Ebola in pregnancy: risk and clinical outcomes

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The current Ebola virus disease (EVD) outbreak in West Africa—the worst since Ebola virus was identified in 1976—provides a stark reminder of the human consequences of EVD. There are great challenges, ethical dilemmas and uncertainty in providing safe obstetric interventions to Ebola virus-infected women in a humanitarian emergency setting. Although applying the precautionary principle is eminently sensible, especially when protecting healthcare staff, the limited evidence underpinning discussions regarding management of pregnant women with EVD should be acknowledged, with very few studies to date reporting on maternal and fetal outcomes.

Much of our understanding of EVD comes from previous outbreaks in resource-limited settings in Africa, a very different healthcare context to the UK. Women in these settings are at high-risk for exposure to Ebola virus (because of their predominant caregiver role, both in domestic and healthcare settings), rather than women being more susceptible to Ebola virus.

Ebola virus is transmitted from person to person through close and direct physical contact with body fluids from a symptomatic individual. In the early symptomatic phase, the virus is present in blood but thought to be at very low levels in other body fluids. Infectiousness increases with illness severity, and, in the late phase, all body fluids should be considered infectious, with blood, faeces and vomit being most infectious. Skin is almost certainly highly contaminated in late-stage disease, as maintaining good hygiene with diarrhoea, vomiting, incontinence and bleeding is near impossible (Public Health England; Ebola in pregnancy. 2014, https://www.gov.uk/government/publications/information-for-healthcare-workers-ebola-in-pregnancy).

Bausch et al. isolated Ebola virus from breast milk in one lactating woman, in both the acute and convalescent phases of illness (after demonstrated viral clearance from blood), suggesting that the mammary glands may be an immunologically protected site with delayed viral clearance (Bausch et al. J Infect Dis 2007;196:S142–7). However, it is unknown if Ebola virus is transmitted routinely from mothers to infants through breastfeeding (Jamieson et al. Obstet Gynecol 2014;124:1005–10).

It is likely that fetal infection occurs through the placenta. In the current outbreak in Guinea, Baggi et al. found a high Ebola virus load in the amniotic fluid of two pregnant women, and in one this was after viral clearance from blood in the convalescent phase. Placental samples in both were also positive for Ebola virus (Baggi et al. Euro Surveill 2014;19(49)).

In most previous EVD outbreaks, pregnancy-related information was not collected systematically or routinely reported. Data on pregnancy outcomes in the current Ebola outbreak are also relatively scarce, with some reports from Guinea (Baggi et al.; Baize et al. N Engl J Med 2014;371:1418–25), Sierra Leone (Schieffelin et al. N Engl J Med 2014;371:2092–100) and Liberia (Chertow et al. N Engl J Med 2014;371:2054–7). Only the report by Baggi et al. from Guinea specifically focuses on pregnancy outcomes, describing induced deliveries after intrauterine death in two 7-month gestation Ebola virus-infected pregnant women who were in the convalescent phase of illness; both women survived. In the other reports (Baize et al.; Chertow et al.; Schieffelin et al.), pregnancy-related outcomes are described among other clinical outcomes in Ebola virus-infected patients.
Limited evidence suggests that pregnant women are at increased risk of spontaneous abortion (Baize et al.; Bull WHO 1978;56:271–93; Bwaka et al. J Infect Dis 1999;179:S1–7; Chertow et al.; Mupapa et al. J Infect Dis. 1999;179:S11–12; Schieffelin et al.), pregnancy-related haemorrhage (Mupapa et al.; Schieffelin et al.), stillbirth (Baggi et al.; Mupapa et al.) and death (Bull WHO; Mupapa et al.) when infected. However, although evidence to date suggests that maternal mortality is high among Ebola virus-infected pregnant women, there are also reports of maternal survival after fetal loss (Bull WHO; Baggi et al.; Baize et al.; Bwaka et al.; Mupapa et al.).

High neonatal mortality rates have also been reported. Live infants born to Ebola virus-infected mothers have invariably died (Bull WHO; Mupapa et al.), but some have died in the late neonatal phase, and whether these deaths represented actual cases of EVD or resulted from the many other causes of high infant mortality has not always been known (Bull WHO).

As we learn more about Ebola virus transmission and the clinical course of illness and recovery, we must continually revisit our approach to its control and treatment, based on best-quality evidence. Meeting maternal health needs in West Africa while better understanding and managing the risk to healthcare workers in the ongoing Ebola outbreak is the real challenge.

Disclosure of interests
AK has previously worked as a clinician with Médecins Sans Frontières in Liberia (2005/06) and currently works for Public Health England.