I can't go to school my tummy hurts!
Functional Abdominal Pain

Sona Sehgal MD
Pediatric Gastroenterology
June 13,2018
CNHN Future of Pediatrics

Goals of the talk

- Recognize functional abdominal pain
- Initiate treatment plan to limit disability
- Emphasize early school return

Format

- Case review
- Classification of functional GI disorders
- Functional abdominal pain
- Evaluation and management
- Case wrap-up

Case

15 year old female with abdominal pain for 6 weeks that started after a flu like illness

She has generalized abdominal pain and nausea all day and intermittent vomiting and loose stools

Seen in the local ER where she had normal blood and stool tests; CT scan showed mesenteric lymphadenitis

She had missed 2 weeks of school

Case

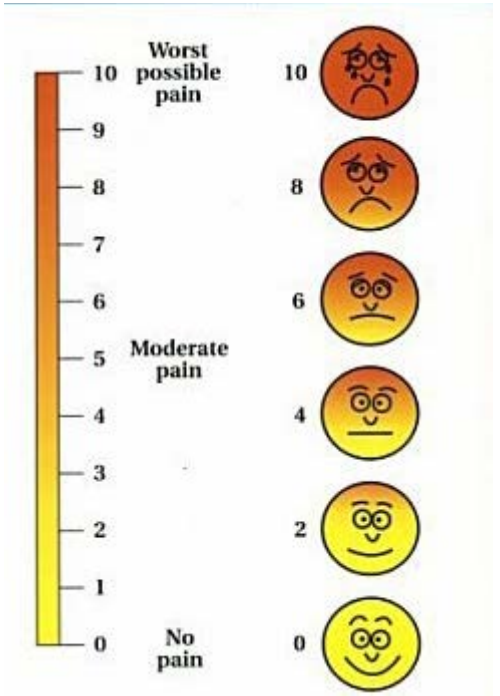
History:

- dizziness, headaches, disordered sleep
- decreased appetite (no weight loss)
- social problems at school; some of her classmates were mean to her and were ostracizing her, said bad things about her on social media
- had become more anxious and sad

Family History:

- Mom has depression, sibling has seasonal affective disorder

My Impression



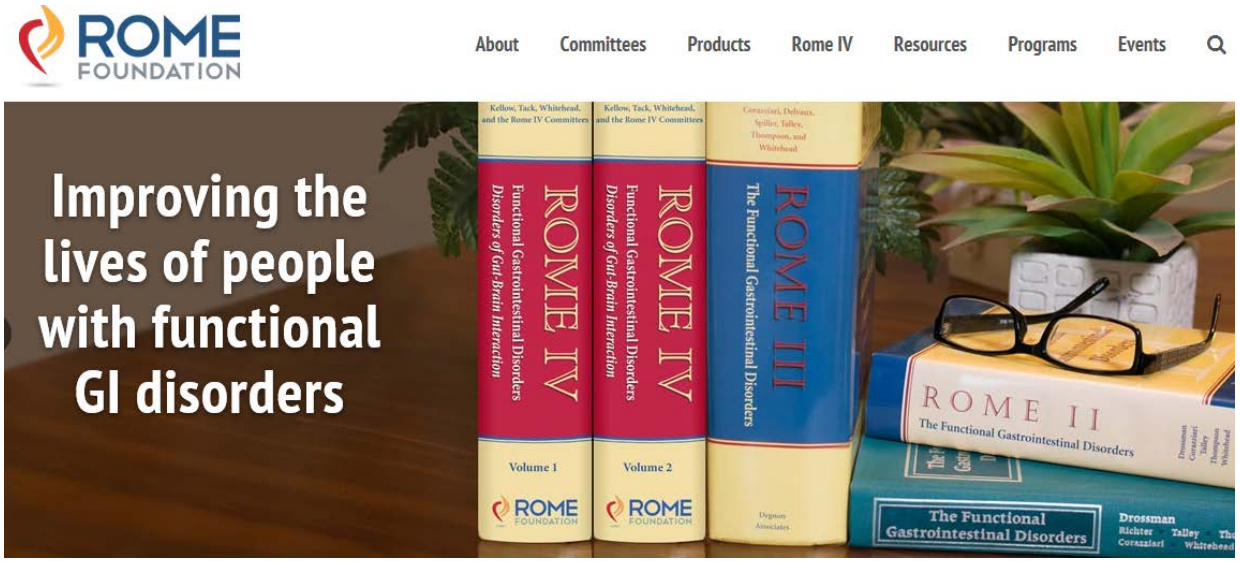
- Well appearing
- Multiple complains
- Disproportionate severity of pain and impairment
- Psychosocial stressors
- Family history of psychiatric problems

Characteristics of highly impaired children with severe chronic pain: a 5-year retrospective study on 2249 pediatric pain patients. Zernikow B et al. BMC Pediatr. May 2012,16;12:54.

Rome criteria: Functional GI Disorders

- International panel of adult and pediatric gastroenterologists who met in 1988.

- Rome IV (2016)



Changes in Rome IV

- Removed the dictum there was “no evidence for organic disease”
- Replacing it with “after appropriate medical evaluation the symptoms cannot be attributed to another medical condition”
- FGIDs can coexist with other medical conditions that themselves result in GI symptoms (eg, IBD)

Childhood Functional Gastrointestinal Disorders: Child/Adolescent. Jeffrey S. Hyams et al. Gastroenterology 2016;150:1456–1468

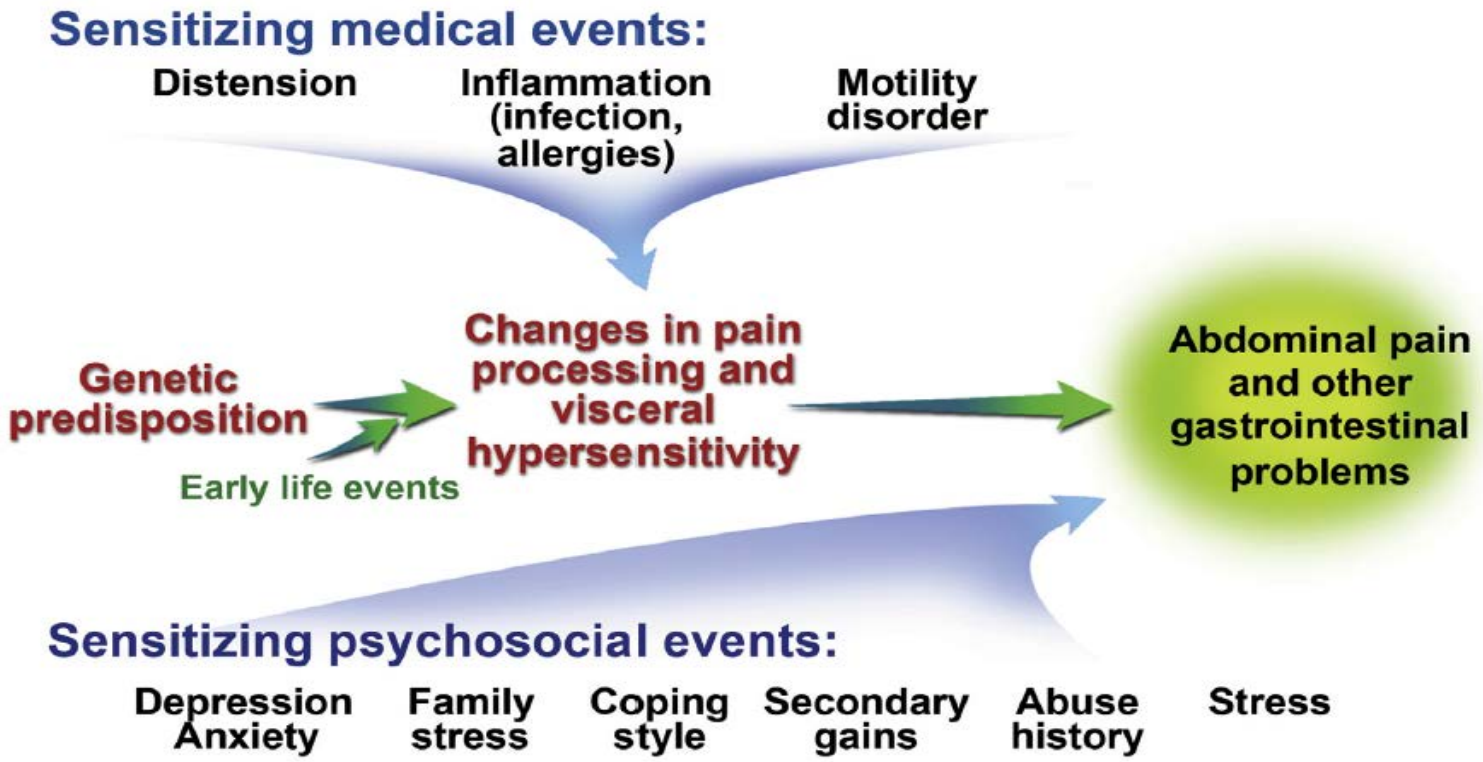
Classification of FGID

Table 1. Functional Gastrointestinal Disorders: Children and Adolescents

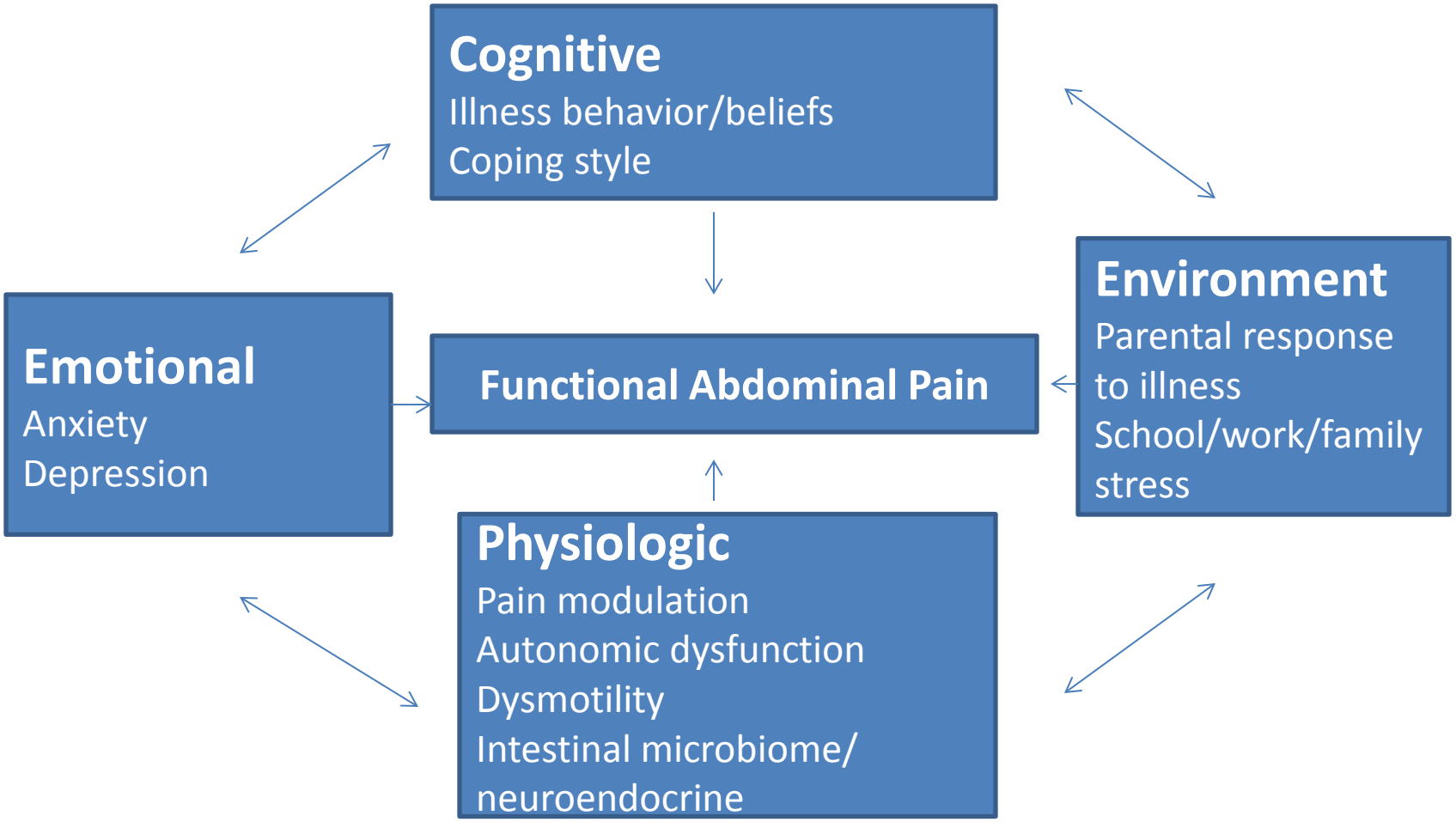
H1. Functional nausea and vomiting disorders
H1a. Cyclic vomiting syndrome
H1b. Functional nausea and functional vomiting
H1c. Rumination syndrome
H1d. Aerophagia
H2. Functional abdominal pain disorders
H2a. Functional dyspepsia
H2b. Irritable bowel syndrome
H2c. Abdominal migraine
H2d. Functional abdominal pain—not otherwise specified
H3. Functional defecation disorders
H3a. Functional constipation
H3b. Nonretentive fecal incontinence

Childhood Functional Gastrointestinal Disorders: Child/Adolescent. Jeffrey S. Hyams et al. Gastroenterology 2016;150:1456–1468

Pathophysiology of Functional Abdominal Pain Disorders



Biopsychosocial Model



Characteristics of Functional Abdominal Pain

- Pain on a weekly basis lasting more than 2 months
- Not associated with physiological events like eating or menses
- Special consideration should be given to the presence of autonomic symptoms, in particular in children with postural orthostatic tachycardia syndrome

Warning Signs

Family history of IBD, Celiac disease or peptic ulcer disease
Persistent right upper or right lower quadrant pain
Dysphagia
Odynophagia
Persistent vomiting
Gastrointestinal blood loss
Nocturnal diarrhea
Arthritis
Perirectal disease
Involuntary weight loss
Deceleration of linear growth
Delayed puberty
Unexplained fever

Diagnosis

- Symptom based diagnosis
- May consider some screening tests- CBC, CMP, CRP, Celiac screen, Lipase, Fecal Calprotectin
- Avoid unnecessary expense and risk

Utility of Fecal Calprotectin

Utility of Fecal Calprotectin in Evaluation of Chronic Gastrointestinal Symptoms in Primary Care. Kaiser Permanente. Clin Pediatr (Phila). 2017

- Calprotectin is a cyotosolic protein in neutrophils . It is marker of intestinal inflammation.
- Participants 0 to 18 years old with abdominal pain who had an FC test in the years 2010-2014 were retrospectively identified.
- 84% (689/822) had normal FC; no participant with normal FC was diagnosed with IBD in the subsequent 12 months.
- 16% (133/822) had elevated FC, and 31% of those (42/133) were diagnosed with IBD.
- In this cohort, sensitivity of FC for IBD is 100%, and specificity is 88%.

Treatment

- Reassurance and education!
  - Eliminate fear of unknown
- Validate that symptoms are real, but not dangerous
  - For sake of patient and parent
  - Return to regular activities and return to school
- Biopsychosocial approach
- Evidence for medical therapies in pediatrics is not strong
  - Mostly extrapolated from adult data
  - Weigh risk vs. *possible* benefit
  - Short trial of empiric therapy and discontinuation if no response

Treatment
Psychotherapy

- Biofeedback
- Hypnotherapy
- Relaxation
- Family therapy
- **Cognitive behavioral therapy**

Cognitive Behavior Therapy

Cognitive Behavior Therapy for Pediatric Functional Abdominal Pain: A Randomized Controlled Trial. van der Veek SM et al**.** Pediatrics 2013

OBJECTIVE:

This RCT investigated the effectiveness of a 6-session protocolized cognitive behavior therapy (CBT) compared with 6 visits to a pediatrician (intensive medical care; IMC) .

METHODS:

104 children aged 7 to 18 were randomized to CBT or IMC. Assessments were performed pretreatment, posttreatment, and at 6- and 12-month follow-up. Primary outcomes were level of abdominal pain (AP) as reported on questionnaires and diaries. Secondary outcomes were other gastrointestinal complaints, functional disability, other somatic complaints, anxiety, depression, and quality of life.

RESULTS:

Both CBT and IMC resulted in a significant decrease in AP ($P < .001$) 60% of children that received CBT had significantly improved or recovered, versus 56.4% of children receiving IMC. Additionally, nearly all secondary outcomes improved after treatment.

Cognitive Behavior Therapy

Module 1. Relaxation training

Focus: Makes use of successive breathing and relaxation exercises

1. Breathing calmly through abdomen instead of the chest.

2. *Progressive muscle relaxation*: teaches children difference between tensing and relaxing muscles.

3. *General relaxation*: teaches children to relax without tensing muscles first.

4. *Cue relaxation*: teaches children to relax whole body at once on cue (eg, say “relax” in your mind and then relax the whole body).

5. *Hypnotic suggestion:* teaches children to visualize their AP and change that image to decrease AP

Cognitive Behavior Therapy

Module 2. Cognitive therapy

Focus: Change negative thoughts about pain or negative thoughts about other things that aggravate pain (eg. worry about school or friends)

Cognitive Behavior Therapy

Module 3. Behavior therapy directed at behavior

Focus: Change maladaptive pain-related coping behavior of child

- Children educated about the benefits of continuing daily activities as a distraction from pain.

- A hierarchy of small consecutive steps made to help guide the child to reach those activity goals.

Cognitive Behavior Therapy

Module 4. Behavior therapy directed at behavior of parent

Focus: Change maladaptive pain-related coping behavior of parent

- Parents educated about the effects of refraining children from activities and asking children frequently about their pain.
- Parents asked to stimulate their child to practice relaxation skills and to encourage their child to keep active.
- The parent's own reactions to their physical complaints may serve as a model for how children respond to physical complaints.

Treatment
Dietary

Low-FODMAP (**F**ermentable **O**ligosaccharides, **D**isaccharides, **M**onosaccharides, **A**nd **P**olyols)

- Poor absorption and rapid fermentation

Fruits: apple, apricot, pear, mango, dried fruit

Vegetables: onion, mushroom, eggplant, garlic

Cereals: wheat, rye

Legumes: kidney beans, chickpeas

Milk products: soft cheese, yogurt

Sweeteners: sorbitol, fructose, corn syrup

Treatment
Complementary

- **Peppermint Oil: worsens reflux**
- **Probiotics: Lactobacillus GG**

Effectiveness of Probiotics in Children With Functional Abdominal Pain Disorders an ıation: A Systematic Review. Wegh CAM. J Clin Gastroenterol. 2018 print]

METHODS:

A systematic review from PubMed and Cochrane databases from inception to January 2018 for randomized controlled trials (RCTs) investigating the efficacy of probiotics in children aged 4 to 18 years with FAPD or children aged 0 to 18 years with FC.

RESULTS:

Finally, **11 RCTs for FAPD** and 6 RCTs for FC were included. Some evidence exists for Lactobacillus rhamnosus GG (n=3) in reducing frequency and intensity of abdominal pain in children with irritable bowel syndrome. There is no evidence to recommend L. reuteri DSM 17938 (n=5), a mix of Bifidobacterium infantis, Bifidobacterium breve and Bifidobacterium longum (n=1), Bifidobacterium lactis (n=1) or VSL#3 (n=1) for children with FAPD. No evidence exists to support the use of Lactobacillus casei rhamnosus LCR35 (n=1), B. lactis DN173 010 (n=1), B. longum (n=1), L. reuteri DSM 17938 (n=1), a mix of B. infantis, B. breve and B. longum (n=1), or Protexin mix (n=1) for children with FC. In general, studies had an unclear or high risk of bias.

CONCLUSIONS:

Insufficient evidence exists for the use of probiotics in FAPD and FC, only L. rhamnosus GG seems to reduce frequency and intensity of abdominal pain but only in children with irritable bowel syndrome.

Therapy
Pharmacologic

- **SSRI, tricyclic antidepressant (TCA)**
  - Amitriptiline (Elavil) best studied in pediatrics (no effect)
  - Lower dose than used for depression
  - EKG prior to TCA treatment to evaluate for long QT syndrome
  - Citalopram effective. Black box warning increased risk of suicide in adolescents

1. Multicenter, randomized,placebo-controlled trial of amitriptyline in children with functional gastrointestinal disorders. Saps M, et al. Gastroenterology 2009.

2. Citalopram for pediatric functional abdominal pain: a randomized, placebo-controlled trial. NeurogastroenterolMotil 2014.

Therapy
Pharmacologic

- **Anticholinergics**
  - Dicyclomine (Bentyl), Hyoscyamine (Levsin)
  - Cyproheptadine (Periactin), also antiserotonergic

- **H_2 blocker, proton-pump inhibitor**

- **Analgesics** (ie. NSAID, opioid)
  - Typically not necessary/effective

Summary

- FGIDs are symptom-based diagnoses
- If no “red-flags”, few/no diagnostic tests needed
- Etiology is multifactorial, incompletely understood
- Many therapies available, but evidence is limited
- Consider needs/desires of patient and family and use biopsychosocial approach

Case

- Acknowledged the patients symptoms
- Recommended a psychologist for CBT
- Started low dose Amitriptiline
- Planned return to school (go 1 hour late)
- Physical therapy/ activity
- Sleep hygiene
- Pain clinic

Follow up after 8 weeks

- Back in school full time
- CBT with therapist
- Difficulty falling asleep
- New friends
- Blocked accounts of rude cla[illegible]nates
- Pain and nausea when she in an anxious situation
- Wanted to start swimming

International Foundation for
Functional Gastrointestinal Disorders

https://www.iffgd.org/lower-gi-disorders/functional-abdominal-pain-syndrome.html

https://www.gikids.org/

ssehgal@childrensnational.org
202-476-3032

Thank you!