This Month...

**Birth Defects**
- Zika Virus NS4A and NS4B Proteins Deregulate Akt-mTOR Signaling in Human Fetal Neural Stem Cells to Inhibit Neurogenesis and Induce Autophagy.
- A Summary of Pathways or Mechanisms Linking Preconception Maternal Nutrition with Birth Outcomes

**Newborn**
- Why do maternal and newborn deaths continue to occur?
- Setting the global health agenda: The influence of advocates and ideas on political priority for maternal and newborn survival.

Upcoming event

27th International Conference on Spina Bifida and Hydrocephalus  
28-30 October 2016 // Ghent, Belgium

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Publication

Ending Preventable Maternal, Newborn and Child Mortality

Regional Technical Advisory Group Meeting, Recommendations and Report, December 2015

Under the Regional Flagship project on ending preventable maternal and child mortality with a focus on reducing newborn mortality, the WHO Regional Director for South-East Asia has appointed the Technical Advisory Group (SEAR-TAG) to provide guidance to national governments, implementing partners and other stakeholders on how best to accelerate implementation of strategies, and monitor these. The inaugural meeting of SEAR-TAG was organized on 15–18 December 2015 to evolve a shared understanding of priorities, challenges and high impact approaches for reducing newborn mortality.

SEAR-TAG members, RMNCAH nodal persons from the ministries of health from Member States, representatives of UN agencies and other partners, INGOS and NGOs, representatives of Professional associations and WHO Collaborating Centres participated in the meeting. There were deliberations to examine and identify ways to expand equitable coverage of evidence-based interventions for mothers and newborns; improving quality of care; and improve registration of births and deaths of mothers and newborns as well as stillbirths. The report provides the summary of proceedings of the SEAR-TAG meeting and the recommendations.

Full information
Zika Virus NS4A and NS4B Proteins Deregulate Akt-mTOR Signaling in Human Fetal Neural Stem Cells to Inhibit Neurogenesis and Induce Autophagy.

Qiming Liang, Zhifei Luo, Jianxiong Zeng, Weiqiang Chen, Suan-Sin Foo, Shin-Ae Lee, Jianning Ge, Su Wang, Steven A. Goldman, Berislav V. Zlokovic, Zhen Zhao, Jae U. Jung

Highlights

- ZIKV infects human fNSCs, leading to defective neurogenesis and increased autophagy
- Expression of ZIKV NS4A and NS4B blocks neurogenesis and promotes autophagy
- Two ZIKV proteins, NS4A and NS4B, inhibit Akt-mTOR signaling.

Summary

The current widespread outbreak of Zika virus (ZIKV) infection has been linked to severe clinical birth defects, particularly microcephaly, warranting urgent study of the molecular mechanisms underlying ZIKV pathogenesis. Akt-mTOR signaling is one of the key cellular pathways essential for brain development and autophagy regulation. Here, we show that ZIKV infection of human fetal neural stem cells (fNSCs) causes inhibition of the Akt-mTOR pathway, leading to defective neurogenesis and aberrant activation of autophagy. By screening the three structural proteins and seven nonstructural proteins present in ZIKV, we found that two, NS4A and NS4B, cooperatively suppress the Akt-mTOR pathway and lead to cellular dysregulation. Corresponding proteins from the closely related dengue virus do not have the same effect on neurogenesis. Thus, our study highlights ZIKV NS4A and NS4B as candidate determinants of viral pathogenesis and identifies a mechanism of action for their effects, suggesting potential targets for anti-ZIKV therapeutic intervention.

A Summary of Pathways or Mechanisms Linking Preconception Maternal Nutrition with Birth Outcomes.

King JC

Abstract

Population, human, animal, tissue, and molecular studies show collectively and consistently that maternal nutrition in the pre- or periconception period influences fetal growth and development, which subsequently affects the individual's long-term health. It is known that nutrition during pregnancy is an important determinant of the offspring's growth and health. However, now there is evidence that the mother's nutritional status at conception also influences pregnancy outcome and long-term health. For example, the mother's nutritional status at conception influences the way energy is partitioned between...
maternal and fetal needs. Furthermore, placental development during the first weeks of gestation reflects maternal nutrition and establishes mechanisms for balancing maternal and fetal nutritional needs. Also, maternal nutritional signals at fertilization influence epigenetic remodeling of fetal genes. These findings all indicate that maternal parenting begins before conception. The following papers from a symposium on preconception nutrition presented at the 2015 Scientific Sessions and Annual Meeting of the ASN emphasize the importance of maternal nutrition at conception on the growth and long-term health of the child.

Newborn

Why do maternal and newborn deaths continue to occur?


Roos N, von Xylander SR.

Abstract

According to estimates in 2015, there were 303,000 maternal deaths, 2.7 million newborn deaths and 2.6 million stillbirths. A wide range of factors, from health system dynamics to social determinants of health and underlying health conditions, contribute to this outcome. The highest mortality risk for mothers and their babies is on the day of birth, and most of these deaths are preventable. The largest burden of deaths occurs in low-income countries, particularly in sub-Saharan Africa and South Asia, due to their young population and high fertility. Substantial reductions in maternal and newborn mortality have been achieved between 1990 and 2015, but it has not been fast enough and stillbirths continue to remain uncounted in many national vital statistics systems. Lack of a universal definition and classification system for stillbirths is an obstacle for preventing stillbirths, hindering the design of effective interventions.

Setting the global health agenda: The influence of advocates and ideas on political priority for maternal and newborn survival.


Smith SL, Shiffman J.

Abstract

This study investigates a puzzle concerning global health priorities-why do comparable issues receive differential levels of attention and resources? It considers maternal and neonatal mortality, two high-burden issues that pertain to groups at risk at birth and whose lives could be saved with effective intrapartum care. Why did maternal survival gain status as a global health priority earlier and to a greater degree than newborn survival? Higher mortality and morbidity burdens among newborns and the cost-effectiveness of interventions would seem to predict that issue’s earlier and higher prioritization. Yet maternal survival emerged as a priority two decades earlier and had attracted considerably more attention and resources by the close of the Millennium Development Goals era. This study uses replicative process-tracing case studies to examine the emergence and growth of political priority for these two issues, probing reasons for unexpected variance. The study finds that maternal survival’s grounding as a social justice issue spurred growth of a strong and diverse advocacy network and aligned the issue with powerful international norms (e.g. expectations to advance women’s rights and the Millennium Development Goals), drawing attention and resources to the issue over three decades. Newborn survival’s disadvantage stems from its long status as an issue falling under the umbrellas of maternal and child survival but not fully adopted by these networks, and with limited appeal as a public health issue advanced by a small and technically focused network; network expansion and alignment with child survival norms have improved the issue’s status in the past few years.

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