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The important role for emergency medicine in combatting maternal mortality

To the editor,

We read with interest a recent paper published in this journal: Injury patterns and health outcomes among pregnant women seeking emergency medical care in Kumasi, Ghana: Challenges and opportunities to improve care. In this paper, Osei-Ampofo and colleagues conducted a chart review to investigate injuries amongst pregnant women. As the scope of the study was limited to cases presenting to their emergency department, the authors appropriately concentrated their title, scope, and results of injuries to these pregnant women. However, the discussion section conflates these undoubtedly tragic injuries and deaths with maternal death. While the most common mechanisms of injury in this study were reported as traffic-related, followed by poisoning and laceration or penetrating wound, the authors conclude, “The high rates of maternal and foetal mortality and morbidity from this study suggest that injury is an under-recognized source of maternal and foetal mortality and morbidity in Ghana and this may well apply to most LMICs.”

Maternal mortality has garnered international attention as an indicator of overall development, and the Sustainable Development Goals have set a target of no country with an MMR over 70 per 100,000 live births.1 It is undoubtedly important to use international priorities and frameworks in a variety of intellectual and health investigations. Tying emergency care to these international priorities is important to elevate the status and relevance of acute and emergency care, especially within low-and-middle income countries in which emergency medicine is often non- or under-recognized as a specialty. However, a maternal death is, “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes” (see Box 1). Likewise, maternal morbidity is defined as, “any health condition attributed to and/or aggravated by pregnancy and child-

birth that has a negative impact on the woman’s wellbeing”. Per the WHO definition, the death and disability described by Osei-Ampofo and colleagues are not maternal deaths or disabilities. A “death in pregnancy”, which is what they are in fact studying, may certainly include injury-related deaths amongst pregnant women. Many of the references which the authors cited were, in fact, indirect maternal deaths (deaths arising from conditions which are exacerbated by pregnancy, but not directly related to the pregnancy or delivery), not “non-obstetric” maternal deaths, a concept not included in the current definition of maternal death. While these distinctions in definitions may seem trivial, such precise definitions have enormous implications for global public health.

Maternal mortality is used as more than an individual-level cause of death and is used as an indicator of a country’s development as well as a health system’s ability to function.2 Therefore, conflating the deaths of all pregnant women from all causes with those who died from direct and indirect obstetric causes overestimates the true number of maternal deaths (as defined by the WHO) and thus artificially inflate the Maternal Mortality Ratio. In addition, by framing deaths in pregnancy from injury as maternal mortality, the authors risk detracting attention from the significance of their work and the work of others who have identified the important role emergency care can have in improving health outcomes for all patient populations, including pregnant women.

In the seminal Three Delays Model conceptualizing maternal deaths, Thaddeus and Maine3 identify common delays which, if addressed, could reduce up to 75% of maternal deaths. The second delay in this model (“the identification of – and transport to – a medical facility”) is most directly applicable to emergency care.4 In 2011, the United Nations developed the MDG Acceleration Framework (MAF) for Ghana,5 as the country was lagging in progress and was not on track to meet the MDG5 target. Ghana’s slow progress was due in part to inadequate accessibility to emergency obstetric care services as a result of inadequate transport, poor road networks and weak referral systems, all of which are directly addressable by applying the principles of emergency care.

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medicine. In fact, over the past decade, Emergency Medicine (EM) has contributed to notable reductions in maternal and neonatal mortality in several sub-Saharan African settings.

Maternal health and EM experts have partnered to create effective obstetric Emergency Medical Services (EMS) systems, hallmarked by protocol-driven referrals, efficient communication, and timely emergency transportation, all centred upon, and free of charge to, pregnant women. These African obstetric EMS systems, while limited in geographic reach, have played a critical role in lessening the financial and transportation barrier that often contributes to the second delay in maternal mortality by facilitating transport to health centres for skilled delivery and providing rapid transport to hospitals for emergency obstetric care.6–9 In their design, these systems incorporate very pragmatic Afro-centric elements, for example the use of cot-fitted motorcycles and cell phone-based text messaging.10,11 Consequently, communities in Burundi, Ethiopia, Malawi, Rwanda, South Africa, South Sudan, and Uganda have about doubled facility delivery and Caesarean section rates, and reduced institutional maternal mortality rates, by up to 74% in some African studies, via the implementation of basic obstetric-centric EMS systems.6–12 Equally as impressive, the financial services for these investments was deemed highly cost-effective, per life saved or per capita.11–14

The life-saving extension of EM and EMS into addressing maternal morbidity and mortality is a demonstration of the interdisciplinary applicability of EM beyond the walls of the traditional emergency centers, and beyond prototypical EM conditions like injuries. Emergency care specialists have much to offer the maternal health community to tackle and reduce maternal mortality. However, framing descriptive studies on deaths or disability in pregnancy as a study of maternal morbidity and mortality diffuses this importance.

Box 1 Definitions of Maternal Death and deaths in pregnancy, childbirth, and the puerperium: ICD-MM

Definition of Maternal death:
A maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Maternal deaths are subdivided into two groups:
- Direct obstetric deaths: direct obstetric deaths are those resulting from obstetric complications of the pregnancy state (pregnancy, labour and the puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above.
- Indirect obstetric deaths: indirect obstetric deaths are those resulting from previous existing disease or disease that developed during pregnancy and which was not due to direct obstetric causes, but which was aggravated by physiologic effects of pregnancy.

Definition of deaths in pregnancy, childbirth, and the puerperium:
Death occurring during pregnancy, childbirth and the puerperium is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death (obstetric and non-obstetric).
emergency medical care in Kumasi, Ghana: Challenges and opportunities to improve care”.

You raise important concerns about the definition of maternal mortality and its use in our article. The World Health Organisation (WHO) clearly explains the rationale for the new category of Pregnancy related death: “To facilitate the identification of maternal deaths in circumstances in which cause of death attribution is inadequate, a new category has been introduced: Pregnancy-related death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death.”(1)

WHO thus considers pregnancy-related deaths as a maternal death with inadequate cause of death attribution. While we acknowledge the importance of nomenclature and standardisation, the authors were very clear in their description of the likely cause of death of mothers in the article. Suffice it to say though that our study reported significant abdominal injuries, which are associated with abruptio placentae and uterine rupture. Because of the descriptive nature of the study, we however, did not make any attribution of cause but simply stated the risk. Mention was also made about accessibility to safe abortion practices in Ghana. Authors only stated the likelihood of the event taking place and did not attempt to make an attribution of cause. While some gains have been made in this area, it is worthwhile to note the following: although the abortion laws in Ghana appear quite liberal, health system barriers as well as a general low level of women empowerment prevents access to safe abortion practices in Ghana. Authors only stated the likelihood of the event taking place and did not attempt to make any definitive attribution of cause. Despite differences in nomenclature and despite the limitations of the study design, we think that the study still does demonstrate that injuries to pregnant women are a significant health problem that requires further research and attention.

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