USING THE GI-MAP® IN PEDIATRICS

GI-MAP®
GI Microbial Assay Plus

PATHOGENS

- Detection of pathogens in pediatrics is common
  - Especially in young children due to frequent fecal-oral exposures
- May not require direct treatment
  - Consider commensal organisms, digestion, immunity, exposures
- Evaluate clinical presentation and symptoms for context
- Assess GI-MAP Intestinal Health Markers (page 4) for immune activation and inflammation
  - Occult Blood – FIT, Secretory IgA, Eosinophil Activation Protein, Calprotectin, Zonulin

HELICOBACTER PYLORI

- Can be commensal or even protective in children
  - May reduce the risk of asthma, allergies, and esophageal reflux
- May not require treatment
- Consider treating if:
  - Extremely high levels
  - Persistently high *H. pylori* on serial testing
  - Highly symptomatic
  - Virulence factors present

Common Dysbiosis Patterns in Children

COMMENSAL/KEYSTONE BACTERIA

- GI microbiome develops in a predictable pattern over the first 2-3 years of life
- Change is rapid within the first 12 months
  - Low commensals and presence of pathogens and/or inflammatory opportunists are common in this first year
  - By 12 months, most commensal flora should be developed
- Commensals are expected to look significantly different in infants/children compared to adults.

- Pediatric considerations:
  - *Bifidobacterium* spp. - higher levels expected/ideal
  - *Akkermansia muciniphilia* – develops 5-9 months
  - *Faecalibacterium prausnitizi* – develops *9-12 months*
  - *Bacteroidetes* phylum – develops within 12 months

- Factors that can affect pediatric microbiome maturation:
  - Diet: nursing/weaning status
  - Medical history: gestational age, method of delivery, hospitalization, antibiotic history

OPPORTUNISTIC OVERGROWTH MICROBES

- Opportunistic bacteria, even inflammatory microbes, may be higher within the first 18 months, as this is part of healthy, normal immune development
- May not require treatment, especially in infants
- Consider treating if:
  - Extremely high levels
  - Symptoms present

FUNGI/YEAST

- *Candida* spp. is a common finding in children
- Consider treating in context with clinical symptoms

PARASITES

- Certain protozoa such as *Blastocystis hominis*, *Dientamoeba fragilis*, and *Endolimax nana* are common findings in children due to frequent fecal-oral exposures
- Consider treatment if:
  - Multiple protozoa are present, especially *B. hominis* or *D. fragilis*
  - Symptoms present

GI-MAP Intestinal Health Markers

Marker	Pediatric Considerations
Steatocrit	• Expect normal range
Elastase-1	• Expect normal range • By 18–24 months, children should have fully mature enzyme production, with elastase levels typically >500 μg/g, which is considered optimal
ß-Glucuronidase	• Expect normal range
Occult Blood – FIT	• Expect normal range • <dl optimal
Secretory IgA	• Expect normal range • Low levels indicate poor immune function and tolerance • High levels indicate immune activation, stress, potential infection, and possible food intolerances
Anti-gliadin IgA	• Expect normal range • Elevated levels indicate mucosal sensitivity to gluten/gliadin protein • Does not rule in or rule out celiac disease
Eosinophil Activation Protein	• Expect normal range • Elevated levels may indicate food sensitivities, potential allergies, GI immune activation
Calprotectin	• Elevated levels can be normal in children up to age ~4. • Consider working reference range ~350 μg/g
Zonulin	• High levels can be normal in infants and young children, tending to normalize around 12-18 months

TREATMENT APPROACHES

⭐ Always individualize care

⭐ Less is more: Children often respond quickly and require minimal intervention

⭐ Support the foundations: Use diet, lifestyle and supportive nutrients first
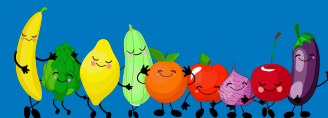
Common Interventions

- Support normal flora: Probiotics, prebiotics, fiber, polyphenols
- Barrier support: Butyrate, L-glutamine (with caution), collagen, NAG
- Digestive support: Chewable enzymes, bitters, relaxation before meals
- Immune support: Colostrum, elderberry, mushrooms
- Diet modifications: High yield eliminations - dairy, gluten, eggs

Antimicrobials

- Favor botanicals over pharmaceuticals in most cases
- Consider delivery method and taste and texture preferences
- Use selectively - considerations:
  - Multiple pathogens/opportunistic organisms present
  - Persistent symptoms despite other interventions
  - Advise caution with antimicrobial treatment under 12 months of age
  - Use Clark's rule as guidelines for pediatric dosing

Use GI-MAP in Confidence with your PEDS Patients!

Diagnostic Solutions laboratory