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Editorial

The E-MOTIVE Trial – game changer for PostPartum Haemorrhage (PPH) management focusing on early detection and timely interventions

Almost 300000 maternal deaths occur each year, although most of which are preventable when complications arise with timely access to quality maternity care and evidence-based interventions[1]. Postpartum Haemorrhage (PPH) commonly defined as a blood loss of 500 ml or more following childbirth, still remains the leading cause of maternal death worldwide, accounting for 27% of global maternal deaths affecting 5% of all lifebirths[2]. Death from PPH is largely preventable, as it has been nearly eliminated in High-Income Countries (HICs). But it still remains a major concern in the Low- and Middle-Income Countries (LMICs) where PPH-associated maternal mortality is disproportionately high[3]. In Low-Income Countries (LICs) every 6 minutes a birthing woman dies from PPH[4]. Most maternal deaths from PPH occur in Sub-Saharan Africa (30-50%) and South Asia[2]. In Bangladesh haemorrhage is accountable for 33% of maternal death[5]. The estimated global Maternal Mortality Ratio (MMR) of 223 maternal deaths per 100000 live births in 2020[6] makes it clear that countries of these zones are significantly off track in terms of progress toward achieving the Sustainable Developmental Goal (SDG) goal 3 target 3.1 which is to reduce the global MMR to less than 70 per 100000 live births by 2030[6].

Although PPH is largely preventable, many often it is not predictable and when it does occur, early detection and prompt evidence-based management can avoid the most adverse outcome – maternal death[7,8]. Despite having technology, interventions, increased facility births, published guidelines, and evidence-based recommendations, global progress in reducing PPH mortality has been slow. There is an urgent need to address the issue of preventable PPH mortality and morbidity to overcome the stalled progress in reducing maternal death over the past 5-10 years[9].

The World Health Organization (WHO) published recommendations for the prevention and treatment of PPH in 2012 and has regularly updated its recommendations[7, 10-13]. However, adherence to the WHO-recommended practices remains a critical challenge. For example, different studies from LMICs revealed the facts that most women with PPH do not receive life-saving treatment, only 26% received a uterotonic drug when blood loss exceeded 500-600 ml and 70% when the loss was more than 1000 ml, and the real world PPH detection rate was low[14-16]. So, it is now evident by the facts that adherence to these WHO recommendations in many LMICs with low resource settings is limited by numerous challenges. First – PPH is often undetected or detected late as the current usual practice of blood loss assessment is visual estimations, widely recognized as inaccurate and leads to underestimation of blood loss with life-threatening delays in initiating life-saving interventions[17]. The second challenge is delayed or inconsistent use of effective intervention for the management of PPH. Traditionally, components of PPH treatment have been administered sequentially with the gap between each intervention, when the first option is not effective – costing more time between each intervention. Considering the fact that PPH is a time-critical condition and such delay is not at all affordable and can result in loss of life. Recognizing the urgency of prompt and timely action, the WHO has recommended the early and simultaneous bundle approach treatment protocol.

E-MOTIVE is a breakthrough new solution to these challenges. E-MOTIVE is the acronym for a new PPH care bundle developed based on the WHO 2012 and 2017 recommendations to address the critical challenges of PPH management by focusing on early detection and timely treatment. The E-MOTIVE care bundle (WHO 2023 guideline) emphasizes objective blood loss assessment by using calibrated drapes and a standardized comprehensive range of interventions by bundle approaches including the uterine massage, use of oxytocic drugs (Oxytocin and Misoprostol), Tranexamic acid, intravenous fluids, thorough physical examination of patient and birth canal and escalating to other procedures (Refractory

Bundles) if bleeding does not stop[18]. The acronym stands for[19, 20] -

E- Early detection and trigger criteria

- By objective measurement of blood loss using a calibrated drape
- Trigger lines at 300 ml and 500 ml for the first hour of birth
- Or earlier for obvious heavy bleeding or abnormal vitals

WHO recommends immediate administration of "bundle" as a first-line treatment when triggered by early diagnosis.

M- Massaging the uterus until contracted

O – Administration of oxytocic drugs –

(inj.Oxytocin 10 unit in 100-200 ml infusion over 5-10 minutes + maintenance dose of 20-unit IV infusion in 1 L

over 4 hours + Tab.Misoprostol 800 μgm if needed)

T – Tranexamic acid (TXA) – (1000 mg in 100-200 ml IV saline infusion over 10 minutes)

IV fluids – IV crystalloid fluids if clinically indicated for resuscitations

E – Examinations + Escalations

- Ensure bladder empty
- Evacuate clots
- Exam for tears and placental completeness
- Escalations of care – refractory bundle if bleeding continues

The main differences between the 2023 guideline and 2012, 2017 guidelines observed 2 key recommendations[19].

1. Routine objective assessment of postpartum blood loss with a calibrated drape to improve early detection and trigger interventions.
2. Standardize and timely treatment approach through the use of a bundle ensuring all components simultaneously

The results of E-MOTIVE trials have unveiled a remarkable breakthrough in maternal care – a significant reduction of maternal mortality, blood loss, and need for laparotomy/hysterectomy by 60%. Moreover, the early detection rate was 93.1% in comparison to traditional care 51.1%[18, 21, 22]. Still, many potential barriers exist to implementing E-MOTIVE trials. One of them is the availability and ready supply of cost-effective calibrated drapes in the health facilities which should be affordable and locally producible. Objective assessment of blood loss is to be done after every vaginal birth by using a transparent, plastic, calibrated blood collection drape placed under the woman's buttock by midwife when preparing for or immediately after delivery unrolled to allow blood collection after delivery of the baby but before placental delivery. So, the introduction of calibrated drapes with trigger lines to increase motivation for bundle care use is one of the key implementation strategies of the E-MOTIVE package.

The Obstetrical and Gynaecological Society of Bangladesh (OGSB) has implemented a PPH emergency response using a bundle approach to manage PPH by the first response and a refractory bundle for clinical management and a nonclinical bundle[23, 24]. The society is also working to implement leadership development initiatives and now needs to take the challenges to make the calibrated drapes available in the facilities. Objective assessment of blood loss will trigger the providers for early detection as well as initiate timely interventions.

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