

Prenatal Cognitive Behavioral Therapy

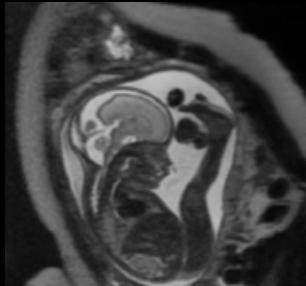
for Pregnant Women Carrying Fetuses Diagnosed with Critical Heart Disease

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What is this Study About?

Research funded by the **Brain & Behavior Research Foundation**, National Alliance for Research on Schizophrenia & Depression (NARSAD) Award

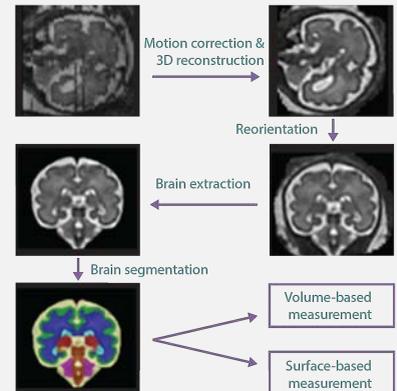


Sagittal view of a fetal MRI (26 weeks)

Pregnancy-related stress, anxiety or depression can result in detrimental effects on maternal and child outcomes. A prenatal diagnosis of congenital heart disease (CHD) has been shown to significantly increase maternal psychological distress. Our pilot studies in pregnant women with a fetal diagnosis of CHD suggest an alarming high prevalence (>60%) of prenatal psychological distress. Notably, survivors of CHD experience long-term learning and social-behavioral difficulties despite successful neonatal cardiac repair. A growing body of evidence suggests neurobehavioral dysfunction in CHD likely has its origins in the fetal period.

We have pioneered advanced non-invasive fetal magnetic resonance imaging (MRI) techniques to study in utero brain development. Our pilot data suggest that prenatal maternal psychological distress is associated with impaired global brain and regional hippocampal and cerebellar development in fetuses with CHD. Cognitive behavioral therapy (CBT) is a mood management intervention, which aims to improve mental health through thoughts, behaviors, and social contacts. Recent studies have demonstrated the success of CBT in reducing perinatal maternal stress and depression; however, no study has examined the effectiveness of CBT in pregnancies with fetal CHD.

In this study, we will examine the impact of a prenatal CBT intervention on psychological distress reduction in pregnant women carrying fetuses with a diagnosis of CHD; and to delineate the impact of a prenatal maternal CBT intervention on in vivo brain growth in CHD fetuses using advanced 3D volumetric MRI.



Why is it important?

Prenatal psychological distress is a prevalent, modifiable risk factor that is clinical under-appreciated in pregnant women carrying fetuses with CHD.

The successful reduction of psychological distress in this high-risk population will lead to improved maternal outcomes and fetal neurodevelopment.



Yao Wu, PhD
Research Faculty
Assistant Professor



Welcome Stephanie Norman!



Stephanie Norman
Clinical Research Nurse Program Manager

Stephanie Norman is our new Clinical Research Nurse Program Manager with over 20 years of NICU experience including practicing as a registered nurse, nurse educator and board certified Neonatal Nurse Practitioner (NNP). Her research interests include neonatal neuroprotection, neonatal congenital heart defects, and neonatal stabilization and transport.

Welcome New Interns!



JT Howard | GWU



Zahra Iqbal | GWU



Brittany Lessin | GWU



Simone Burchard | Senior
at Washington Latin Public
Charter School

Research Publications

Wu Y*, Yuan-Chiao L, Jacobs M, Pradhan S, Kapse K, Zhao L, Andescavage N, Vezina G, du Plessis A, Limperopoulos C. Association of prenatal maternal psychological distress with fetal brain growth, metabolism, and cortical maturation. *JAMA Network Open*. 2020 Jan 3;3(1):e1919940. doi: 10.1001/jamanetworkopen.2019.19940.

Wu Y*, Kapse K, Jacobs M, Andescavage N, Donofrio MT, Krishnan A, Vezina G, Wessel D, du Plessis A, Limperopoulos C. Association of maternal psychological distress with in utero brain development in fetuses with congenital heart disease. *JAMA Pediatrics*. 2020 Jan 13; doi:10.1001/jamapediatrics.2019.5316

Ottolini KM*, Andescavage N, Jacobs, M, Murnick J, Limperopoulos C. Improved brain growth and microstructural development in breast milk-fed very low birth weight premature infants. *Acta Paediatrica*. 2020 Jan 10. doi: 10.1111/apa.15168.

Congratulations

Yao Wu on your promotion to Research Faculty!



“Turning discovery into transformative care, one baby at a time.” | www.developingbrain.org

In Press

Andescavage N*, You W, Jacobs M, Kapse K, Quistorff J, Bulas D, Ahmadzia H, Gimovsky A, Baschat A, Limperopoulos C. Exploring in vivo placental microstructure in healthy and growth-restricted pregnancies through diffusion-weighted magnetic resonance imaging. *Placenta*.

Wu Y*, Limperopoulos C. Pregnancy stress, anxiety and depression sequela on neonatal brain development-Reply. *JAMA Peds*.

Wu Y*, Stoodley C, Brossard-Racine M, Kapse K, Vezina G, Murnick J, du Plessis, AJ, Limperopoulos C. Altered local cerebellar and brainstem development in preterm infants. *Neuroimage*

Featured Press

Fetal brain development with Dr. Catherine Limperopoulos

How maternal stress during pregnancy impacts baby's brain

When pregnant moms are stressed out, babies' brains suffer

Stressful pregnancies can leave fingerprint on fetal brain

Stress in expectant mothers could result in poor brain development in their unborn children

Psychological distress affects unborn fetus brain development

Mom's stress tied to brain development in fetuses with CHD

Maternal stress affects fetal brain development

Maternal mental health alters structure and biochemistry of developing fetal brain

Research Presentations

Jayapal A*, Kapse K, Limperopoulos C. Compromised region-specific brain development of fetuses and neonates with congenital heart disease. Brown Student Neurosurgery and Neurology Research Conference. Brown University. Jan 2020

Coronavirus (COVID-19) Resources

At Children's National Hospital, we have implemented strategies to limit the spread of coronavirus in our community.

As a precaution to protect our patients, families and staff, we are following the recommendations from the CDC.

