Functional syndromes in kids

PAUL KAHLKE

Updates from pediatrics

1) Nursery coming

Tier 3 Funded nursery coming!

Allow deliveries to 34wks, care of moderately ill infants

Next steps: Renovation, recruitment, training

2) Dr. Nicole Arseneau

Stollery Children’s Hospital, with a focus on adolescent health, gender medicine, and mental health.

In her spare time Dr. Arseneau enjoys spending time outside - hiking, biking, camping, skiing, you name it

3) Waitlist issues

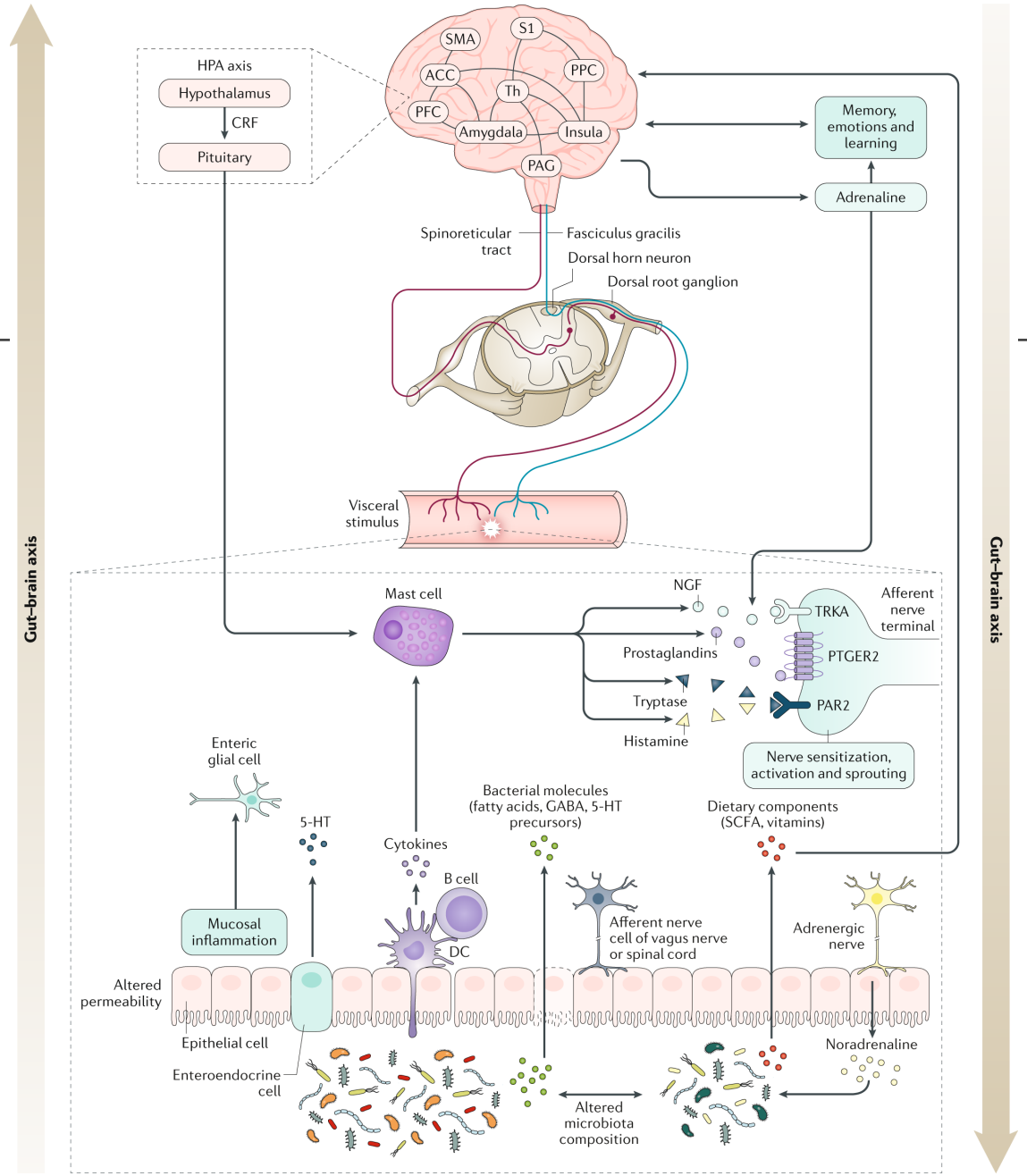
Functional syndromes

What does FUNCTIONAL mean?

The child's psychosocial functioning is decreased

The function of the organ system is impaired

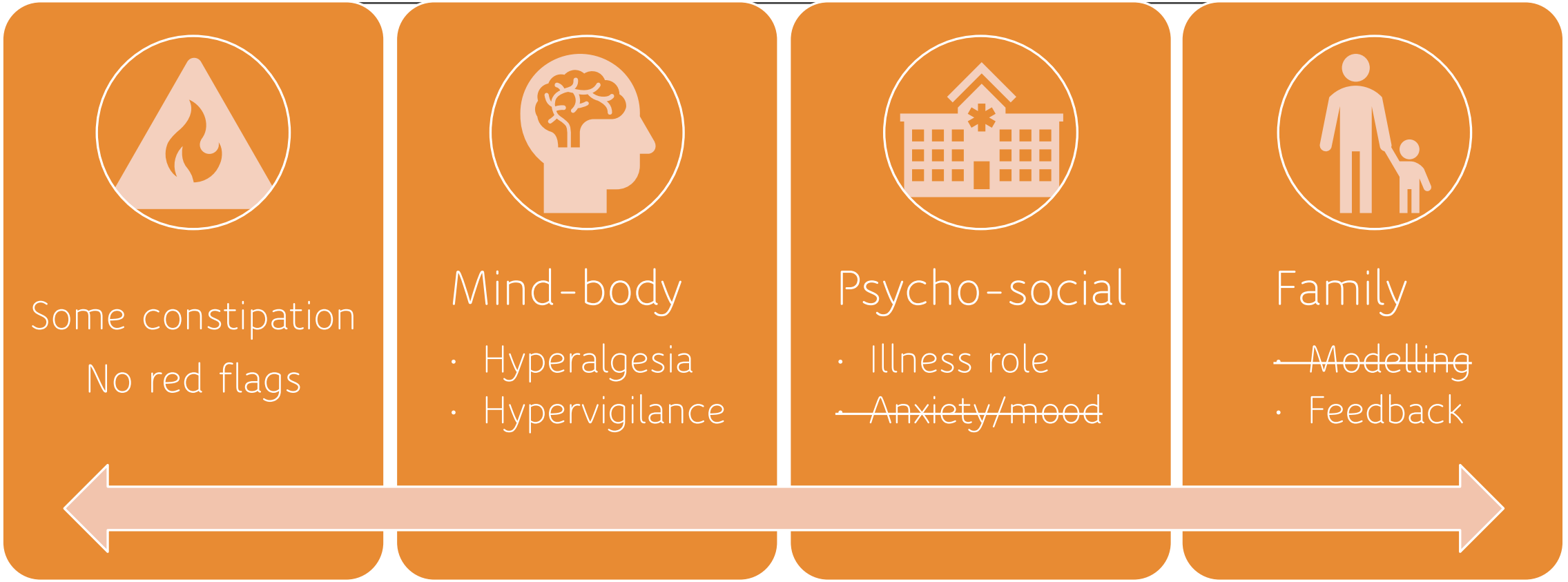
Organic causes have been ruled out

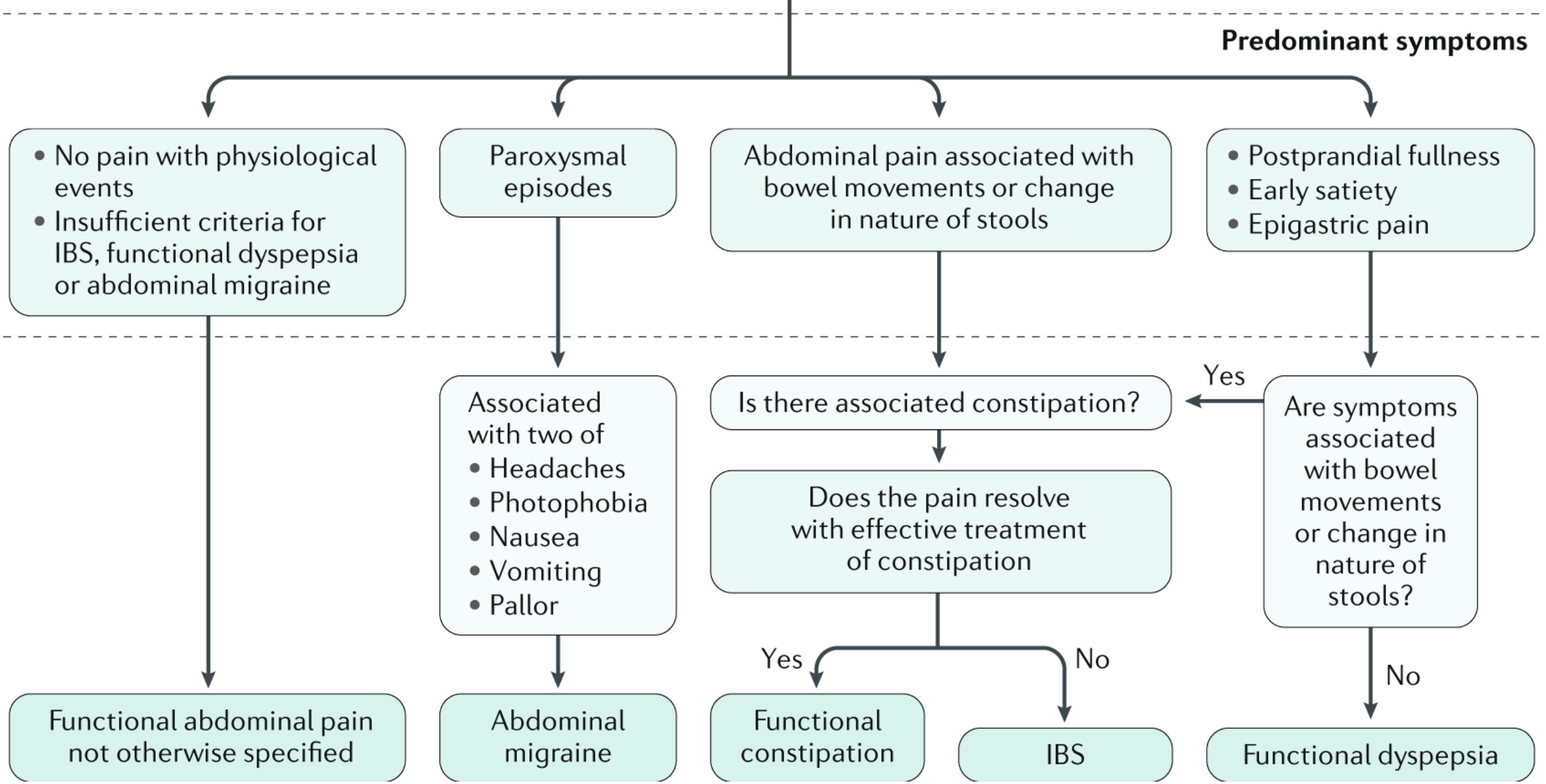

Gut–brain axis
HPA axis
Hypothalamus
CRF
Pituitary
SMA
S1
ACC
PPC
Th
PFC
Amygdala
Insula
PAG
Memory, emotions and learning
Adrenaline
Spinoreticular tract
Fasciculus gracilis
Dorsal horn neuron
Dorsal root ganglion
Visceral stimulus
Mast cell
NGF
Prostaglandins
Tryptase
Histamine
TRKA
Afferent nerve terminal
PTGER2
PAR2
Nerve sensitization, activation and sprouting
Enteric glial cell
5-HT
Cytokines
B cell
DC
Bacterial molecules (fatty acids, GABA, 5-HT precursors)
Dietary components (SCFA, vitamins)
Afferent nerve cell of vagus nerve or spinal cord
Adrenergic nerve
Mucosal inflammation
Altered permeability
Epithelial cell
Enteroendocrine cell
Noradrenaline
Altered microbiota composition
Gut–brain axis

Functional disease components

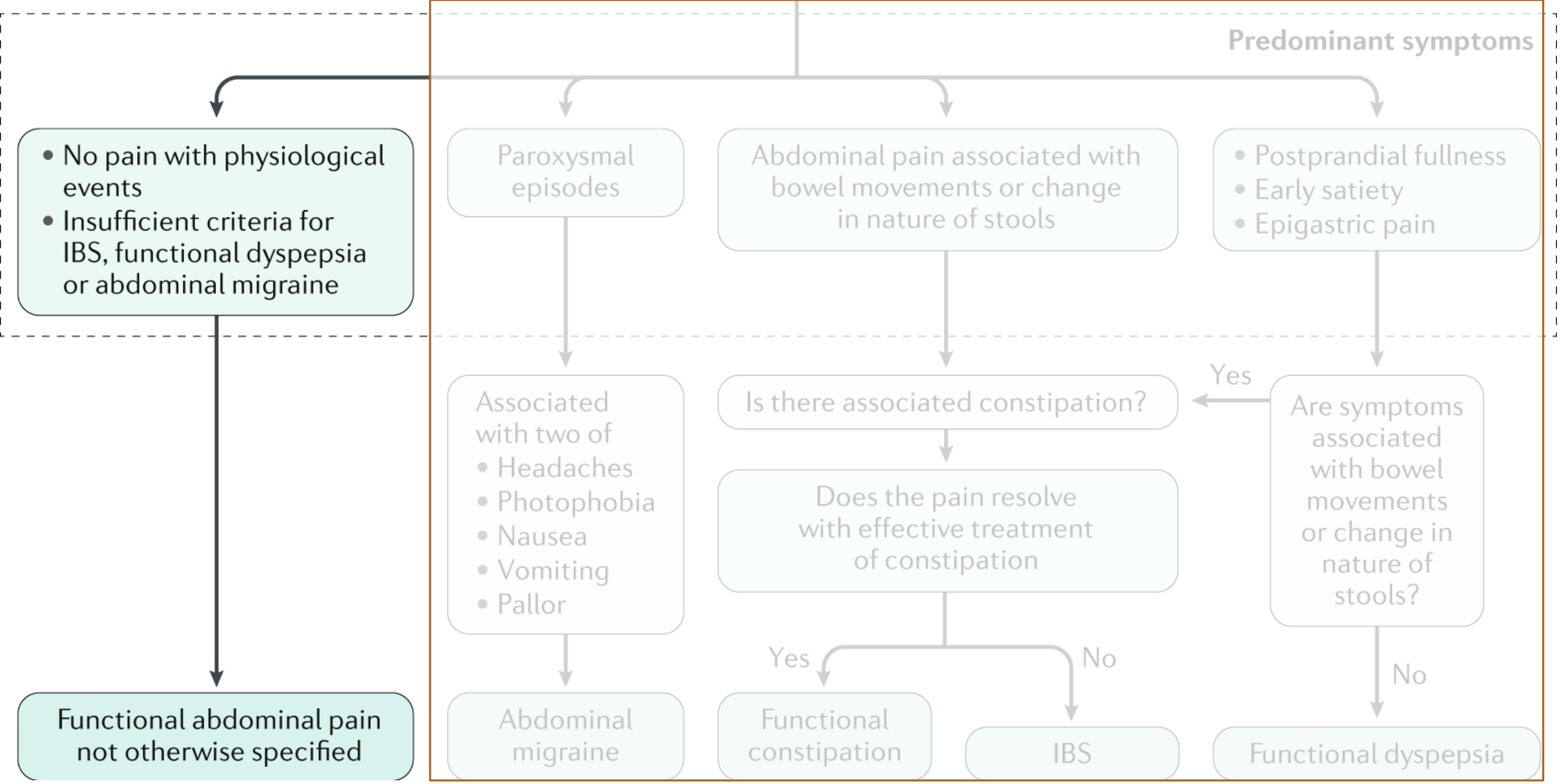
Case 1

Functional disease components





Thapar et al 2020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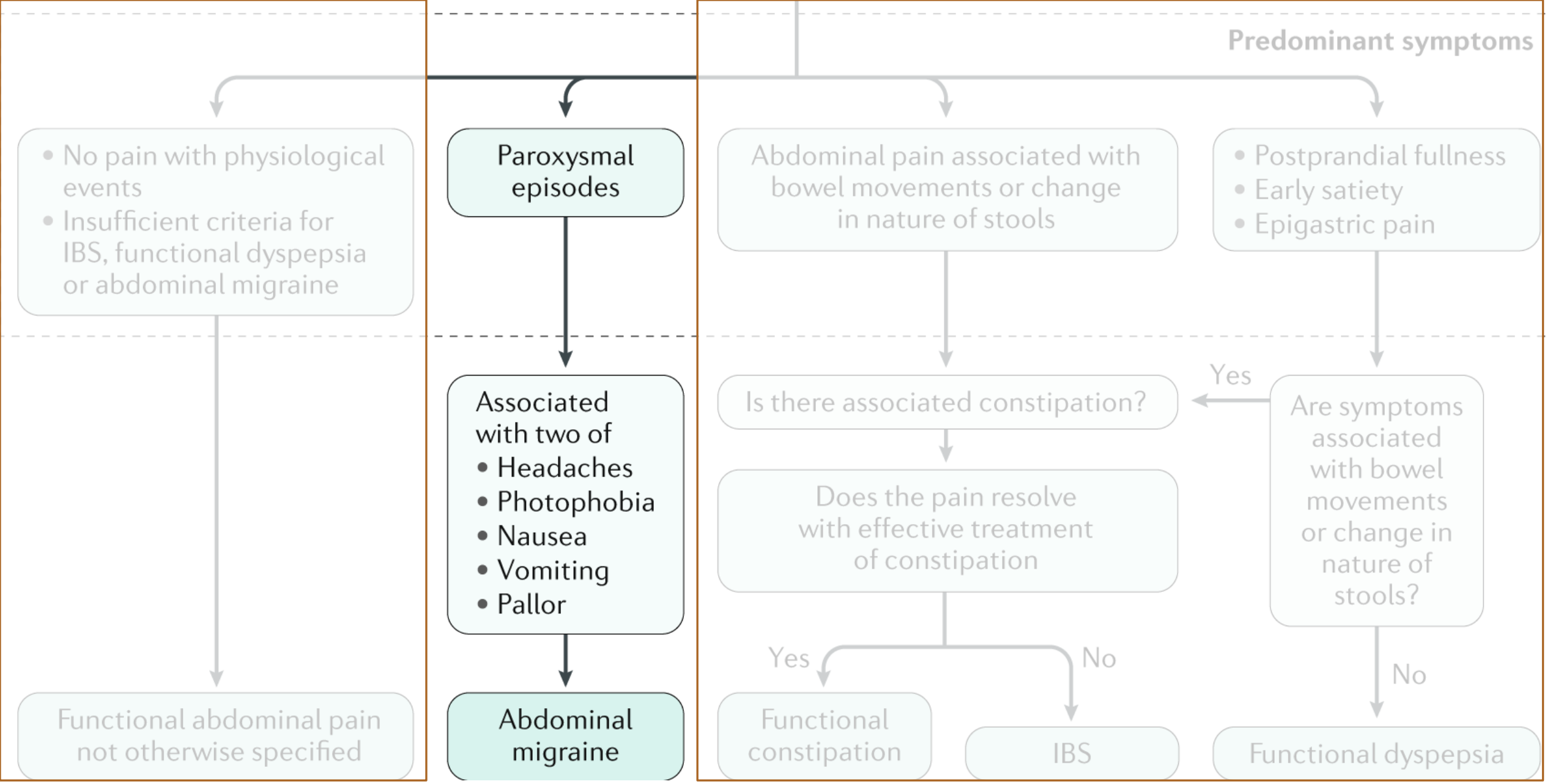
• No pain with physiological events
• Insufficient criteria for IBS, functional dyspepsia or abdominal migraine
Paroxysmal episodes
Abdominal pain associated with bowel movements or change in nature of stools
• Postprandial fullness
• Early satiety
• Epigastric pain
Associated with two of
• Headaches
• Photophobia
• Nausea
• Vomiting
• Pallor
Is there associated constipation?
Yes
Are symptoms associated with bowel movements or change in nature of stools?
Does the pain resolve with effective treatment of constipation
Yes
No
No
Functional abdominal pain not otherwise specified
Abdominal migraine
Functional constipation
IBS
Functional dyspepsia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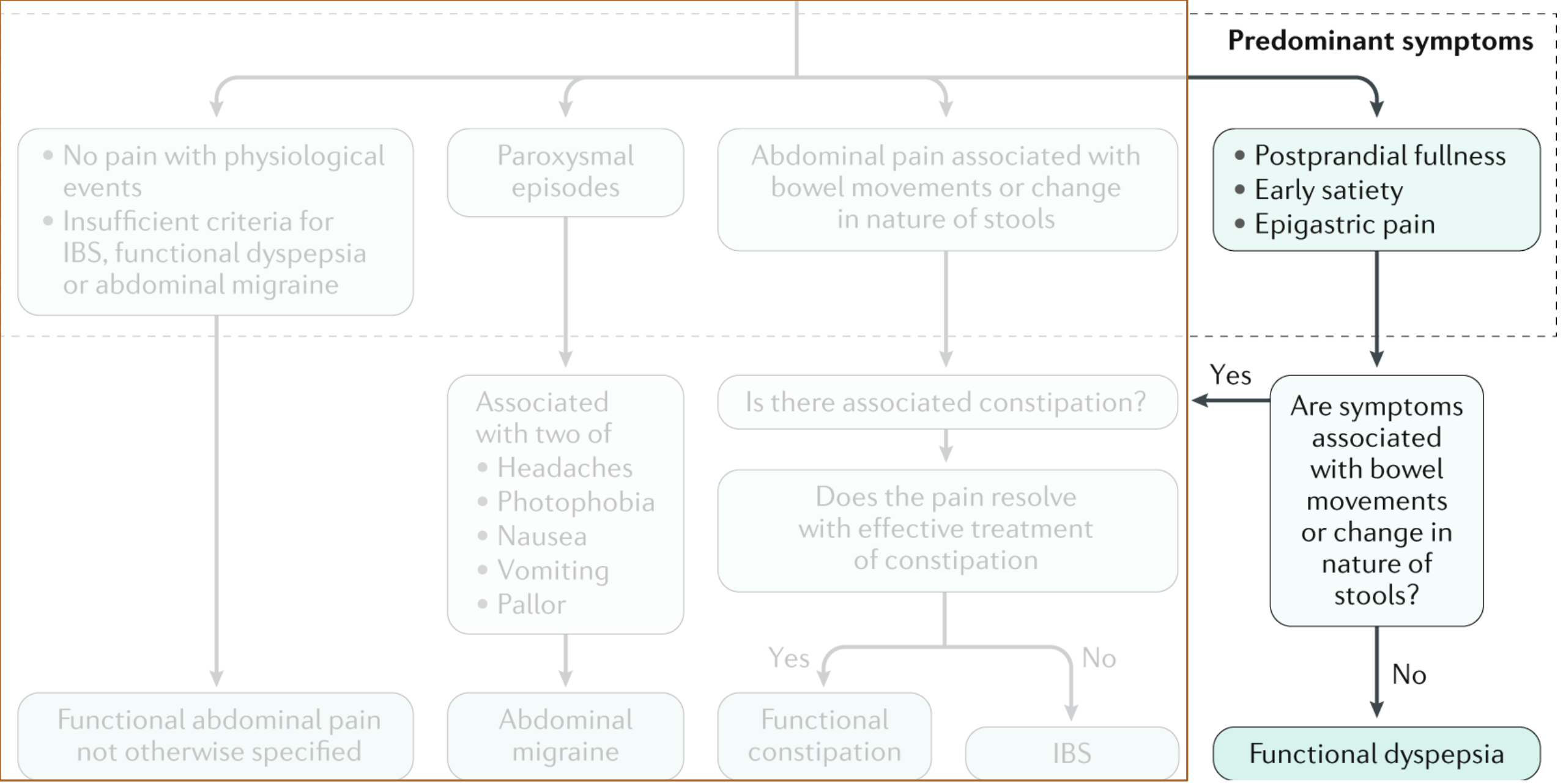
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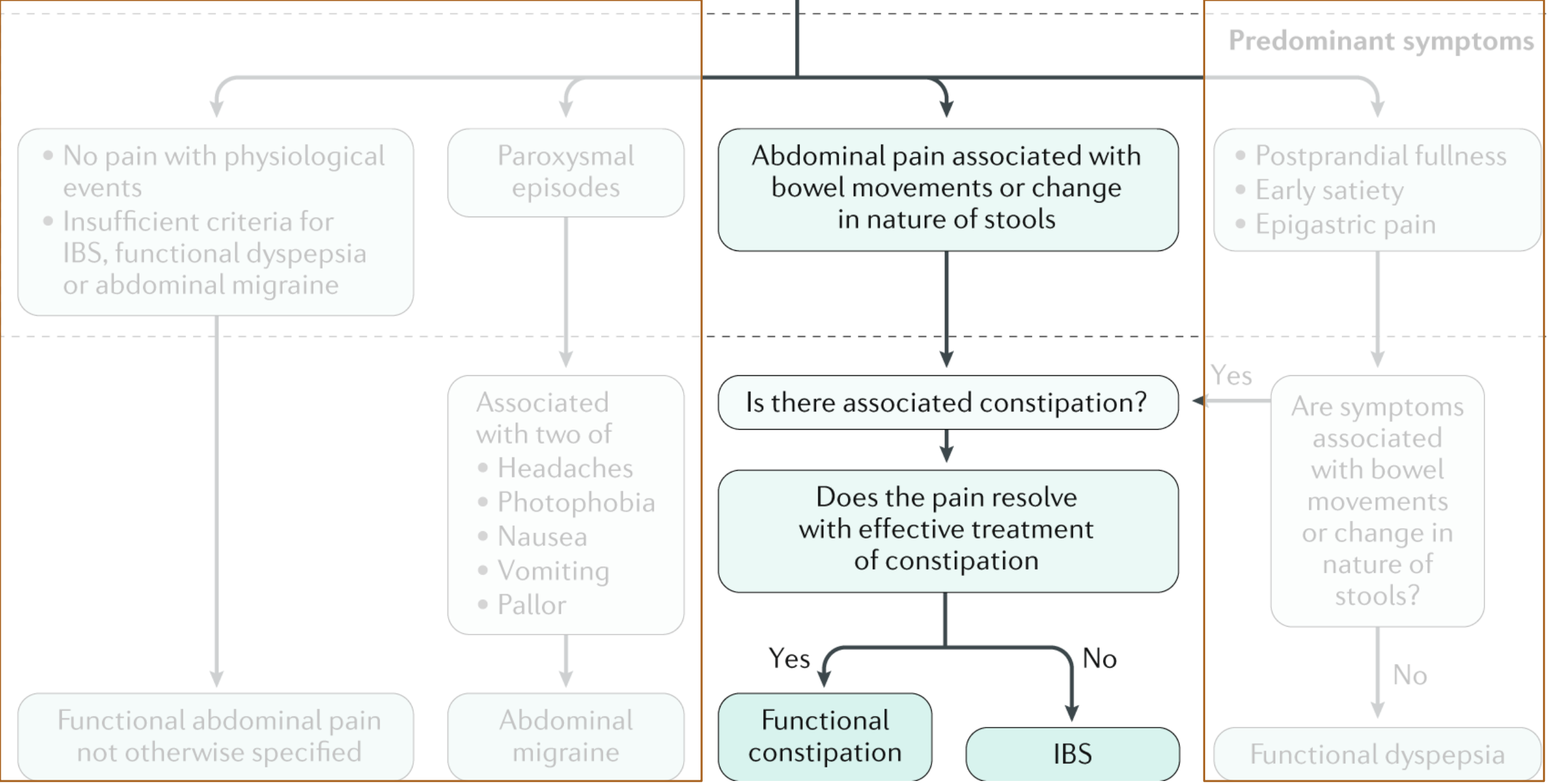
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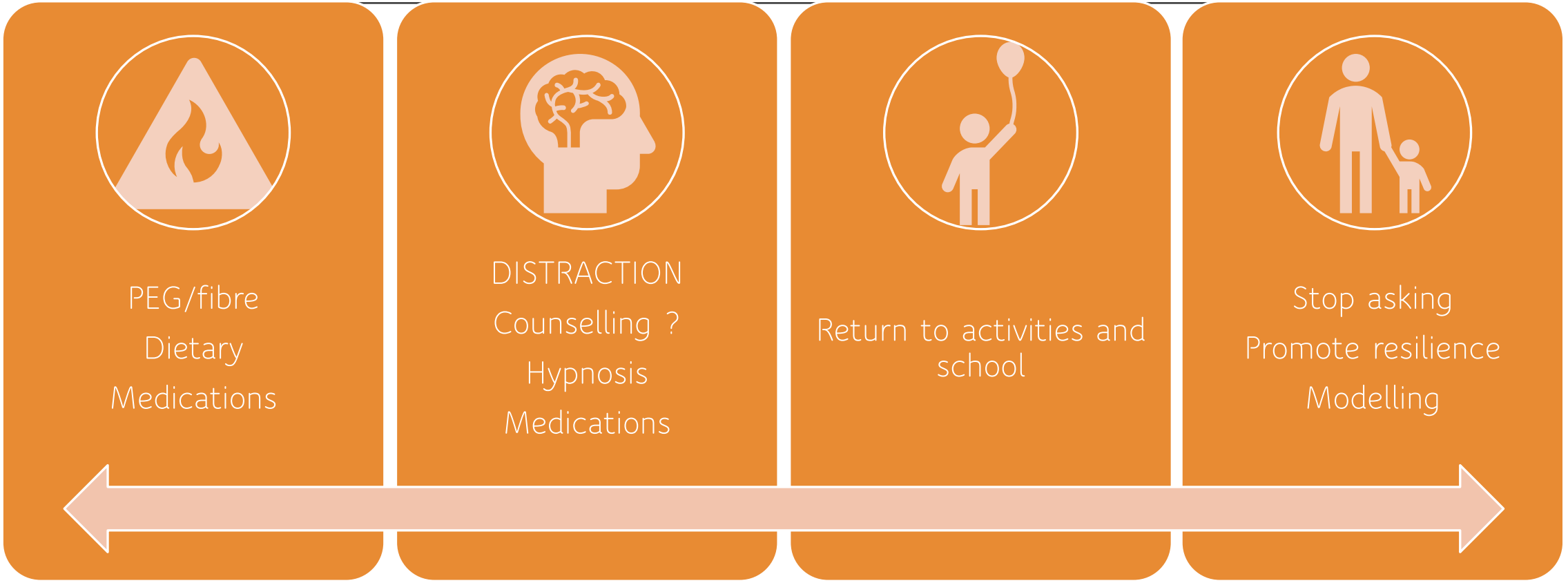
Tests

Often	Sometimes	Almost never
• CBC, CRP, ALT, Celiac screen	• Fecal calprotectin • Stool O&P, PCR	• Ultrasound • Xray • Allergy testing

Multi-targeted treatment plan



Hypnosis4abdominalpain.com

Hypnosis For AbdominalPain

Home For whom? About hypnosis Who are we? Research For professionals Order FAQ Contact

Welcome

10 -15% of the world's children suffer from abdominal pain – too many! **Our research reveals that listening to self-hypnosis recordings helps more than 70% of children.** Using self-hypnosis also reduces medical and psychological visits, improves quality of life, **increases school attendance, self-confidence — and even sleep improves!**

Abdominal pain is troublesome and annoying

By missing school, not playing sports or being with friends, abdominal pain impacts many parts of children's lives. **This ongoing pain is caused by irritable bowels.** Genetic predisposition,

Waiting for hypnosis4abdominalpain.com...

Type here to search

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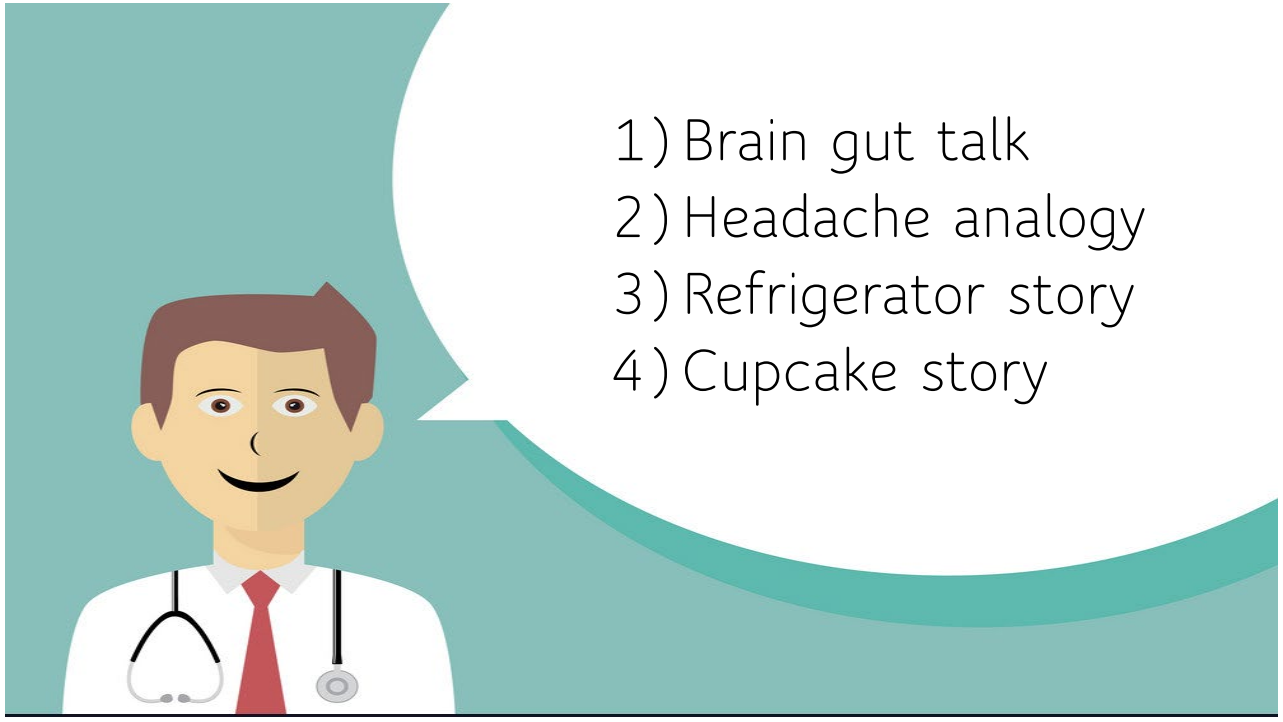
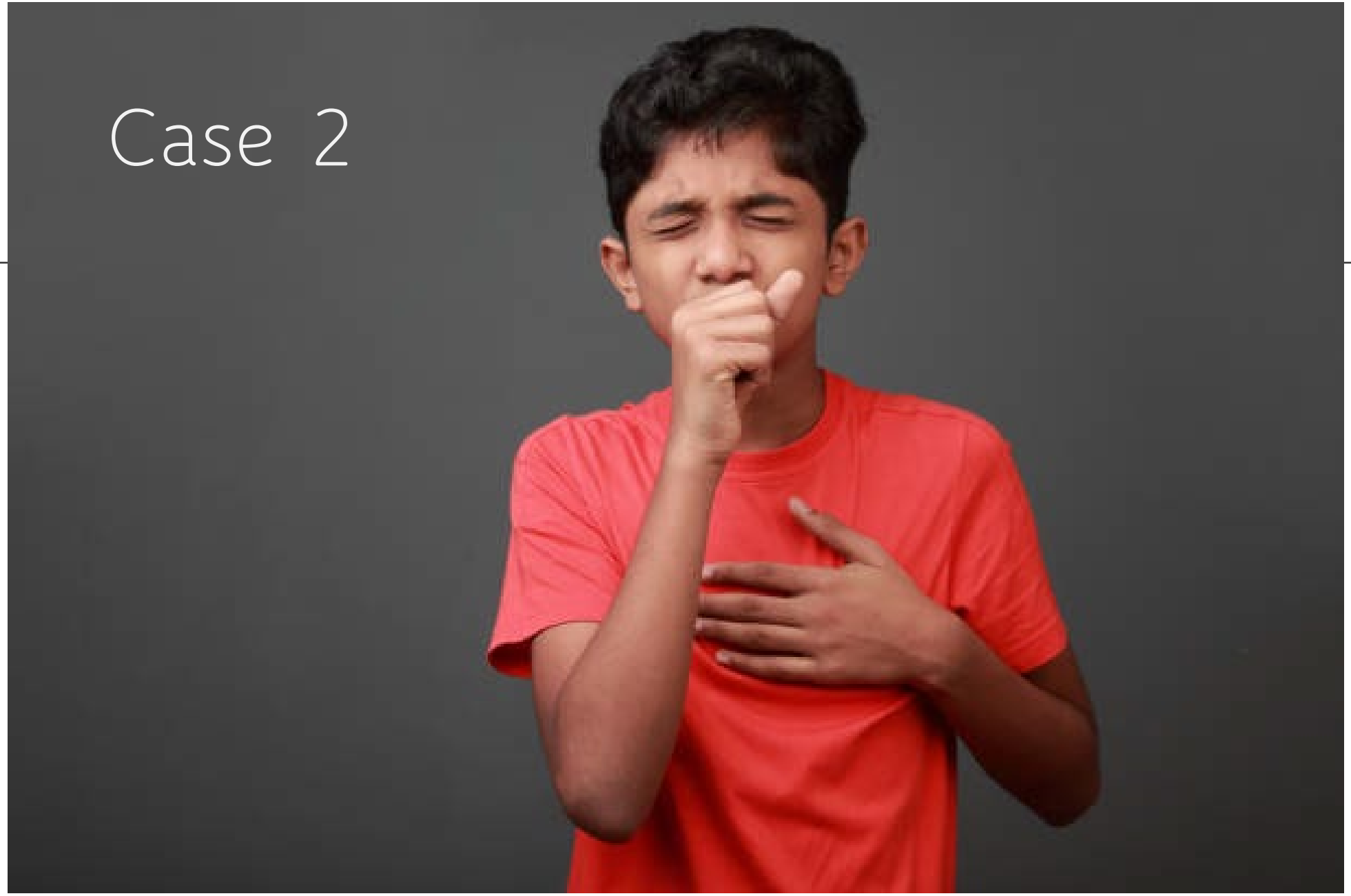
Pharmacology (rarely)

AP-NOS	Abdo Migraine	IBS-C	IBS-D	Dyspepsia
· Peppermint oil · Cyproheptadine · Amitriptyline	· Amitriptyline · Various	· PEG · Fibre	· FODMAPS? · Loperamide	· PPI · Cyproheptadine

Talking to families



Case 2



Habit cough

Almost all kids with chronic cough without wheeze

Not just kids with tics or ADHD

Diagnosis is usually the only treatment needed

Case 3

Avoidant restrictive food intake disorder (ARFID)

Most are anxious, hypervigilant

Often a fear of choking or of throat tightness

Reassurance, collaborative goal setting

Many go on to have anorexia nervosa as teens

T

Case 4

Pollakiuria (habit micturition)

They may be peeing A LOT but not very much at night

Lack of other LUTS

Incontinence is rare

Urinalysis is usually enough

Mostly reassurance

Function syndromes take home points

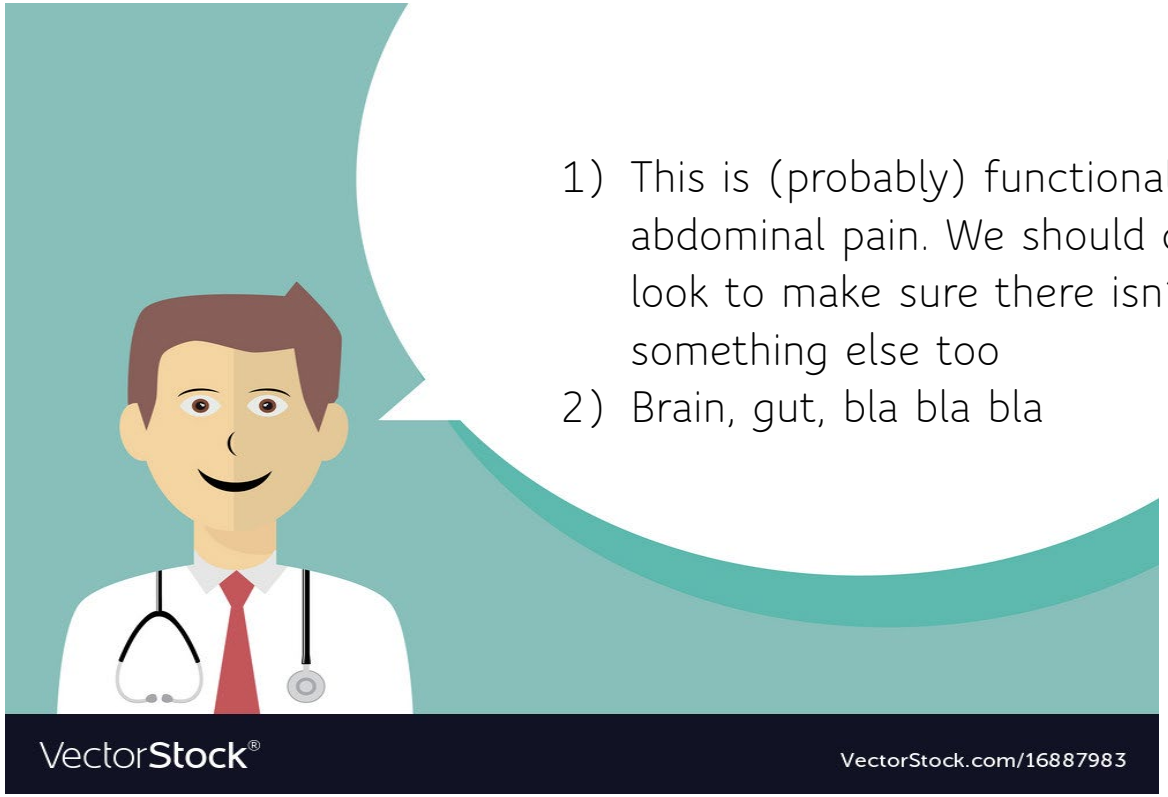
1) It's probably functional

2) It's definitely *at least* partly functional

3) Start them on the right path

Thanks!

Talking to families



It's what we see…

- Abdo pain
- Cough
- Micturation
- Swallowing
- Joint pain
- Tics
- Pseudoseizures
- Nausea/Vomiting
- Dizziness

Pitfall 1

"Please see this 8yo girl with constant abdominal pain causing months of school loss. I've sent bloodwork and an ultrasound."

Pitfall 1

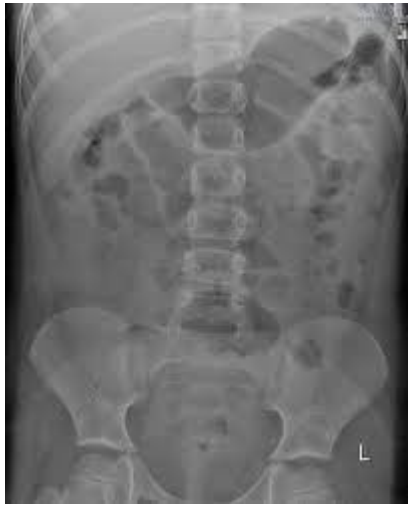
"They said his belly pain was due to anxiety, but he's not even an anxious kid"

Pitfall 2

"I know there's something going on. He's a really tough kid with a high pain threshold."

Pitfall 3

"They did an xray that showed he was constipated. We've been giving him Restoralax, but it's not helping (the pain)."



School / activities

Address school absenteeism EARLY

- There is *always* a functional (psychosomatic) component
- Empower parents to work with the school

Talking to parents

Typical symptoms – I've got great news. His pain is totally classic for something called functional abdominal pain.

"Nobody knows the full story for why so many kids get this type of pain, but we do know that a lot of it is the way her brain and gut nerves are wired together."

"His brain is getting signals from the gut all the time and it has to decide which ones it reports as pain. Some kid's brains get stuck in interpreting many signals as pain. This gets worse the more attention and importance we give the pain. We can help guide his brain to start ignoring some of those signals."

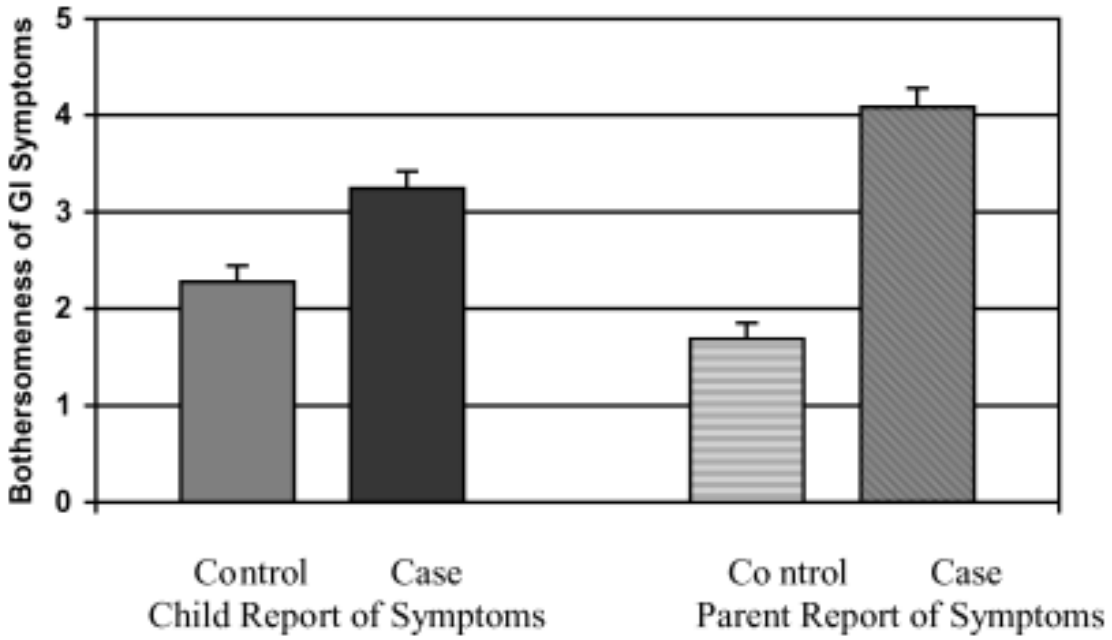
Functional dyspepsia/nausea -
Cyproheptadine → amitriptyline → mirtazapine

IBS-C –
Step 1: laxatives/psyllium, peppermint oil (IBGard), probiotics, antispasmodics, low FODMAP diet (one at a time). I will often do laxatives first because Rome IV suggests you should do this to differentiate it from functional constipation, I don't use antispasmodics often
Step 2: linaclotide (tried with a few teenagers). Lubiprostone also approved for adults

IBS-D –
Step 1: peppermint oil (IBGard), probiotics, antispasmodics, loperamide, Low FODMAP diet (big for this, often one of the first things I will try, or will have them meet with RD first to look for some high FODMAP things in diet, like onion/garlic, to remove first).
While CAG says not to use loperamide continuously, I find it useful for patients PRN or even daily in specific situations (e.g. if symptoms are early in morning and need to get to school)
I will sometimes test for SIBO (it is generally recommended against empiric SIBO treatment, but can see why practically some don't want to wait)
Step 2: TCA, eluxadoline (only used latter in few cases, teenagers)

Abdominal migraine – my understanding is that this is the same algorithm as

Mother with abdominal pain /IBS vs control Levy et al 2004



Levy et al 2004

Monozygotic twins – 17% concordance

Dizygotic twins – 8.4% concordance

Functional abdominal pain risk factors

Mental health disorder

Celiac disease

Sibling with celiac disease

FHx of chronic pain / IBS

Other risk factors

Hx CMPA, early abx, bacterial GI infx, infant abdominal surgery, HSP, IBD

“Her throat is blocked”

9yo girl with swallowing issues

Started after a URTI. “Big tonsils”

Started with crunchy foods. Now on a liquid diet.

Booked for tonsillectomy