

How prenatal infections shape newborn health

Premium

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By Suhasini Inamdar & Prathap Chandra | February 17, 2026



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Regular screening of women for infections during pregnancy is a crucial step to protect the health of both mothers and babies. Image used for representational purposes only | Photo Credit: Getty Images

Prenatal infections are illnesses contracted during pregnancy or at childbirth, usually bacterial or viral in nature. They are infections that affect both the mother and the foetus.

Why do they happen? Pregnancy is associated with a physiological and immune adaptation supporting foetal development and maternal-foetal communication, and these changes make pregnant women more susceptible to infections. While the placenta is a protective barrier, certain small pathogens have the ability to cross through in instances of placental inflammation, membrane damage, or bleeding. Maternal low immunity adds to the underlying inflammatory conditions, increasing infection risk.

An estimated 60–62% of pregnant women experience some form of infection during their prenatal period, and about 4% of these may lead to serious complications in the newborn. If not detected early, such infections can lead to miscarriages, stillbirths, preterm births, or congenital disabilities.

Warning signs of infection in pregnancy that clinicians watch for include fever, abdominal pain, burning or frequent urination, blood in urine, abnormal vaginal discharge or bleeding, and unusually reduced or excessive foetal movements. More subtle symptoms that parents might overlook, such as mild rash, low-grade fever, loose stools, or vague abdominal discomfort, can also indicate an infection and must be brought to the attention of doctors.

Infections can trigger inflammation in the uterus and placenta, weakening foetal membranes and stimulating contractions, thereby increasing the risk of spontaneous preterm labour. Many maternal infections — especially urinary tract infections — can be asymptomatic, making targeted screening essential. Routine testing for urinary infections, sexually transmitted infections, and certain late-pregnancy bacterial colonisation reduces neonatal risk. Preterm birth and the risk of transmission can be significantly reduced by early detection and treatment. Women who have had a premature delivery in the past, cervical cerclage, and other risk factors need close monitoring and immediate action even for mild symptoms.

In the Neonatal Intensive Care Unit (NICU), doctors observe, first-hand, the consequence of maternal infections, which can lead to critical complications in premature infants. Infection-driven inflammation is estimated to contribute to nearly 60–70% of preterm births, as inflammatory mediators such as cytokines and prostaglandins can trigger premature labour before the foetal organs are fully mature.

Common maternal infections that harm newborns include urinary tract infections, bacteriuria, gram-negative bacteria such as *E. coli* and *Klebsiella*, and Group B *Streptococcus* colonisation. In some populations, 10–30% of pregnant women may carry urinary infections. Untreated infections increase the risk of early-onset neonatal sepsis, with symptoms such as poor feeding, lethargy, breathing difficulties, temperature instability, jaundice, pneumonia, bloodstream infections, or meningitis. Other risks include sexually transmitted diseases including chlamydia, gonorrhoea, and syphilis.

Congenital viral infections grouped as TORCH - toxoplasmosis, rubella, cytomegalovirus, and herpes, can cause hearing loss, neurological injury, developmental delays, and multi-organ damage.

Six months into her pregnancy, a mother developed a severe *E. coli* urinary infection. Though treated, the pregnancy remained fragile. At eight months, her cervical stitch was removed due to early labour, and the baby was born at 33 weeks and 4 days with very low weight.

Premature and medically unstable, the baby was put on oxygen, warmth, and monitoring in the NICU. She developed sepsis, which progressed to necrotising enterocolitis, a life threatening condition. She needed emergency bowel surgery including a temporary stoma. She made a good recovery under the best care that the NICU had to offer.

Another condition reported by teams in the NICUs is episodes of early-onset sepsis, which occur when babies have a bloodstream infection, for example, *E. coli* and *Klebsiella*. In most reviews, this is attributed to undiagnosed or untreated infections in mothers, most of which have no clinical symptoms at all.

Therefore, regular screening of women for infections during pregnancy is a crucial step to protect the health of both mothers and babies.

(Dr. Suhasini Inamdar is obstetrician and gynaecologist, Motherhood Hospitals, Indiranagar, Bengaluru. siniinam@gmail.com. Dr Prathap Chandra is consultant – paediatrician and neonatologist, Motherhood Hospitals, Indiranagar, Bengaluru. drprathap@motherhoodindia.com)

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