PROVIDENCE
Children's Health

Pediatric Disorders of Gut-Brain Interaction (DGBI's)

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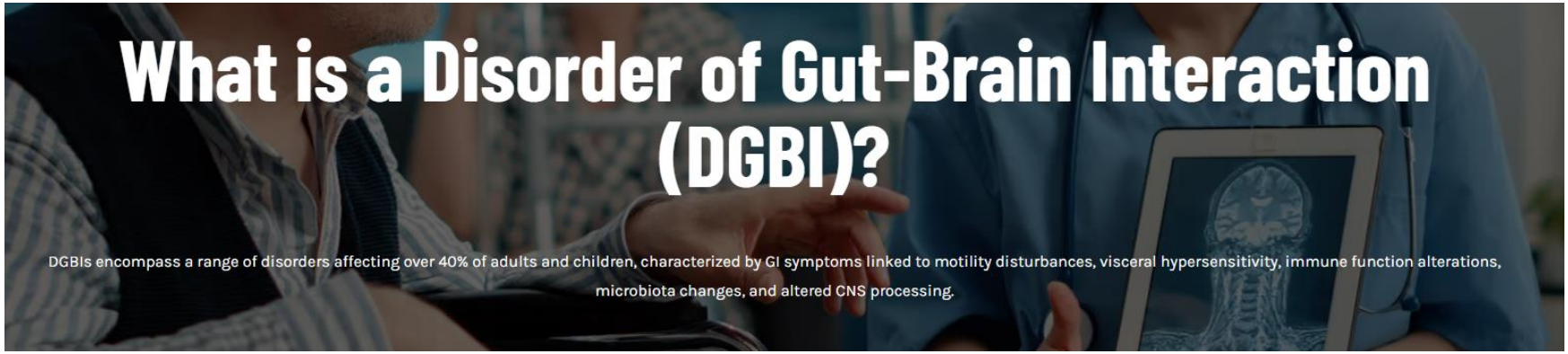
Conflicts of interest

- None

Learning Objectives

1. Define DGBI's
2. List common DGBI's
3. Diagnosis and Management
4. When to refer to pediatric gastroenterologist
5. Multi-disciplinary Care Approach
6. Describe the essential role of primary care providers in comprehensive care.

Definition



-Disorders of gut-brain interaction (DGBI), refers to a group of disorders characterized by chronic or recurrent gastrointestinal symptoms, in the absence of structural disease that readily explains the symptoms.

-The Rome V consensus defined a total of 27 DGBI in children.

Previously, these were referred to as “functional gastrointestinal disorders” (FGID).

Why change Terminology?

-The terminology was changed because the word “functional” is both nonspecific and potentially stigmatizing for being viewed as “nonorganic” or even psychiatric.

- This perception reflects historical dualistic principles that distinguish between “organic” disorders, considered tangible, and “functional” disorders, which are poorly understood and often labeled psychosomatic or even psychiatric.

- Moreover, the change in nomenclature from FGID to DGBI relied on a Delphi method of decision-making, which positively reflects current non-stigmatizing scientific knowledge and evolving understanding that multiple pathophysiological processes, in part or together, determine the symptom features that characterize the Rome classification of disorders.

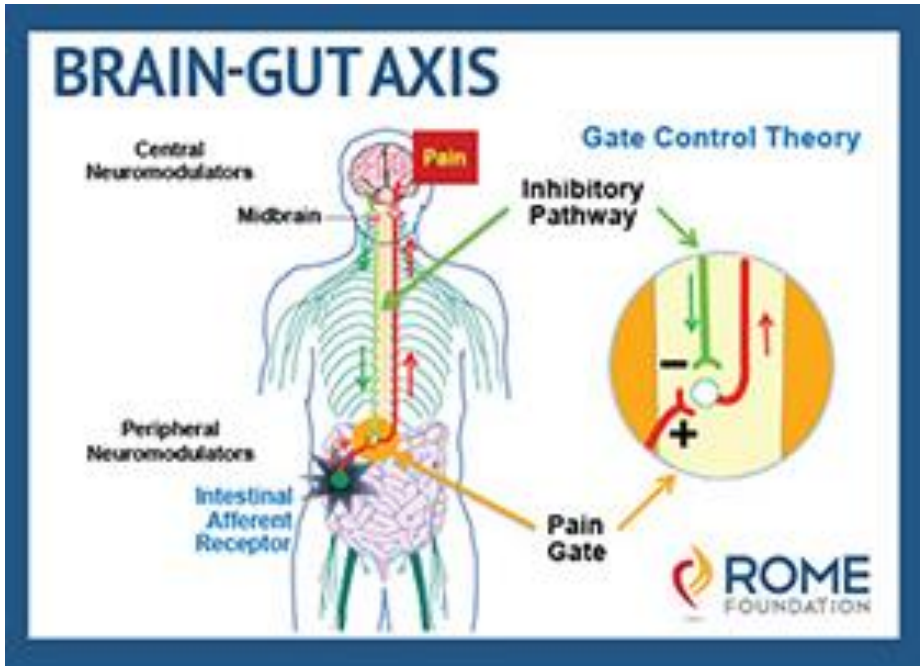
IMPORTANCE

1.Disorders of gut-brain interaction (DGBIs) affect up to 30% of children, with abdominal pain-related DGBIs having a pooled worldwide prevalence of 13.5% in children aged 4-18 years
-Significant impact on quality of life, school attendance, and psychological well-being
-High rates of chronicity into adulthood

2.Impact on Quality of Life
These disorders significantly reduce children's quality of life, affecting daily activities and wellbeing.

3.Healthcare Utilization
Pediatric DGBI lead to increased healthcare visits, treatments, and resource use worldwide.

Pathophysiology: The Gut-Brain Axis in Children



The Biopsychosocial Model

-The symptoms are thought to originate from any combination of gastrointestinal motility disturbance, visceral hypersensitivity, altered mucosal and immune function, altered gut microbiota or altered processing of visceral signals in the brain.

Pathophysiology involves disruptions of the gut-brain axis:

- **Gastrointestinal factors:** intestinal infection, motility disorders, microbiome alterations
- **Psychosocial factors:** adverse childhood experiences, traumatic events
- **Genetic predisposition**

Results in visceral hypersensitivity and hypervigilance

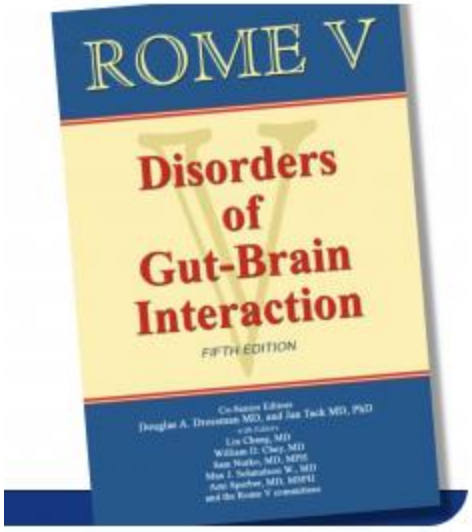
***Recent findings:** In utero SSRI exposure identified as risk factor

What' New! ROME 5

-One of the major functions of the Rome Foundation is to update and revise medical information on the DGBI and the Rome Criteria.

-This has been accomplished beginning with Rome I (1994), Rome II (2000), Rome III (2006) and Rome IV (2016)….Rome V (2026).

-The Rome V products will include Rome V textbook (Vol I & II), a pediatric version, a primary care version and questionnaires and tables book.



Clinical Features

Recurrent Abdominal Pain
Children with DGBI frequently suffer from repeated episodes of abdominal pain, impacting their daily activities.

Digestive Symptoms
Common symptoms include bloating, nausea, vomiting, and altered bowel habits which help identify DGBI subtypes.

Exclusion of Organic Disease and Differential Diagnosis

1. **Rule Out Infections:** H. Pylori and Stool PCR

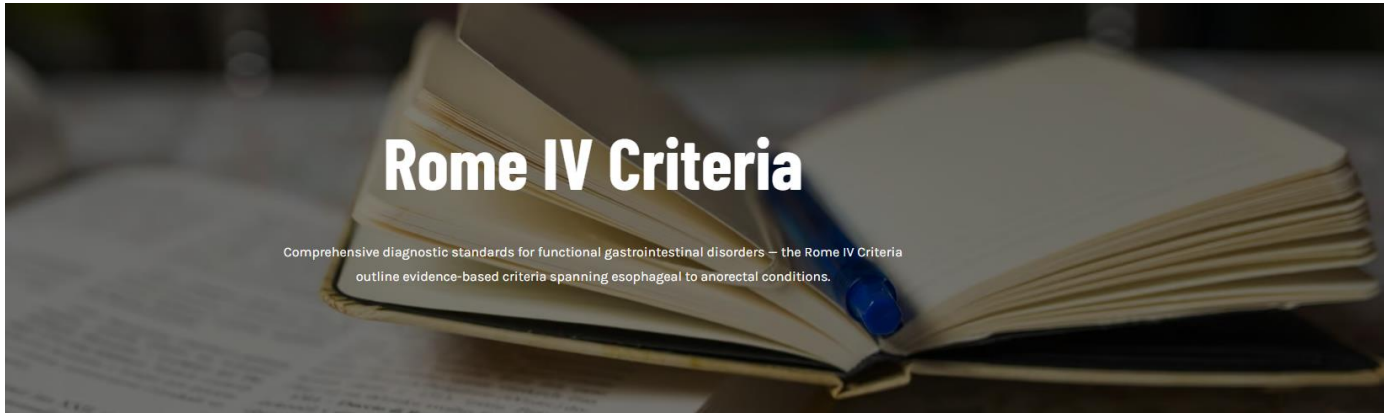
2. Rule out mucosal diseases : EOE/EGID, GERD, celiac disease, IBD excluded through targeted investigations

3. Rule out anatomical issues: Malrotation, Strictures, Hiatal hernia, MALS

* **Median arcuate ligament syndrome (MALS)**, also known as celiac artery compression syndrome, is a rare condition caused by **extrinsic compression of the celiac artery by the median arcuate ligament and diaphragmatic crura**, leading to foregut ischemia and/or neuropathic pain from celiac ganglion compression

Most Common DGBI's

[Rome IV Criteria | The Rome Foundation]



DIAGNOSTIC CRITERIA

G4. INFANT COLIC

Diagnostic criteria* – For clinical purposes must include all of the following:

1. An infant who is less than 5 months of age when the symptoms start and stop
2. Recurrent and prolonged periods of infant crying, fussing, or irritability reported by caregivers that occur without obvious cause and cannot be prevented or resolved by caregivers
3. No evidence of infant failure to thrive, fever, or illness

"Fussing" refers to intermittent distressed vocalization and has been defined as "[behavior] that is not quite crying but not awake and content either." Infants often fluctuate between crying and fussing, so that the two symptoms are difficult to distinguish in practice.

For clinical research, a diagnosis of infant colic must meet the preceding diagnostic criteria and also include both of the following:

1. Caregiver reports infant has cried or fussed for 3 or more hours/day during 3 or more days in 7 days in a telephone or face-to-face screening interview with a researcher or clinician;
2. Total 24-hour crying plus fussing in the selected group of infants is confirmed to be 3 hours or more when measured by at least one, prospectively kept, 24-hour behavior diary.

DIAGNOSTIC CRITERIA

G6. INFANT DYSCHEZIA

Diagnostic criteria* – Must include in an infant less than 9 months of age:

1. At least 10 minutes of straining and crying before successful or unsuccessful passage of soft stools
2. No other health problems

DIAGNOSTIC CRITERIA

B3b. Cyclic Vomiting Syndrome (CVS)

Diagnostic criteria* – Must include all of the following:

1. Stereotypical episodes of vomiting regarding onset (*acute*) and duration (*less than 1 week*)
2. At least three discrete episodes in the prior year and two episodes in the past 6 months, occurring at least 1 week apart
3. Absence of vomiting between episodes, but other milder symptoms can be present between cycles

*Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis

Supportive remark

History or family history of migraine headaches

DIAGNOSTIC CRITERIA

B3c. Cannabinoid Hyperemesis Syndrome (CHS)

Diagnostic criteria* – Must include all of the following:

1. Stereotypical episodic vomiting resembling cyclic vomiting syndrome (CVS) in terms of onset, duration, and frequency
2. Presentation after prolonged use of cannabis
3. Relief of vomiting episodes by sustained cessation of cannabis use

*Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis

Supportive remark

May be associated with pathologic bathing behavior (prolonged hot baths or showers)

DIAGNOSTIC CRITERIA

H1c. Rumination Syndrome

Diagnostic criteria* – Must include all of the following:

1. Repeated regurgitation and rechewing or expulsion of food that:
    1. Begins soon after ingestion of a meal
    2. Does not occur during sleep
2. Not preceded by retching
3. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition. An eating disorder must be ruled out.

*Criteria fulfilled for at least 2 months prior to diagnosis

DIAGNOSTIC CRITERIA

A4. GLOBUS

Diagnostic criteria* – Must include all of the following:

1. Persistent or intermittent, non-painful sensation of a lump or foreign body in the throat with no structural lesion identified on physical examination, laryngoscopy, or endoscopy
2. Occurrence of the sensation between meals
3. Absence of dysphagia or odynophagia
4. Absence of a gastric inlet patch in the proximal esophagus
5. Absence of evidence that gastroesophageal reflux or eosinophilic esophagitis is the cause of the symptom
6. Absence of major esophageal motor disorders**

*Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis with a frequency of at least once a week

**Achalasia/EGJ outflow obstruction, diffuse esophageal spasm, jackhammer esophagus, absent peristalsis

DIAGNOSTIC CRITERIA-

CIC (Chronic Idiopathic Constipation)

G7. FUNCTIONAL CONSTIPATION

Diagnostic criteria* – Must include one month of at least two of the following in infants up to 4 years of age:

1. Two or fewer defecations per week
2. History of excessive stool retention
3. History of painful or hard bowel movements
4. History of large diameter stools
5. Presence of a large fecal mass in the rectum

In toilet trained children, the following additional criteria may be used:

6. At least one episode/week of incontinence after the acquisition of toileting skills
7. History of large diameter stools which may obstruct the toilet

DIAGNOSTIC CRITERIA-
IBS

H2b. Irritable Bowel Syndrome

Diagnostic criteria* – Must include all of the following:

1. Abdominal pain at least 4 days per month over at least 2 months associated with *one or more* of the following:
2. Related to defecation
3. A change in frequency of stool
4. A change in form (appearance) of stool
5. In children with abdominal pain and constipation, the pain does not resolve with resolution of the constipation (children in whom the pain resolves have functional constipation, not IBS)
6. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition

*Criteria fulfilled for at least 2 months prior to diagnosis

DIAGNOSTIC CRITERIA

H2c. Abdominal Migraine

Diagnostic criteria* – Must include all of the following occurring at least twice:

1. Paroxysmal episodes of intense, acute periumbilical, midline or diffuse abdominal pain lasting 1 hour or more (should be the most severe and distressing symptom)
2. Episodes are separated by weeks to months
3. The pain is incapacitating and interferes with normal activities
4. Stereotypical pattern and symptoms in the individual patient
5. The pain is associated with *two or more* of the following:
    1. Anorexia
    2. Nausea
    3. Vomiting
    4. Headache
    5. Photophobia
    6. Pallor
6. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition

*Criteria fulfilled for at least 6 months prior to diagnosis

Management

Multimodal approach integrating:

1. **Brain-gut psychotherapies** (strongest evidence)
2. **Pharmacological interventions** (antacids, anti-cramping, Heat packs/war, compress, constipation or diarrhea management, anxiety/depression management)
3. **Dietary modifications:** Low FODMAP diet
4. **Neuromodulation:** TCA's, SSRI's
5. **Parent-focused interventions.**

Focus: Improving function and quality of life, not just symptom elimination

Brain-gut psychotherapies

#Strongest Recommendation:

1. Hypnotherapy
2. Cognitive Behavioral Therapy (CBT)
3. Mindfulness-based therapy
4. Exposure-based therapy

Mechanism: Target visceral hypersensitivity, anxiety, and maladaptive coping patterns

Establishing Therapeutic Relationship

Critical Components:

1. **Empathize** with patient and family to build trust.
2. **Educate** about gut-brain axis pathophysiology.
3. **Set expectations** - focus on function and quality of life.
4. **Use patient-friendly language** when discussing visceral hypersensitivity.
5. **Validate symptoms** while reinforcing positive diagnosis.

Prognosis

1. Typical DGBI:
-Clear Rome IV/V criteria met
-No red flag symptoms
-Normal growth parameters
-Normal physical examination
-Reassuring initial labs (if obtained)
-Good response to first-line therapies
-Supportive family and patient engagement

2. First-Line Approaches:
-Education on positive diagnosis and gut-brain connection
-Lifestyle modifications
-Dietary guidance (avoiding overly restrictive diets)
-OTC therapies for symptom control
-Coordination with mental health when appropriate

Diversity, Equity, and Inclusion (DEI)

1. Addressing Diagnostic Disparities and Cultural Competence: While prevalence of DGBIs does not differ significantly by race or ethnicity (affecting approximately 20-25% of children across all groups), racial and ethnic minorities experience higher rates of pandemic-onset DGBIs independent of COVID-19 infection, suggesting that psychosocial stressors including racism and discrimination may contribute to symptom development. It's important to understand each family's cultural explanatory model of illness, as food, diet, and symptom interpretation vary significantly across cultural groups and directly impact patient care and adherence.

2. Highlighting Barriers to Evidence-Based Treatment Access: There are significant access barriers to brain-gut psychotherapies that disproportionately affect communities of color and low-income families. Despite strong evidence supporting hypnotherapy and cognitive behavioral therapy as first-line treatments, up to 40% of children with identified mental health needs receive no care, with barriers including transportation, insurance coverage, shortage of specialists, cultural stigma, and language barriers.

When to Refer

1.Diagnostic Uncertainty
-Symptoms not clearly meeting Rome IV/V criteria
-Concern for organic disease despite negative initial workup

2.Treatment Failure
-Symptoms persist despite appropriate primary care management
-Need for advanced pharmacologic therapies (e.g., neuromodulators, specialized gut-brain therapies)
-Requiring multidisciplinary approach

3.Severe Functional Impairment
-Significant impact on quality of life and daily functioning
-School absenteeism or social withdrawal
-Development of anxiety, depression, or other psychological comorbidities
-Risk factors for disordered eating with restrictive dietary approaches

4.Complex Presentations
-Overlapping pain conditions (headaches, POTS)
-Suspected need for specialized testing (motility studies, endoscopy)

Initial work-up before referral

1. Blood Tests:
-CBC with differential (anemia, thrombocytosis)
-Inflammatory markers: CRP, ESR
-Comprehensive metabolic panel (albumin, liver enzymes)
-Celiac Panel
-Thyroid Panel

2. Stool Studies: Based on symptoms (H. pylori or fecal calprotectin)

3. Imaging: Based on the symptoms (KUB, RUQ Ultrasound)

Role of PCP cont..

1. Clear Communication: Providing clear explanations helps families understand management plans and reduces uncertainty.
2. Building Trust: Reassurance fosters trust between families and caregivers, improving cooperation and outcomes.
3. Education for Families: Providing clear information to families about DGBI helps reduce stigma and fosters understanding and support.
4. Training Healthcare Teams: Educating healthcare teams about DGBI enhances legitimacy recognition and improves patient care outcomes.
5. Symptom Progression Assessment: Tracking symptom changes over time helps tailor ongoing care and improve patient outcomes.
6. Evaluating Treatment Effectiveness: Regular evaluation ensures that therapies remain effective and adjustments are made when needed.
7. Psychosocial Wellbeing Monitoring: Assessing mental and emotional health is crucial for comprehensive long-term pediatric care.

Multi-disciplinary Care

Essential Team Members:

1. Pediatric gastroenterologist
2. Mental health professional (psychologist/psychiatrist)
3. Pelvic floor therapist
4. Dietitian/nutritionist
5. Neurologist
6. Pain management specialist
7. Primary care provider
8. School liaison (when appropriate)

Goal: Integrated care addressing biological, psychological, and social factors

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Thank you!

Questions?

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