babies can be considered together. This model uses local data to identify the drivers of poor maternal and neonatal outcomes and creates an integrated training package to focus on approaches to addressing these drivers. Based on this training, quality improvement projects are introduced to change the appropriate clinical or operational processes, or to strengthen organizational leadership.

Results: In testing in one of the largest referral hospitals in Ghana, the model has been well received and has improved performance in several cross-cutting areas affecting the quality of maternal and neonatal care, such as triage, patient flow, and NICU hand hygiene.

Conclusion: An integrated approach to systems strengthening in referral hospitals holds much promise for improving outcomes for mothers with high-risk pregnancies and babies in Ghana and in other low-resource settings.

Key Words: Maternal and neonatal mortality, systems strengthening, quality improvement, tertiary hospital, low income settings, Ghana

Competing Interests: None declared.

Résumé

Objectif : Au Ghana, les établissements de recours régionaux reçoivent, de par leur nature, un nombre disproportionné de cas obstétricaux et néonataux exposés à des risques élevés; par conséquent, ces établissements comptent des taux de mortalité plus élevés que la moyenne nationale. Les volumes élevés et la complexité des cas font en sorte que ces établissements ont à faire face à des défis cliniques, opérationnels et de direction particuliers. Dans de telles situations, l'amélioration des issues nécessite la mise en œuvre d'une approche intégrée visant à renforcer le système dans sa globalité.

Méthodes : Le renforcement des compétences cliniques, la formation en amélioration de la qualité et la consolidation des compétences propres au leadership sont des outils qui ont tous été utilisés, avec un certain succès, pour améliorer les issues maternelles et néonatales. Nous présentons ici un modèle, ayant été adapté au contexte particulier des hôpitaux de recours tertiaires, qui favorise la mise en œuvre simultanée de ces trois outils, de façon à ce que l'interaction complexe entre les conditions cliniques, les contraintes en matière de ressources et les facteurs organisationnels qui affectent la vie des mères et des enfants puisse être envisagée dans son ensemble. Ce modèle utilise des données locales pour identifier les éléments associés à l'obtention

de piètres issues maternelles et néonatales, pour ensuite créer un programme intégré de formation axé sur des approches permettant d'aborder ces éléments. En fonction de ce programme de formation, des projets d'amélioration de la qualité sont mis en œuvre pour modifier les processus cliniques ou opérationnels appropriés, ou pour renforcer le leadership organisationnel.

Résultats : Dans le cadre de sa mise à l'essai au sein de l'un des plus importants hôpitaux de recours du Ghana, ce modèle a été bien reçu et a permis une amélioration du rendement dans plusieurs domaines transsectoriels affectant la qualité des soins maternels et néonataux, comme le triage, le roulement des patientes et l'hygiène des mains en UNSI.

Conclusion : La mise en œuvre d'une approche intégrée envers le renforcement des systèmes au sein des hôpitaux de recours s'avère fort prometteuse pour l'amélioration des issues chez les mères connaissant des grossesses exposées à des risques élevés et les nouveau-nés du Ghana et d'autres milieux ne disposant que de faibles ressources.

J Obstet Gynaecol Can 2015;37(10):905–914

INTRODUCTION

Ghana has made progress in reducing maternal mortality. The maternal mortality ratio has declined from 470 to 380 maternal deaths/100 000 live births between 2005 and 2013.[1] However, Ghana will fall short of the national Millennium Development Goal target of 185 maternal deaths/100 000 live births by 2015.[2] Combined data from three large referral and teaching hospitals has identified 895 maternal deaths/100 000 live births, a ratio nearly double the corresponding national average.[3–5] This represents significant disparity between regional and teaching facilities and other institutions.

One reason for the disparity is the number of high-risk pregnancies encountered. Within health facilities, high-risk pregnancies typically account for 5% to 10% of patients, but at Ridge Regional Hospital, which is typical of referral hospitals, more than 20% of cases are high risk.[6,7] Improvement efforts must target referral hospitals if additional progress is to be made in reducing maternal deaths. The heavy caseload and disproportionately large number of patients with high-risk pregnancies makes these referral hospitals complex environments that require innovative solutions. We present here an integrated approach to improve clinical care and strengthen systems, in order to improve obstetric and neonatal outcomes for high-risk women delivering in referral hospitals in Ghana. This approach may be applicable to other low and middle-income countries (LMICs).

CONTEXT: FACTORS AFFECTING MATERNAL AND NEONATAL OUTCOMES IN REGIONAL HOSPITALS

In 2012, there were 54 maternal deaths at Ridge Regional Hospital.[8] Ridge Hospital is one of three facilities in the Greater Accra region that receives very sick patients referred from other facilities. A complex interplay of clinical, operational, and leadership issues both within and outside the hospital all influence maternal and neonatal outcomes. Consider the following scenarios summarizing two cases from a retrospective audit of maternal mortality and stillbirths at Ridge Regional Hospital in 2014. These scenarios are exemplars of many other similar cases.

Scenario 1

A woman in her 30s with two previous Caesarean sections presented to the labour triage room in the early evening. She had no prenatal care during this pregnancy. Upon admission, her cervix was fully dilated, and the fetal heart rate was normal. She was having four strong contractions every 10 minutes. In view of the fact that she had two previous Caesarean sections and was at full cervical dilatation, she was prioritized for urgent attention. The midwife began to prepare her for Caesarean section and notified the house officer (junior physician) 30 minutes after her admission, using established hospital protocols. Two hours after admission, a house officer arrived and evaluated the patient. An urgent Caesarean section was planned. She was sent to the waiting area of the operating theatre.

Thirty minutes later, while the patient was still in the waiting area, no fetal heart tones could be heard. The patient was reviewed by a senior physician, who palpated fetal parts in the abdomen and made the diagnosis of ruptured uterus. It took another 45 minutes for the patient to enter the operating theatre, and a stillborn baby boy was delivered. The uterus was repaired and the abdomen closed. The patient was then sent to the four-bed recovery room. After one hour in the recovery room, a nurse noted that the patient was having heavy vaginal bleeding with clots. Her pulse rate was rising and her blood pressure was falling, but there was no record of a physician being called to review her condition. A physician arrived a further hour later, and a laparotomy was planned; however, the patient had cardiac arrest shortly afterwards. Resuscitation was unsuccessful and the patient was pronounced dead.

Scenario 2

A woman in her 30s with her second pregnancy was referred for intrapartum care at term because of anemia. On arrival at the hospital in the early afternoon, her hemoglobin concentration was low, but her vital signs were normal. The fetal heart rate was normal, and fetal movements were felt. On examination, the cervix was 4 cm dilated and the patient was having two contractions every 10 minutes. Four hours after admission, the cervix was 5 cm dilated. The midwife ruptured the membranes with passage of clear amniotic fluid. The fetal heart rate remained in the normal