

New scientific review reveals huge gaps in understanding preterm birth

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Preterm birth is now the leading cause of death for children under 5 worldwide, and a new scientific paper reveals a startling lack of knowledge about what causes it and how to prevent it.

Published in the November issue of *Science Translational Medicine*, "Prevention of Preterm Birth: Harnessing Science to Address the Global Epidemic" shines a light on the urgent need for a larger, coordinated research effort to discover how to identify women at risk of preterm birth and develop prevention interventions.

"There are not enough resources dedicated to researching the complex problem of preterm birth and its prevention," said lead author Craig Rubens, MD, PhD, executive director of the Global Alliance to Prevent Prematurity and Stillbirth (GAPPS), an initiative of Seattle Children's. "This paper is a clarion call to the scientific community, that investing in preterm birth research will pay dividends with millions of lives saved and also save billions of dollars in healthcare expenses associated with preterm birth."

The paper provides an analysis of nine pathways that can contribute to preterm birth, including genetics, psychological and environmental stress, and infection and inflammation. It notes that approximately 70 percent of preterm births are spontaneous, and there are few known interventions that can delay labor once it has begun.

"It's easy to look at preterm birth and view it as a single endpoint,"

Rubens said. "In reality, preterm birth can have many causes and pathways. Although the end result is the same, we need to understand the different pathways so we can develop ways to prevent them."

The authors note that there are many factors that increase a woman's likelihood of a preterm birth - such as periodontal disease, poor pregnancy weight gain, and cigarette use - but there is not much understanding of why different factors increase risk. For example, in the United States, babies of non-Hispanic black women have preterm birth rates that are 40 percent greater than those of Hispanic and non-Hispanic white women, and this difference persists even after adjustment for maternal socioeconomic status and education. Unfortunately, even less is understood about the risk factors, disparities, and causes of preterm birth in high-burden, low-resource countries.

There is a need for more research "to better understand the biology of pregnancy and how [different] risk factors contribute to preterm birth in order to develop effective strategies for early detection and prevention," the authors write.

The paper distills the state of preterm birth research into a central analysis, while conveying the tremendous burden of preterm birth and the urgent need for more research to understand its causes. The authors point out some major challenges, including the fact that pregnancy research involves studying two individuals - the mother and the fetus - at the same time, as well as the influence of the genetics of the father. They also pose a number of questions that can help lay the foundation for what future research should seek to address and how research can be translated into practical interventions. Additionally, the paper identifies barriers to pregnancy research, including the perception of risk and liability, which deters scientists and pharmaceutical companies from testing diagnostics and therapeutics during pregnancy.

The authors note, "The gaps in knowledge about the basic biology of both term and preterm pregnancy, including what constitutes normal gestational length in any given population, leave clinicians with few tools to prevent [preterm birth]. This is the fundamental reason that most prematurity intervention efforts are actually aimed at care of the woman in [preterm labor](#) and care of the preterm neonate, rather than prolonging gestation or stopping labor."

Every year, more than 15 million babies are born too soon around the world, and more than one million of them don't survive infancy. Even in high-income countries with advanced medical technology, preterm birth remains the leading cause of infant mortality. In the U.S., 1 in 9 babies is born too soon, and studies have found that [preterm birth](#) costs society more than \$26 billion a year in the U.S. alone.

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