

Bloodwork Protocol

At the Alberta Children's Hospital Neurometabolic Therapy Program (NMT), diets offered to patients and families living with epilepsy include the Classical Ketogenic Diet (CKD), and Low Glycemic Index Therapy (LGIT). For the safety of the patients on these ketogenic diets, bloodwork must be ordered at regular intervals.

This bloodwork routine protocol has been established by the NMT program, based on the consensus of the International Ketogenic Diet group.¹

Bloodwork is done before the start of the ketogenic diets and at regular intervals of 1 month, 4 months, 8 months, and 12 months post-start of the diet for both diet types. After the first year the patient is on diet, labs are done every 4-6 months as per individual cases (if unstable, more often). Please see the below table for ketogenic bloodwork ordered at these intervals. The bloodwork varies slightly based on diet type.

In addition to this, outside of regularly scheduled bloodwork, repeat bloodwork tests may be ordered to follow up on abnormal results, usually around 2-6 weeks after. As per below, some lab tests are labeled PRN, based on symptoms patients may present, additional bloodwork includes, but is not limited to; iron panel, ferritin, Vitamin D, zinc, CBC, copper etc. These may be ordered at the neurologist's request, only within the context of addressing side effects for the patients on ketogenic diet.

The purpose of this written protocol is to allow the Registered Dietitians of the NMT program to be able to order bloodwork "Neurology Ketogenic diet order panel" on the Connect Care program "as per protocol" as the Ordering Provider; and include the neurologist responsible for the patient, as the Authorizing Provider. The responsible neurologist is aware of all protocols and will continue to be responsible for following up on all bloodwork ordered for their patient in the program, particularly if abnormal results are obtained. Dr Juan Pablo Appendino, the head of the NMT program, can be contacted for any questions regarding this bloodwork protocol.

It is also standard practice for conditional PRN Blood Glucose checks to be ordered when a patient on a ketogenic diet is admitted. Conditions are: 1) if the patient is <1 year old, 2) NPO, 3) tolerating less or equal than 3/4 of allotted food, or 4) vomits 2 or more times in 24 hours. These conditions are written into the order set. Additionally, urine ketones are ordered BID during inpatient admissions to allow for diet assessment throughout admission. This protocol also allows for these monitoring labs included in the 'Ketogenic Diet and Management Panel Pediatrics' to be ordered by the Registered Dietitian along with diet orders and nursing communications in Connect Care program "as per protocol" as the Ordering Provider; and include the Neurologist responsible for the patient, as the Authorizing Provider.

Test	Baseline Labs	LGIT Path – F/Up	CKD Path – F/Up	Ketogenic Diet Mgtmt Order Panel – Inpatient Admissions
Blood				
Acylcarnitine Profile	X			
Albumin	X	X	X	
ALT	X	X	X	
AST	X	X	X	
Beta hydroxybutyrate	X	X	X	
Bicarbonate	X	X	X	
BUN	X	X	X	

Calcium	X	PRN	PRN	
Carnitine, Total and Free	X	X*	X*	
CBC with platelets	X	PRN	PRN	
Creatinine	X	X	X	
Electrolytes	X	X	X	
Ferritin	PRN	PRN	PRN	
Glucose – Random	X	X	X	X
Iron Panel	PRN	PRN	PRN	
Lipase	X	X	X	
Lipid Profile – Fasting	X	X	X	
Magnesium	X			
Organic Acids	X			
Phosphate	X			
Selenium – Serum	X	X*	X*	
Total Protein	X	X	X	
Vitamin D	PRN	PRN	PRN	
Zinc	PRN	PRN	PRN	
Urine				
Urinalysis	X	X	X	X
Urine Ca:Crea Ratio	X	X	X	
Organic acids	X			

X* Carnitine and Selenium only checked at 4 and 12 months in the first year of diet, or if for any circumstances, supplements are not provided during the treatment period. PRN = as needed, according to clinical scenario, to be decided by RD and MD.

Yours sincerely,



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References:

- Optimal clinical management of children receiving dietary therapies for epilepsy: Updated recommendations of the International Ketogenic Diet Study Group. Eric Kossoff et. Al *Epilepsia Open*. 2018 May 21;3(2):175-192. doi: 10.1002/epi4.12225. eCollection 2018 Jun. [Optimal clinical management of children receiving dietary therapies for epilepsy: Updated recommendations of the International Ketogenic Diet Study Group - Kossoff - 2018 - Epilepsia Open - Wiley Online Library](#)