

Obstetrics in the time of Ebola: challenges and dilemmas in providing lifesaving care during a deadly epidemic

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The World Health Organization (WHO) has declared the current Ebola epidemic an international public health emergency.¹ The epidemic is concentrated in West Africa, an area of the world with an already poor health infrastructure and with some of the worst health indicators globally.² The WHO estimated Sierra Leone, one of the affected countries, to have the highest maternal mortality rate in the world, 1100 per 100 000 live births, equating to a life-time risk of 1 in 21 women dying during childbirth.³

The provision of adequate maternity services in Sierra Leone is a challenge at the best of times; however, in the context of an Ebola epidemic there are unique challenges in both appropriate diagnosis and safe treatment. Whereas regular health services should continue to operate during an epidemic, it is unclear how best to provide safe obstetric interventions. In any humanitarian emergency it is estimated that approximately 15% of pregnant women will encounter a potentially life-threatening complication,⁴ it is these women which pose the greatest challenges in diagnosis and treatment during the epidemic.

Ebola is highly infectious and is spread through contact with human bodily fluids, including breast milk and sweat. As women are often caretakers of the sick, and during pregnancy are more likely to have recently attended a health clinic, they are a high-risk group for exposure to, and transmission of, Ebola. The mortality rate of infected pregnant women is very high, with perinatal mortality believed to approach 100%.⁵

Clinical diagnosis of Ebola is difficult: the history and symptoms are often general, especially in the early stages, and overlap with many other differential conditions (for example malaria or typhoid). In obstetrics there is a large crossover between the presentation of women with pregnancy complications and the alert symptoms for a

suspected Ebola case. Spontaneous miscarriage, bleeding (including vaginal bleeding), abdominal pain, chest pain, joint pain, vomiting, stillbirth/intrauterine fetal death (IUFD), and fever are routinely encountered in isolation or combination as part of obstetrical referral criteria. The same symptoms can also form part of the 'case definition' for an Ebola alert, in particular when combined with a history of contact with Ebola (including suspicion) or attendance at funerals.

Differentiating between a woman who presents with an obstetric emergency, where prompt intervention is necessary and potentially lifesaving, and a woman who is suspected of having Ebola, where invasive procedures should be absolutely limited, remains a major challenge in this field. The current system used to identify suspected Ebola patients relies on verbal history and temperature alone. This takes place in a 'triage' area before entry to the unit is permitted. Because of the associated hazards of close contact with an infected individual, the stratification of risk takes place before health workers consider performing exposure-prone procedures or the patient mixes with other inpatients; however, this method is not robust. The patient history is often unclear, particularly for women who arrive in extreme circumstances and may be unconscious or bleeding profusely. Furthermore, the history is occasionally not reported correctly out of fear by patients or their relatives (for example, if they had been to a traditional birth attendant before coming, or if they have attempted to terminate the pregnancy). Finally, during the epidemic patients may withhold contact histories out of fear of stigmatisation, isolation, or refusal of treatment.

Suspected Ebola patients should be isolated first, and then tested, taking high-level infection control precautions. Because of poor infrastructure and limited access to

appropriate laboratory services, a test result may take in excess of 24 hours to be received. During this time a woman and/or fetus that arrive alive may die, or their condition may significantly worsen, whilst awaiting a result.

The overlap in diagnostic criteria, but with contradictory treatment strategies, creates an ethical conundrum for the obstetrician in an Ebola epidemic. Is it medically possible to justify withholding lifesaving treatment to someone who is *suspected* of having an infectious disease? Equally, can one risk exposing healthcare staff, and other patients, by admitting an individual who is *suspected* of having Ebola?

Obstetrics is considered to be one of the highest exposure-prone medical specialties in any context. Healthcare workers, equipment, and the general environment will frequently be exposed to large quantities of blood, amniotic fluid, urine, and faeces. Healthcare staff are a high-risk group for Ebola transmission and mortality in all healthcare facilities: in this sense, obstetrics during an Ebola epidemic can be considered an extremely high-risk specialty.⁶

Operatively, obstetric surgeries are often performed under stressful, emergency conditions in order to save lives. They frequently involve large levels of blood loss, often operating in difficult conditions visually (for example vaginal operations with limited access, or when there is heavy bleeding obscuring the surgical field). This predisposes surgical staff to a high risk of splashes of blood (or other bodily fluids) and needle-stick or scalpel injuries.

Personal protective equipment (PPE) is the standard precaution used for all procedures in an Ebola epidemic. The most restrictive clothing is reserved for suspected or confirmed cases. The practicality of using PPE during surgery remains controversial. The combination of a difficult operation, heat, reduced sensation, and reduced vision under layers of PPE can render it a hazard to safety as well as a protector. For example, if goggles repeatedly become misted over there is a higher risk of sharps injury. Within the Ebola Management Centres it is recommended that PPE should be worn for a maximum of 1 hour. Complex procedures that take longer periods of time may diminish the efficacy of the PPE, particularly face masks.^{7,8}

Individuals without symptoms of Ebola are not thought to be contagious in normal circumstances;⁹ however, when considering obstetrics procedures alongside the high personal and public cost of occupational infection, there is insufficient evidence to fully balance the exposure risks (for example if a patient were to exhibit symptoms shortly after a caesarean section). The pre-emptive testing of all patients has been suggested; however, this would be artificially reassuring because of high false-negative rates in the asymptomatic, incubating, or recovering patients, where viral loads may be low but not absent.⁹ Furthermore the polymerase chain reaction in a pregnant woman who has survived Ebola, and is negative for the virus in her blood, can

remain positive with high viral loads in the amniotic fluid, placenta and fetus and hence continue to be contagious.¹⁰

If healthcare workers were to become infected with Ebola the knock-on effect may be the closure of the unit itself. There is also the wider political fall-out of healthcare (particularly expatriate) workers contracting Ebola. The situation therefore does not allow for flexibility or any risk-taking, as the consequences of a single error can be wide-reaching and lasting.

Maternal mortality and morbidity is tragically high within the Ebola-affected region. Although there will be a group of women who die from Ebola during pregnancy, there is likely to be a far higher number of women who will suffer as an indirect result of the epidemic. The health structures that were functioning are now deserted of staff and patients. Healthcare staff have died from Ebola and those surviving fear working in the current conditions, resulting in their absence and in industrial action.¹¹

It is well documented that high maternal mortality rates are often caused by consecutive delays in recognition, access, and receipt of treatment.¹² Certainly, this remains a significant issue in the affected region. The rumours and fear that accompany Ebola have magnified these delays. Stories of patients being isolated and then dying has fed into conspiracy theories that health centres are actively injecting patients *with* Ebola, or outright murdering them, scaring the population away. Furthermore, attendance of suspected or confirmed Ebola cases at a health centre directly leads to a drop in patient attendance because of fear of transmission. As a result women are presenting ever later with obstetric emergencies, waiting until they are in a critical state. This further challenges the system of triaging patients, with the urgency to treat being directly opposed to the time needed to identify Ebola suspects. The decision on whether to isolate a woman or not is potentially a decision between life and death, for both the patient and the health worker.

Obstetric interventions during an Ebola epidemic are theoretically, practically, and ethically deeply challenging. To deny an individual, let alone a population, adequate access to health care is a violation of their universal human rights.¹³ Meeting the maternal health needs in the region whilst the epidemic is continuing will require continual assessment of how the risk to healthcare workers can be minimised, enabling them to safely continue providing life-saving care for their patients.

Disclosure of interests

There are no conflicts of interest to report.

Contribution to authorship

Dr BB, is the sole author and hence he is responsible for the concept, design, and writing of the article. He is an

obstetrician and a gynaecologist registrar currently working for Médecins Sans Frontières in Sierra Leone, initially providing emergency obstetric care in a referral centre (during the Ebola epidemic), and now in the Ebola treatment centres. He provides care to both pregnant and non-pregnant Ebola patients. Médecins Sans Frontières has reviewed the article; however, it does not represent the organisation or their views.

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