

Apgar score for may be tool for predicting whether mother will become critically ill

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The Apgar score that evaluates a baby's condition at birth may also be a useful

tool for predicting whether a mother is critically ill, according to new research by Dr. Joel Ray, a physician and researcher at St. Michael's Hospital. Credit: St. Michael's Hospital

The Apgar score that evaluates a baby's condition at birth may also be a useful tool for predicting whether a mother is critically ill, new research suggests.

The health of a baby and its mother are inextricably linked throughout pregnancy and delivery, yet none of the current tools used to assess the risk of "severe acute maternal morbidity" - a critically ill woman in need of transfer to an [intensive care unit](#) - have taken into account her baby's health.

Dr. Joel Ray, a physician and researcher at St. Michael's Hospital and an adjunct scientist at the Institute for Clinical Evaluative Sciences, examined health records held by ICES of more than 600,000 live births in Ontario between 2006 and 2012. He found a "very strong relation" between a baby's Apgar score and whether its mother was admitted to ICU after delivery.

In a research letter published today in the journal *JAMA Pediatrics*, Dr. Ray wrote that among mothers whose baby had a normal Apgar score five minutes after birth, 1.7 per 1,000 of the women were admitted to an ICU.

When the Apgar score fell into the intermediate range, 12.3 of every 1,000 mothers were admitted to an ICU. When the newborn's Apgar score was in the low range, the mother's rate of ICU admission rose to 18.2 per 1,000.

The Apgar score is a universal measure done by physicians, midwives and nurses. It is obtained at one minute after birth and again at five minutes. It was designed to quickly evaluate a newborn's condition to determine if the baby needs immediate medical or emergency care.

The 10-point score awards two points each for Appearance (skin colour), Pulse (heart rate), Grimace response (reflexes), Activity (muscle tone), and Respiration (breathing rate and effort) of the newborn. A normal score is considered to be 7 or higher. An intermediate score is 4 to 6 and a low score is 0 to 3.

Dr. Ray's study found that mothers whose [babies](#) had a low Apgar score had a nine-time higher risk of ICU admission than those whose baby had a normal Apgar, even upon taking into account the mother's age, number of previous deliveries, economic status and whether she had certain chronic health conditions. Mothers whose baby had an intermediate Apgar score had a 6.5-times higher risk of going to an ICU than those who had a normal Apgar.

Mothers who required mechanical ventilation in the ICU - indicating they were especially ill - were 18 times more likely to have had a baby with a low Apgar score.

A small proportion of women have a planned admission to ICU, not because they are critically ill, but for special monitoring of things such as a pre-existing heart condition. Most maternal ICU admissions are unplanned, for complications such as heavy bleeding after delivery, serious pre-eclampsia (high blood pressure) or following an emergency hysterectomy.

"Our study shows that a universally available metric for newborns - the Apgar score - provides a promising and novel application for [mothers](#) as well," said Dr. Ray. "At a minimum, it confirms that, even after birth,

the health of the baby and mother remain intimately linked."

Provided by St. Michael's Hospital

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