

Understanding the impact of antibiotics for neonatal intensive care

Dr. Michelle Science at SickKids and Dr. Bryan Coburn from the University Health Network describe their ground-breaking work.



How would you describe your project / what are you working on?

The bacteria that live in our intestines (the gut microbiota) play an important part of how our immune and metabolic systems develop. How we are born (by cesarean section or vaginally), how we are fed early in life (breast milk or formula) and other exposures like antibiotics can affect these bacteria with potentially long-lasting consequences for health. Infants in neonatal intensive care units (NICUs) are at increased risk of infections. We have studied the bacteria in neonates in the NICU and identified how antibiotic exposures correlate with disturbance of the neonatal microbiota, and how these alterations are related to risk of infections while in the NICU. We are especially interested in whether we can better manage antimicrobial use to minimize unnecessary harms to the microbiota in the hopes that this can limit the negative impact of antibiotics on this vulnerable population.

What are the potential applications and what does this mean for the average person?

Antibiotics have been one of the most important transformational health interventions over the past 100 years. However, we are now beginning to understand some of the harms associated with antibiotic use. In addition to selection for antibiotic resistance, which will limit the effectiveness of these lifesaving drugs, antibiotics also have dramatic effects on the bacteria that live on and in us. These bacteria are important for normal growth and development. By using sequencing technologies to assay the microbiota in NICU during and after antibiotic exposure, we hope to provide physicians with the type of information they need to use antibiotics more appropriately, limiting their negative impact on the microbiota and the future health of NICU patients.

For more information about this project: <http://www.ontariogenomics.ca/funding-opportunities/awarded-projects/spark-program/#impact-of-antibiotics>