C5OH-related targets

How long has Ontario had C5OH-related targets on their panel?

Newborn Screening Ontario has been screening for C5OH-related targets since 2006. These targets include:

- 3-Methylcrotonyl-CoA Carboxylase (3-MCC) Deficiency
- Beta-Ketothiolase Deficiency (BKT)
- Hydroxymethylglutaric (HMG) CoA-Lyase Deficiency
- Multiple Carboxylase (Holocarboxylase Synthetase) Deficiency

Why were C5OH-related targets reviewed?

C5OH-related targets were nominated for review in 2016 based on:

1. the number of asymptomatic individuals that were being identified through screening. Most children and mothers who have test results suggesting they have 3-MCC Deficiency have no health concerns related to the diagnosis.
2. the high number of false positives (high number of children with screen positive results who do not have disease)
3. the low positive predictive value (low number of children who screen positive who have disease)

Who was involved in the review?

A task force of the Advisory Council undertook a thorough review of Newborn Screening Ontario data collected between 2006-2014, as well as an extensive literature review. The task force was made up of metabolic specialists (the doctors who would care for children identified with one of these target diseases) and screening specialists.

How was the review performed?

The task force looked at the number and types of cases being identified through newborn screening in the province. The majority of cases identified, primarily 3-MCC Deficiency, did not require medical treatment. While this condition has a higher incidence than many diseases on the newborn screening panel, whether or not it is a 'disease' has come into question with many health care specialists around the world concluding that it is a benign condition. Many mothers with 3-MCC Deficiency were also being identified through newborn screening whom had never had any symptoms of the disease. This also raised concerns that children and mothers may be receiving treatments that they do not need.

BKT, MCD and HMG CoA-Lyase Deficiency are all extremely rare. No cases of HMG CoA-Lyase Deficiency have been identified in over 10 years of newborn screening. Infants with these conditions are typically ill very soon after birth and before newborn screening results can be available.

The task force also looked at the experiences of other newborn screening programs – some newborn screening programs have never added C5OH-related targets to their panels, some have removed them as targets, and some continue to screen for them. In Germany, 3-MCC Deficiency screening was in pilot programs but the programs decided against including it in their recommended panel. In 2015, New Zealand performed a review of C5OH screening targets and made the decision to stop screening in August of that year. On their website they indicated that screening for carboxylase deficiencies was of no clinical benefit to the infant. That same year Israel published their review stating that they have stopped screening for 3-MCC Deficiency as they concluded it was a benign condition.

What was the outcome of the review?

Upon completion of the review and following consultation with the metabolic specialists in the province, the task force presented its findings to the NSO-AC with the recommendation to remove C50H-related disorders from the provincial screening panel. The Advisory Council voted unanimously to accept the recommendation of the task force. This recommendation was submitted to the Ontario Ministry of Health and Long-term Care and was accepted in the Fall of 2017.

When will this change take effect?

The four conditions mentioned above will no longer be screened by Newborn Screening Ontario as of December 1, 2017. The other conditions on the newborn screening panel will not be affected by this change.

What if I have concerns about my baby's health?

Newborn screening is a screen only. It is not a diagnostic test. If you are concerned about the health of a child please talk to your health care provider about what testing might be appropriate. Testing for the C5OH-related targets can be arranged as diagnostic tests to confirm or rule out conditions where appropriate (for example, significant family history of the disease or symptoms of the disease in a child).

Will the care of children already diagnosed with a C5OH-related disorder change?

No, the care will not change. This change only applies to newborn screening – not follow up care.

Who has been made aware of the newborn screening change?

Information regarding this change has been shared with hospitals and midwifery practices, health care providers, screening specialists, laboratories, and metabolic specialists in the province.

Who can I contact if I have questions?

If you have concerns or questions regarding this change, please do not hesitate to contact us.