Newborn Screening Follow-up for Isolated C4 Acylcarnitine Elevations (also applies to any plasma or serum C4 acylcarnitine elevation)*

Isolated elevation of C4 acylcarnitine

- Perform:
  - C4U / C4 Acylcarnitines, Quantitative, Urine
  - OAU / Organic Acids Screen, Urine
  - ACYLG / Acylglycines, Quantitative, Urine
  - AND 1 of the following:
    - ACRN / Acylcarnitines, Quantitative, Plasma
    - ACRNS / Acylcarnitines, Quantitative, Serum

- Routine labs performed locally: Glucose, electrolytes, blood gases, ammonia

- Plasma or serum C4–High
- Urine C4–High
- Urine isobutyrylglycine–High or Normal

  Diagnostic for isobutyryl-CoA dehydrogenase (IBDH) deficiency
  - Consider confirmatory testing for ACAD8 (IBDH) gene

- Plasma or serum C4–High or Normal
- Urine C4–High or Normal
- Urine ethylmalonic acid–High

  Diagnostic for short chain acyl-CoA dehydrogenase (SCAD) deficiency
  - Call for clinical consultation to determine the necessity for molecular testing: SCADZ / Short-Chain Acyl-CoA Dehydrogenase (SCAD) Deficiency, Full Gene Analysis

- Plasma or serum C4–High
- Urine C4–High
- Urine ethylmalonic acid and isovalerylglycine–High

  Diagnostic for ethylmalonic encephalopathy
  - Consider confirmatory testing for ETHE1 gene

- Plasma or serum C4–Normal
- Urine C4–Normal
- Urine isobutyrylglycine–Normal

STOP

* Interpretive report provided for all tests in this algorithm