

# CPSP study to explore serious infections in youngest patients

In the first precious week of life, 1 to 2 per 1,000 newborns will have a serious bacterial infection. During the first month, this number rises to almost 5 in every 1,000.

The term “neonatal sepsis” is used to describe most of these bacterial infections. Meningitis is also another possibility. The vast majority of the infections are transmitted from mother to infant. Recent U.S. studies have recorded changing infection patterns and some resistance to preventive treatment, but current Canadian data are limited, making it urgent to better understand the changing epidemiology of these infections.

The latest study under the Canadian Paediatric Surveillance Program aims to fill this gap. Dr. Michael Sgro, assistant professor of Paediatrics at the University of Toronto and adjunct scientist at St. Michael’s Hospital, is the study’s principal investigator. He leads a Toronto-based team that also includes support and personnel from the University of Saskatchewan.

When it is early-onset—occurring within the first seven days of life—the sepsis is mainly caused by group B *Streptococcus* (GBS) and *E. coli*. There are five risk factors for developing early-onset GBS sepsis in newborns:

- Over 18-hour rupture of membranes,
- Abnormally high body temperature (pyrexia), higher than 38°C,
- Premature labour at less than 36 weeks,
- GBS bacteriuria at anytime during pregnancy, and
- A previous child with invasive GBS disease.

If any potential risk factor exists or the mother tests positive for GBS at 35 to 37 weeks, she will normally receive antibiotics to protect the infant. However, said Dr. Sgro,

## Case definition

Study participants will report any newborn less than 7 days old who presents with one of the following:

- Positive blood culture, and/or
- Positive cerebrospinal fluid culture from a lumbar puncture.

Culture growth includes bacterial or fungal pathogens in both of the above.

“it’s hard to test for this infection in children before they are born.”

## Cultures only ordered when the bacteria are suspected

Healthcare providers detect the presence of sepsis or meningitis in the newborn through a positive blood culture and/or a positive cerebrospinal fluid culture.

How do they know when to conduct these tests? “You generally shouldn’t do the test on newborns just based on risk factors,” Dr. Sgro said. “Typically we monitor

the situation more closely. If the infant becomes sick, you would then do a blood culture and a lumbar puncture.”

The study objectives are threefold: First, the team wants to ascertain how frequently early-onset neonatal sepsis and meningitis occurs in Canada. Second, they aim to determine what types of bacteria and corresponding resistance patterns exist in these illnesses. Finally, the research will collect information on risk factors for sepsis, meningitis, and antibiotic prophylaxis in mothers.

“Meningitis would occur in only a very small portion of the group of infants that we are collecting data on,” Dr. Sgro added.

With a better understanding of the neonatal infection patterns in Canada, this surveillance proposes to improve antibiotic guidelines for mothers during labour and delivery, and management of these infections in newborns.

The study began in January, and runs until the end of 2012. 🌸

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