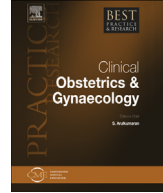




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Q8 Ending preventable maternal and newborn Q9 deaths due to infection

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Over 300,000 maternal deaths occur each year, 11% of which are thought to be due to infectious causes, and approximately one million newborns die within the first week of life annually due to infectious causes. Infections in pregnancy may result in a variety of adverse obstetrical outcomes, including preterm delivery, pre-labor rupture of membranes, stillbirth, spontaneous abortion, congenital infection, and anomalies. This paper reviews the burden of disease due to key infections and their contribution to maternal, perinatal, and newborn morbidity and mortality, as well as key interventions to prevent maternal and newborn deaths related to these infections. Research needs include more accurate clinical and microbiologic surveillance systems, validated risk stratification strategies, better point-of-care testing, and identification of promising vaccine strategies.

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Scope of the Problem

Q3 Over 300,000 maternal deaths occur each year, 11% of which are thought to be due to infectious causes, and approximately one million newborns die within the first week of life annually due to infectious causes [1,2]. Furthermore, around 2.6 million stillbirths occur each year worldwide, with major causes being infections, including chorioamnionitis, syphilis, and malaria [3]. Over 98% of all of these deaths occur in low- and middle-income countries (LMIC).

Infections in pregnancy may result in a variety of adverse obstetrical outcomes, including preterm delivery, pre-labor rupture of membranes, spontaneous abortion, congenital infection, and anomalies. The types of infections span the microbial spectrum, including bacterial, viral, and parasitic diseases. The aims of this review are to (1) discuss what is known about the contributions of key individual infections to maternal, perinatal, and newborn mortality and morbidity and (2) review interventions to prevent maternal and newborn deaths related to these infections and their effectiveness.

Human Immunodeficiency Virus (HIV)

Burden of Disease

The estimated number of pregnant women living with HIV globally exceeds 1.5 million [4], the majority in sub-Saharan Africa. The health of a woman with HIV in pregnancy and beyond depends on her sustainable access to antiretroviral therapy (ART), as well as other medications for treatment and prevention of opportunistic infections. A recent population-based open cohort study in rural Uganda found that life expectancy in women living with HIV increased by 22.9 years between 2000 and 2002 and 2009 and 2012, coinciding with introduction of ART in 2004 [5]. Perinatal transmission from an HIV-infected woman to her fetus or infant is the leading cause of pediatric HIV infections, with approximately 220,000 new HIV infections among children in 2014; however, this is a reduction of 58% from the number of infections in 2000, largely due to increased access to antiretroviral medications during and after pregnancy: as of June 2015, 73% (68–79%) of pregnant women living with HIV had access to antiretroviral medicines to prevent transmission of HIV to their babies [6].

Mother-to-child transmission

Mother-to-child transmission (MTCT) can occur during pregnancy, labor, delivery, or with breastfeeding and in the absence of any intervention transmission rates ranging from 15% to 45%. In high-resource settings, MTCT rates as low as 0.46% have been achieved with the use of effective combination of ART started early in pregnancy or prior to conception, attainment of undetectable HIV viral load, and avoidance of breastfeeding [7]. Cesarean section is recommended at 38 weeks of gestation only if the HIV viral load is >1000 copies/mL near the time of delivery [8]. In the US, it is now recommended that all individuals with HIV initiate ART regardless of the CD4 cell count, based on increasing evidence that earlier initiation of ART reduces morbidity due to the number of non-acquired immune deficiency syndrome (AIDS)-defining conditions, improves survival, and substantially reduces sexual transmission [9].

In lower-resource countries, perinatal transmission can be reduced below 5% with currently available interventions. In 2013, World Health Organization (WHO) released Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIV Infection in limited resource settings [10]. All pregnant women should have HIV testing and counseling on the first antenatal visit and retesting should be considered in the third trimester or peripartum, especially in settings of generalized epidemics. Key recommendations relevant to treatment of pregnant women are summarized below:

- All pregnant and breastfeeding women with HIV should initiate triple antiretroviral drugs (ART), with those meeting the treatment eligibility criteria continuing with lifelong ART. For programmatic and operational reasons, particularly in generalized epidemics, lifelong ART is preferred for all pregnant and breastfeeding women, regardless of the CD4 count (Option B+). With Option B+, ART is stopped after cessation of breastfeeding in women who do not meet the eligibility for treatment.

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