Primer
to First Edition of

Multi-Dimensional Clinical Profile (MDCP)
For Functional Gastrointestinal Disorders

A Rome Foundation Publication

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The Mission of the Rome Foundation
To improve the lives of people with Functional GI Disorders

The goals of the Rome Foundation are to:
- Promote clinical recognition and legitimization of the functional GI disorders
- Develop a scientific understanding of their pathophysiological mechanisms
- Optimize clinical management for patients with FGIDs

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Editor's Note

This primer provides an introduction to the concept of the Multi-Dimensional Clinical Profile (MDCP). It describes the MDCP, the criteria for the subcategories and a template for its use by including three illustrative cases. After reviewing this document, the reader will understand how to use the MDCP to develop clinical profiles for patients that will permit more targeted treatment.

With publication of the MDCP book, we are beginning a new endeavor, one that will redefine the ways in which clinicians can help patients having even the most complex functional GI disorders. Discerning clinicians are well aware that making a diagnosis of IBS, functional dyspepsia, or functional abdominal pain is not sufficient to determine treatment. Not all patients with a diagnosis are the same. For example, a patient with IBS-D having mild and occasional symptoms of abdominal discomfort and loose stools and functioning without impairment would be treated quite differently than a patient with the same diagnosis having continuous severe and disabling pain, and co-morbid anxiety disorder with fears of incontinence when leaving the house.

The MDCP identifies and classifies these components into a highly specific plan placed within a framework that is targeted to the needs of the individual. The five components of this framework include the categorical Rome diagnosis (Category A), additional information that subclassifies the diagnosis leading to more specific treatments (e.g., IBS-D or IBS-C, SOD I or SOD II, EPS or PDS), the personal impact of the disorder on the patient (Category C), psychosocial influences (Category D), and physiological abnormalities or biomarkers (Category E). This framework is intuitively clear and the organizational approach is both pragmatic and useful.

The MDCP book containing 32 patient cases is available for purchase at $29.95 USD or €20.00 EUR online at *http://www.romecriteria.org/shop.cfm*, or by visiting the Rome Foundation booth in the exhibitor area at various medical conferences.

Douglas A. Drossman, MD
President, Rome Foundation
On behalf of the Rome Foundation Board of Directors

Aim, Objectives and Rationale

The Multi-Dimensional Clinical Profile (MDCP) for Functional Gastrointestinal (GI) Disorders was developed to capture the wide range of clinical features of patients with FGIDs and to present the information in a manner that is patient specific and consistent with the thinking of experts in the field.

Aim: To develop a multi-component assessment system for FGIDs that can be used to characterize the full dimensionality of the patient's illness state, and which will be applied in treatment planning and research. There are five dimensions:

A. The categorical Rome diagnosis (Category A);
B. Additional information that subclassifies the diagnosis leading to more specific treatments, e.g., IBS-D or IBS-C; sphincter of Oddi dysfunction (SOD) I or II; functional dyspepsia EPS; or PDS (Category B);
C. The personal impact of the disorder on the patient (Category C);
D. Psychosocial influences (Category D); and
E. Physiological abnormalities or biomarkers (Category E).

Objectives:

1. To be useful in making valid treatment decisions within a variety of clinical settings
2. To have reliable categories
3. To be accepted internationally by clinicians and investigators of various theoretical orientations
4. To be useful for educating trainees and health professionals
5. To maintain compatibility with and be accepted and/or endorsed by ICD-10 and third-party payers (to be established)
6. To provide terminology, including psychiatric terms that are readily understood and obtained by non-mental-health professionals
7. To make efforts to reach consensus on the meaning of the terms that previously have been used inconsistently and to avoid terms that have outlived their usefulness
8. When possible, to use information that has been obtained from research studies in order to provide a level of validation
9. To permit identification of subjects for use in research studies
10. To permit responsiveness to change over time based on scientific evidence
11. To be amenable to future investigation and validation

Rationale: The diagnosis of FGIDs is based on a categorical system that uses the Rome criteria. These criteria relate to patient symptoms and (for some disorders) physiological findings that occur around a pre-specified time frame. This categorical assessment system is helpful for selecting patients for clinical studies and treatment trials. However, there are limitations for using solely the criteria in clinical practice since this assessment system is not able to address:

- Certain clinically meaningful subsets of these diagnoses,
- Physiological contributions or degrees of impairment,
- Psychosocial co-morbidities which impact on severity, disability and centrally targeted treatment options,
- Future categorizations (e.g., biomarkers), and
- Overall severity and disability which affects the extent of diagnostic evaluation and the nature of treatment choices.

The MDCP enriches our understanding of the patient by adding these missing dimensions to the categorical diagnosis, and this optimizes the treatment.

Guidelines for Use of the Multi-Dimensional Clinical Profile

The MDCP provides a comprehensive, individualized, clinical understanding of the patient that incorporates the biopsychosocial aspects of the individual's illness experience. It contains the information every clinician would want to know to more precisely target clinical management decisions for his/her patient. This information can also be conveyed to clinicians, investigators, industry and regulatory organizations and may be used by third-party payers. The categories as noted below cover the range of information clinicians would use for diagnosis, treatment and ongoing care of their patients.

Category A. Categorical Diagnosis

This is the standard *Rome categorical criteria* currently using Rome III, which will in the future be modified for Rome IV. It usually is symptom based but may include the presence of physiological criteria (e.g., fecal incontinence).

Category A provides the "specific" diagnostic criteria used in clinical trials and office practice. The additional categories below (B, C, D, and E) are available optimizing clinical care and in specific research situations.

Category B. Clinical Modifiers

The clinical modifiers are *additional symptoms or subtypes, historical information, physical signs, laboratory or physiological studies that subcategorize the diagnosis in ways that would potentially affect treatment planning*. While not required for a diagnosis (i.e., Category A), its presence may help in the pathophysiological understanding of the patient's diagnosis or help direct treatment. Unlike the other categories, the clinical modifiers are not yet based on full scientific evidence. However, it follows clinical wisdom and provides the option for validation or the use of treatments targeted to the specific subcategory. The following modifiers were determined by the contributing authors and may be modified in the future as needed:

- General Modifiers
  - Functional Somatic Syndromes - Fibromyalgia, Chronic Fatigue, etc.
  - Narcotic Bowel Syndrome
  - Fatigue
  - Sleep disturbance
  - Any other medical diagnosis or relevant symptom contributing to the illness condition
- Globus
  - With weight loss
  - With transit dysphagia
- Rumination Syndrome
  - Reswallows or spits out
  - With heartburn
- Aerophagia
  - With excessive belching
- Functional Dysphagia
  - Frequent vs. sporadic
  - Continuous vs. episodic
  - Solid, liquid or both
  - With impaction
  - With weight loss
  - With chest pain
- Functional Heartburn
  - Frequent vs. sporadic
  - Continuous vs. episodic
  - Daytime vs. nighttime
  - Postprandial or not
- Functional or Non-cardiac Chest Pain
  - Frequent vs. sporadic
  - Continuous vs. episodic
  - Postprandial
  - Relieved by belching or not
  - Related to physical effort
  - Related to eating
  - Daytime or nighttime or both
- Functional Dyspepsia
  - PDS, EPS or both
  - Subsyndromic PDS or EPS (i.e., does not meet criteria)
  - Postinfectious
  - Acute-onset
  - Weight loss
  - Co-existing nausea, bloating, belching or vomiting
  - Constipation
- Chronic Idiopathic Nausea
  - Postprandial
  - Continuous vs. episodic
  - Weight loss
- Functional Vomiting
  - Frequent vs. sporadic
  - Continuous vs. episodic
  - Weight loss
- Cyclic Vomiting Syndrome
  - Frequent vs. sporadic
  - With pain
  - With reflux
  - Weight loss
- Functional Sphincter of Oddi Disorder
  - Subtypes I, II, III

  - Post-Cholecystectomy
  - Functional Pancreatic Sphincter Disorder
  - Symptoms sporadic vs. frequent
- Functional Abdominal Pain Syndrome
  - Narcotic bowel syndrome
  - Opioid induced constipation
- Irritable Bowel Syndrome
  - Post-infectious
  - Postprandial symptoms
  - FODMAP sensitive
  - Stool pattern – IBS-D, -C, -M or -U
  - With urgency
  - With fecal incontinence
  - With pain-predominance
  - Frequent vs. sporadic
  - With bloating
  - IBD-IBS
- Functional Bloating
  - Postprandial
  - FODMAP sensitive
- Constipation
  - Slow transit, normal transit
  - Opioid induced constipation
  - Infrequent vs. very infrequent BM (<1/week)
  - Absence of call-to-stool
  - Straining
  - Splinting
  - Manual manoeuvers
  - With dyssynergic defecation, obstructive defecation
- Functional Diarrhea
  - Postprandial symptoms
  - Bile salt malabsorption
  - Severe urgency
  - With fecal incontinence
  - Nocturnal or daytime only
  - Stool volume estimate
- Functional Defecation Disorder (or Dyssynergic Defecation)
  - Dyssynergic defecation
  - Inadequate defecatory propulsion
  - Splinting
- Chronic Proctalgia
  - Levator syndrome
  - Proctalgia fugax
- Fecal Incontinence
  - Passive vs. urge
  - Diarrhea
  - Overflow constipation

Category C. Impact on Daily Activities (none, mild, moderate, severe)

This category designates and quantifies the overall effect on patient illness perceptions, behaviors and daily functioning that influences treatment. It is understood (using the Rome Severity definition) as: "a biopsychosocial composite of patient reported gastrointestinal and extra-intestinal symptoms, degree of disability and illness related perceptions and behaviors" in which both visceral and central factors will contribute. Impact must be based on the patient's perception, including clinical judgment. Therefore, the degree of severity will be assessed by asking the patient the following question: *"Overall, how much do the symptoms currently interfere with life (work, school, social activities, self-care, concentration and performance) – none/mild/moderate/severe"*. In the cases that follow, efforts are made to correlate the patient's report with the evident data. However, it is recognized that the patient's report may differ from the clinician's observations and in those cases the clinician must reconcile these differences when planning treatment.

Category D. Psychosocial Modifiers

This category identifies psychological and psychosocial modifiers and co-morbidities that influence the patient's experience of the illness and behaviors that will affect treatment decisions. It can include categorical evidence (e.g., Diagnostic and Statistical Manual of Mental Disorders [DSM-5] psychiatric diagnosis), quantitative measures (e.g., anxiety by HADS – Hospital Anxiety and Depression Scale) as a continuous score or categorical diagnosis based on cutoffs, or patient report (e.g., abuse) *that is judged by the clinician to be relevant to the person's functional gastrointestinal disorder, the illness behaviors associated with it or its impact on daily functioning.* Care must be taken to permit identification by non-mental health professionals. This information would be obtained from known records (e.g., DSM or HADS diagnosis), clinical observation (e.g., reported history of abuse), clinical evidence for depression that is observed or stated stressful life events such as recent death of a pet (if interpreted as meaningful as a trigger or perpetuating factor for FGID symptoms). In addition, *inclusion of any item listed below that does not have a severity category (e.g., traumatic life events) must be judged as a significant contributor to the development or exacerbation of the current FGID disorder or its severity.*

- Psychological/Psychiatric Symptoms/Syndromes
  - Axis I or Axis II diagnosis from DSM IV or DSM-5 diagnoses (e.g., Somatic Symptom Disorder - 300.82), based on criteria or mental health professional diagnosis.
    - Current
    - Previous
  - Current symptoms of depression, anxiety, anticipatory anxiety, post-traumatic stress disorder (PTSD), excessive worry about symptoms, obsessive-compulsive behaviors (expressed by patient and/or interpreted by clinician) or psychometric scale rated as clinically significant. The clinician may also use psychosocial flags (see next page).
- Major Stressors
  - Traumatic life events – Emotional, sexual or physical abuse history, war trauma, major work disruption, major loss that is either recent (i.e.,

grief process within the past year) or longstanding but unresolved.
    - Mild – no clear psychological residua or life disruption*
    - Moderate – some psychological residua or life disruption*
    - Severe – known adverse events with psychological residua and life disruption* (e.g., rape/penetration, multiple experiences, life threat)
  - Other major stressor judged by the clinician to be considered relevant (e.g., loss of job, divorce)

- Rome Psychosocial Flags (9 items) – Would indicate consideration of a referral to a mental health professional) and may be used for current symptoms category
  - *Anxiety* – Tense or wound up most of the time
  - *Depression* – Downhearted or low most of the time
  - *Suicidal Ideation* – Often or occasionally felt like hurting or killing oneself (responding "often" requires a referral)
  - *Abuse and trauma history* – Having been emotionally, physically or sexually victimized and it is causing distress
  - *Partner abuse* – Having been afraid for personal safety in one's intimate relationship (requires a referral)
  - *Pain severity* – Having had severe bodily pain in last four weeks
  - *Somatic symptoms associated with distress and health concerns* – Worried about physical symptoms for last 6 months that the clinician believes are serious
  - *Impairment/disability* – Pain or other symptoms interfere over past 4 weeks with normal activities quite a bit or extremely
  - *Drug/Alcohol abuse* – Having used alcohol (5+ drinks for men, 4+ drinks for women), prescription drugs for non-medical reasons and/or illegal drugs for past year daily or weekly (responding "daily" requires mental health referral)

*(e.g., psychological residua include constant/intrusive thoughts and behaviors, nightmares, anniversary reactions, etc.)

Category E. Physiological Modifiers of Function and Biomarkers (type/severity)

This category provides the dimensionality for physiological or biochemical parameters that may have clinical relevance and which may enhance the understanding of the diagnosis or have treatment implications. *There must be sufficient external evidence for an item to be endorsed* (e.g., by manometry or radionuclide report, or biochemical sampling). The list below provides the measures that may be used by physiological domain for each anatomic region.

EXAMPLES OF TESTS:

Oropharynx

- *Wall structure and activity:* Manometry
- *Movement of contents:* Cine swallow
- *Sensitivity:* Oropharyngeal sensitivity
- *Evidence of inflammation:* None
- *Other analytical techniques (disease specific)*: Brain imaging

Esophagus

- *Wall structure and activity:* Manometry, Luminal ultrasound
- *Movement of contents:* Impedance Scintigraphy
- *Sensitivity:* Barostat, Thermal, Chemical
- *Evidence of inflammation:* Biopsy
- *Other analytical techniques (disease specific):* 24h pH profile

Stomach & duodenum

- *Wall structure and activity:* Manometry, MRI, SPECT imaging
- *Movement of contents:* Scintigraphy, MRI, Ultrasound
- *Sensitivity:* Nutrient drink test, Barostat, Chemical
- *Evidence of inflammation:* Histology
- *Other analytical techniques (disease specific):* HP testing

Biliary dysfunction

- *Wall structure and activity:* SO Manometry
- *Movement of contents:* HIDA scan
- *Sensitivity:* None
- *Evidence of inflammation:* None
- *Other analytical techniques (disease specific):* Liver function test

Small intestine

- *Wall structure and activity:* Manometry, Capsule for motility, MRI
- *Movement of contents:* Scintigraphy, Smart Pill, MRI
- *Sensitivity:* Barostat, Chemical
- *Evidence of inflammation:* Histology, Calprotectin, Perfusion
- *Other analytical techniques (disease specific):* Glucose breath test for SIBO, Aspiration / breath tests, Lactose breath or tolerance test for lactose intolerance

Colon

- *Wall structure and activity:* Manometry, MRI
- *Movement of contents:* Radio-opaque markers, Scintigraphy, Smart Pill, MRI
- *Sensitivity:* Barostat
- *Evidence of inflammation:* Histology, Calprotectin, Perfusion/diffusion, Cytokines, mRNA, Histology
- *Other analytical techniques (disease specific):* Permeability, Fecal tryptase, Microbiota (HITChip)

Anorectum

- *Wall structure and activity:* Manometry, Defecography, Ultrasound, MRI, Digital exam

- *Movement of contents:* Balloon expulsion, Defecography
- *Sensitivity:* Barostat/ balloon, Electrical
- *Evidence of inflammation:* Histology, Calprotectin
- *Other analytical techniques (disease specific):* None

Learning from the Case Reports

This monograph is designed to use clinical cases for self-learning:

Title. The reader is aware of the diagnosis from the start since the categorical Rome III diagnosis is placed in the title.

Case History. The case history contains all the information that is needed to use the MDCP.

MDCP Categories. These are based on the case report. The specific items used are drawn from the preceding information and tables and the full Rome III Diagnostic criteria (Category A) is in Appendix A.

Explanation of MDCP Categories. For each category, a brief description of the rationale is provided along with references.

Overall Assessment. This is a brief summary of the case report.

Treatment. The treatment section is a major component of the MDCP. Using the categories, the reader is able to construct a treatment plan that is highly specific to the case. Citations are used to support the treatment decisions.

Reference List. Key references are provided with each case.

We encourage the reader to review the case report and consider ways to characterize this particular patient in terms of clinical features and treatment. Following this, the reader can systematically review the information provided and reconcile the differences.

Use in Primary Care

We recognize that patients seen in primary care may not have as complex histories as represented here and the primary care physician may not have access to psychosocial or physiological investigation, nor may it be necessary. Therefore, we suggest that Categories A, B and C be used for patients seen in primary care, and at times Categories D and E would be applied at the discretion of the clinician.

Case 1: Functional Dyspepsia (PDS) (Moderate)

A 30 year old male accountant sees a gastroenterologist due to upper abdominal bloating and fullness with early satiety occurring after meals most every day with 4 kg weight loss. Symptoms began 8 months ago after having a severe gastroenteritis with vomiting and diarrhea. Currently there are no bowel symptoms. He reports the symptoms as moderate: they limit his ability to travel and he avoids eating at work, and this has been associated with 4 kg weight loss. He saw a psychiatrist and is taking an SSRI for generalized anxiety disorder. Upper endoscopy with H. Pylori testing and abdominal ultrasound are negative. Proton pump inhibitors are not helpful.

MDCP Categories

A. Categorical Diagnosis: Functional Dyspepsia
B. Clinical Modifier: Postinfectious postprandial distress syndrome (PDS)
C. Impact on Daily Activities: Moderate
D. Psychosocial Modifier: Moderate generalized anxiety disorder
E. Physiological Features and Biomarkers: None known

Explanation of MDCP Categories

A. Categorical Diagnosis: Functional Dyspepsia was fulfilled by meeting Rome III criteria and having symptoms most every day for 8 months. See inset box for diagnostic criteria.

B. Clinical Modifier: A **postinfectious diagnosis** relates to the onset after a gastroenteritis with vomiting and diarrhea[1]. **Postprandial distress (PDS)** relates to meeting criteria based on symptoms occurring after meals and associated with early satiety, and fullness[2]. This is presumed due to incomplete receptive relaxation of the fundus with hypersensitivity to distension after a meal[3].

C. Impact on Daily Activities: This is moderate based on the patient's self-report, weight loss, and his need to restrict travel and not eat at work due to development of symptoms. The patient endorsed Moderate to the question: 'Overall how much do your symptoms currently interfere with life (work, school, social activities, self care, concentration and performance)?'

D. Psychosocial Modifier: Generalized anxiety disorder is based on a diagnosis made by a psychiatrist who prescribed medication for this diagnosis. There is evidence from brain imaging and gut-brain signaling studies that anxiety and depression are linked to the clinical expression of functional dyspepsia[4].

B. Functional Gastroduodenal Disorders

B1. FUNCTIONAL DYSPEPSIA

Diagnostic criteria Must include:*

1. *One or more* of the following:
   a. Bothersome postprandial fullness
   b. Early satiation
   c. Epigastric pain
   d. Epigastric burning

   AND
2. No evidence of structural disease (including at upper endoscopy) that is likely to explain the symptoms

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

B1a. Postprandial Distress Syndrome

Diagnostic criteria Must include **one or both** of the following:*

1. Bothersome postprandial fullness, occurring after ordinary-sized meals, at least several times per week
2. Early satiation that prevents finishing a regular meal, at least several times per week

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

Supportive criteria

1. Upper abdominal bloating or postprandial nausea or excessive belching can be present
2. Epigastric pain syndrome may coexist

E. Physiological Features and Biomarkers: None known. There is no record of physiological testing or history of such tests.

Overall Assessment

This young man has moderately severe Postprandial Distress Syndrome associated with weight loss. In addition he is being treated for generalized anxiety disorder.

Treatment

1. **Buspirone (5HT1 receptor agonist) –** Given the presumed pathophysiology of PDS, therapeutic efforts are directed toward enhancing postprandial fundic relaxation. Buspirone is a 5HT1 receptor agonist that relaxes the proximal stomach. In one study, patients with functional dyspepsia (mostly PDS) were given 30 mg. buspirone or placebo for 4 weeks. The buspirone had significant improvement in dyspeptic symptoms (early satiety, fullness, bloating), and this was associated with increased gastric accommodation to a meal. There was no effect on gastric emptying[5]. In addition, buspirone is used in psychiatry as a non-benzodiazepine anti-anxiety agent which can also augment the effect of the SSRI on treating psychological symptoms[6]. In Japan, tandospirone, another 5-HT1A agonist used in the treatment of anxiety, was found superior to placebo in alleviating dyspeptic symptoms in a controlled trial[7].
2. **Mirtazepine –** Dyspeptic symptoms can be associated with weight loss due to voluntary dietary restriction to prevent dyspeptic symptoms. In one controlled study of patients with functional dyspepsia and about 10% weight loss, mirtazepine had significantly improved symptoms of early satiety and was associated with weight gain and better caloric intake during a nutrient challenge test[8].
3. **Continue with psychologist for anxiety management –** This patient is currently under treatment with a psychologist, and there is value in continuing this activity to help reduce his ongoing symptom-associated anxiety which behaviorally is related to sitophobia (reduction of eating to avoid symptoms) and travel restriction.

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Case 2: Irritable Bowel Syndrome (Moderate)

A 25 year old female who recently took up a post as employment arbitrator which has involved working shifts with change in eating pattern and exercise. She complains of 2 years of worsening left upper quadrant discomfort associated with bloating and frequent loose stools occurring about 5 days per week. There is some relief from defecation. She often feels a sense of incomplete evacuation. Her diet is high in fruit, vegetables and whole meal bread. There is no past psychiatric history. She is finding the discomfort is interfering with her work and has missed 2 days of work per month recently. A local physician prescribed a low FODMAP diet. She responds well to this, but finds it rather restrictive socially.

MDCP Categories

A. Categorical Diagnosis: Irritable Bowel Syndrome
B. Clinical Modifier: IBS-D, FODMAP intolerance
C. Impact on Daily Activities: Moderate
D. Psychosocial Modifier: None known
E. Physiological Features and Biomarkers: None known

Explanation of MDCP Categories

A. Categorical Diagnosis: Irritable Bowel Syndrome
The patient meets Rome III IBS criteria of abdominal discomfort with relief from defecation and association with loose stools for >1 day per week, with symptoms lasting > 6 months[1]. See inset box for diagnostic criteria and refer to Figure 1 for IBS subtypes.

B. Clinical Modifier: IBS-D, FODMAP intolerance. FODMAPs (Fermentable, Oligo-, Di- and Mono-saccharides and Polyols) are poorly absorbed dietary carbohydrates which if taken in sufficient quantity can cause symptoms of bloating, flatulence and abdominal discomfort, as confirmed in a placebo controlled double-blind trial[2]. A recent placebo-controlled, randomized controlled trial (RCT) confirmed the benefit of a low FODMAP diet[3], and comparisons with historical controls suggest that the response is significantly better in relieving symptoms than is current standard advice [4].

C. Impact on Daily Activities: Moderate; the patient endorsed Moderate to the question: 'Overall how much do your symptoms currently interfere with life (work, school, social activities, self care, concentration and performance)?' Patient is losing 2 days of work per month.

D. Psychosocial Modifier: None known

E. Physiological Features and Biomarkers: None known

C. Functional Bowel Disorders

C1. Irritable Bowel Syndrome

*Diagnostic criterion**

Recurrent abdominal pain or discomfort** at least 3 days/month in the last 3 months associated with *two or more* of the following:

1. Improvement with defecation
2. Onset associated with a change in frequency of stool
3. Onset associated with a change in form (appearance) of stool

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

** "Discomfort" means an uncomfortable sensation not described as pain.

In pathophysiology research and clinical trials, a pain/discomfort frequency of at least 2 days a week during screening evaluation is recommended for subject.

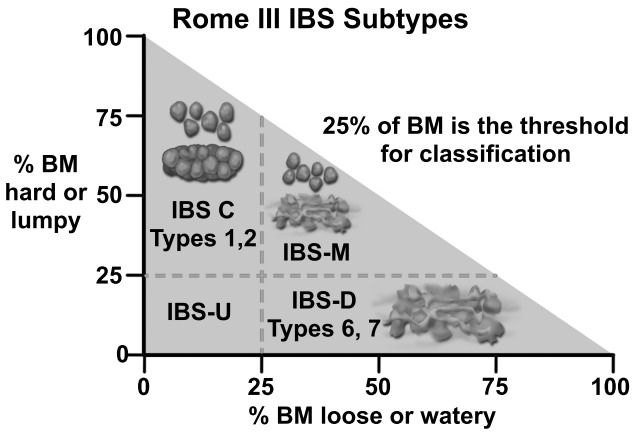

Figure 1. Rome III categorization of IBS-subtypes. IBS can be categorized as IBS-C where patients 25% of the time or more have hard or lumpy stools and less than 25% of the time have loose or watery stools. IBS-D is the reverse: loose or watery stools 25% or more and hard or lumpy stools less than 25% of the time. IBS-mixed (IBS-M) shows both types of stool equal or more than 25% of the time and IBS-U shows no predominant stool pattern. Subtyping has important implications for selecting treatments for this disorder.

Overall Assessment

This young female has adopted a diet high in fruit, vegetables and whole meal bread, which has resulted in IBS symptoms of discomfort and bloating with loose stools. These symptoms respond well to dietary exclusion.

Treatment

1. *Selective exclusion of specific fruits / vegetables identified during reintroduction phase of low-FODMAP diet*

Rationale: FODMAPs (Fermentable, Oligo-, Di- and Mono-saccharides and Polyols) have been shown to induce IBS symptoms of pain, wind, flatulence, bloating in double-blind RCT[2]. There is evidence in trials with weaker design (open label and hence subject to placebo effect) that low FODMAP diets improve symptoms[5] when compared with either low residue diets[6] or no diet change[7]. FODMAPs increase colonic gas and increase colonic diameter[8]. IBS patients appear specifically sensitive to this distension since in healthy volunteers substantial colonic distension can be observed with minimal symptoms. Lactose is a common FODMAP, and recent studies in Chinese subjects, 93% of whom have lactose malabsorption, show clearly that anxiety is a good predictor of symptoms after lactose ingestion, which causes few symptoms in healthy Chinese adults[9].

2. *Loperamide may be used in addition to the diet and taken as required, e.g., before travelling or an event when defecation would be problematic*
   Rationale: Several small old studies show benefit with improvement in diarrhea but not pain[10;11]. Again, consensus statements support this use[12;13].
3. *If neither of the above regimes helps, then consider using 5HT3 receptor antagonists as available (ramosetron, alosetron, ondansetron)*
   Rationale: Meta-analysis shows benefit with NNT of 7 using alosetron 1mg b.d.[14]. The dose of 1mg b.d. may be excessive since 25% suffer from constipation and 0.1% ischemic colitis, but a recent study with 0.5 mg o.d. shows lower incidence of constipation to be 9% but still 1/177 with ischemic colitis[15]. Ramosetron used at very low dose shows benefit with lower incidence of constipation[16]. Recent evidence shows ondansetron titrated starting at 4mg daily and either increasing to 4mg t.d.s. or decreasing to 4mg alternate days provides satisfactory relief in 69% compared with 17% on placebo giving an NNT of 2.0[17]. Constipation rate was 9% and all responded to dose reduction.

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Case 3: Functional Fecal Incontinence (Moderate)

A 68 year old male reports urgency, constant fear of soiling, and fecal incontinence at least once a week. He has 12-15 semi-formed BMs per day and wears protective pads. Onset was one year previously following low anterior resection for rectal cancer and a recovery complicated by an anastamotic leak with abscess and a revision. Anorectal manometry shows slightly weak squeeze pressure, reduced rectal compliance and threshold for urge to defecate, and reduced maximum tolerable volume. The patient responds to the question on impact as Moderate.

MDCP Categories

A. Categorical Diagnosis: Fecal Incontinence
B. Clinical Modifier: Diarrhea**,** urge incontinence
C. Impact on Daily Activities: Moderate
D. Psychosocial Modifier: Fear of incontinence (anticipatory anxiety)
E. Physiological Features and Biomarkers: Reduced rectal compliance, mild weakness of external anal sphincter

Explanation of MDCP Categories

A. Categorical Diagnosis: Fecal Incontinence
The patient meets Category A criteria for Fecal Incontinence. See inset box for diagnostic criteria. A diagnosis of fecal incontinence is based on a patient reporting accidental loss of solid or liquid stool; no diagnostic tests are required to make the diagnosis, although tests such as anorectal manometry and imaging of pelvic floor structures using endoanal ultrasound or MRI help to characterize the etiology and select treatment [1,2].

B. Clinical Modifier: Diarrhea, urge incontinence
Chronic or recurrent diarrhea (i.e., loose or watery stools) is the most consistently reported risk factor for fecal incontinence in population-based studies[3]. It is important to recognize the association with diarrhea because this directs treatment towards the diagnosis of treatable causes of diarrhea and/or the management of idiopathic diarrhea with fiber supplements or antidiarrheal medications[2,4]. A report of strong sensations of urgency preceding fecal incontinence is another risk factor identified in population-based epidemiological studies; it is an independent risk factor from diarrhea although it may be associated with diarrhea[5]. This patient fits the profile of a patient with a hypersensitive rectum, also called urge incontinence[6] or "low anterior resection syndrome"[7].

F. Functional Anorectal Disorders

F1. Functional Fecal Incontinence

*Diagnostic criteria**

1. Recurrent uncontrolled passage of fecal material in an individual with a developmental age of at least 4 years and *one or more* of the following:
   a. Abnormal functioning of normally innervated and structurally intact muscles
   b. Minor abnormalities of sphincter structure and/or innervation
   c. Normal or disordered bowel habits, (i.e., fecal retention or diarrhea)
   d. Psychological causes

AND

2. Exclusion of *all* the following:
   a. Abnormal innervation caused by lesion(s) within the brain (e.g., dementia), spinal cord, or sacral nerve roots, or mixed lesions (e.g., multiple sclerosis), or as part of a generalized peripheral or autonomic neuropathy (e.g., due to diabetes)
   b. Anal sphincter abnormalities associated with a multisystem disease (e.g., scleroderma)
   c. Structural or neurogenic abnormalities believed to be the major or primary cause of fecal incontinence

* Criteria fulfilled for the last 3 months

C. Impact on Daily Activities: Moderate
Moderate impact is shown by the patient's report of a constant fear of incontinence. The condition is not defined as severe because the patient is not home bound and is able to socialize and to work. The patient endorsed Moderate to the question: 'Overall how much do your symptoms currently interfere with life (work, school, social activities, self-care, concentration and performance)'?

D. Psychosocial Modifier: Fear of incontinence (anticipatory anxiety)
The patient reports a constant fear of fecal incontinence which interferes with his quality of life by causing him to have to seek out all the toilets in any location he expects to be in, to take a change of clothes with him, and to avoid eating in public restaurants. This modifier has implications for specific treatments referred to as urge resistance training.

E. Physiological Features and Biomarkers: Reduced rectal compliance, mild weakness of external anal sphincter
The most significant physiological finding is reduced rectal compliance (i.e., reduced maximum tolerable volume of rectal distention). This is consistent with the patient's history of onset following surgical resection

of part of his rectum for treatment of rectal cancer; one would expect reduced compliance in this setting. The significance of external anal sphincter squeeze showing only mild weakness is to rule out sphincter weakness as the primary cause of his fecal incontinence and to underscore the importance of reduced rectal compliance as a cause of incontinence.

Overall Assessment

This man reports frequent bowel movements with rectal urgency and fecal incontinence after low anterior resection for rectal cancer. The incontinence is causing moderate disability and psychological symptoms (fear of incontinence).

Treatment

1. Conservative management should be tried first; it will include (1) taking a careful history to identify dietary or other treatable causes of diarrhea, (2) adding fiber supplements to bind water in stools, and (3) antidiarrheal medication such as loperamide if still needed to normalize stool consistency.
2. If the response to conservative treatment is inadequate in patient's or physician's view, try biofeedback treatment. Type of biofeedback training will be guided by patient having moderately severe urge incontinence with anticipatory anxiety and weak sphincter:
3. Biofeedback to improve sphincter strength
   Although this patient's most significant physiological deficit is reduced compliance of the rectum with associated strong urge sensations, he also presents with decreased sphincter squeeze pressures. The availability of physical therapists and other providers who can assist the patient to strengthen the pelvic floor muscles through a combination of biofeedback and pelvic floor exercises is substantially greater than the availability of therapists who can provide urge resistance training. Strength training with biofeedback has been shown to improve continence by improving the strength of pelvic floor muscles[8].
4. Urge resistance training (a form of biofeedback)
   - Teach deep breathing as a coping skill to counteract anticipatory anxiety
   - Have patient practice tolerating larger volumes of rectal balloon distention by using deep breathing to inhibit urge sensation
   - Encourage patient to practice delaying defecation for short periods after experiencing urge sensation at home

   Urge resistance training as a treatment for urge-related fecal incontinence has not been frequently described in the published literature; however, the rationale, differential diagnosis, and steps to be taken in performing this type of training are described in a book chapter[9].
5. An alternative, evidence-based treatment for moderate to severe fecal incontinence is sacral nerve stimulation (which is also called neuromodulation)[10]. This involves implanting wire electrodes into the sacral nerve at a location that triggers external anal sphincter contractions when stimulated electrically. These electrodes are connected to a battery-operated stimulator which is implanted beneath the skin.
6. Injecting beads of an inert bulking agent (dextranomer) into the submucosal space surrounding the anal canal is also an evidence-based treatment for fecal incontinence[11].

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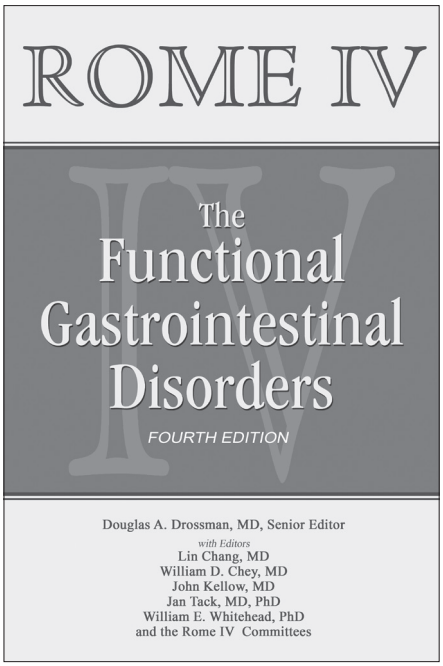
Rome IV

Rome IV publication and formats

Rome IV, The Functional Gastrointestinal Disorders, will be published by The Rome Foundation in May 2016, replacing the previous edition, Rome III (2006).



In this new edition, the Editors (Drossman, Chang, Chey, Kellow, Tack and Whitehead) and their 160 contributors offer updated guidelines for the diagnosis and management of functional GI disorders. Through a well-established process of working in committees of international experts, Rome IV presents definitive consensus and evidence-based knowledge about the diagnostic criteria for esophageal, gastroduodenal, bowel, biliary, chronic abdominal pain, and anorectal disorders in addition to two pediatric chapters for neonate/toddler and child adolescents. In addition, eight non-diagnostic chapters focus on an overview of the field, multicultural aspects of disease, gender, psychosocial issues, intestinal mircoflora, basic science, physiology, and pharmacokinetics, adding up to full-spectrum and authoritative coverage of the subject.

In Rome IV, the Editors capture a biopsychosocial orientation that helps discard the functional-organic dichotomy that can stigmatize patients. Functional GI disorders are now understood as having biological substrates including mucosal immune dysfunction-altered microbiota, disrupted brain-gut signaling and biomarkers that can all play a role in the clinical expression of the illness. Finally, as medicine is truly global, this edition reflects a wealth of cross-cultural information from around the world.

As many clinicians' habits of accessing relevant information have changed in the last decade, Rome IV will be available in several formats: as an online database which will allow searching and cross-linking; as a two volume printed book containing the diagnostic and non-diagnostic chapters; as a volume on algorithms; and as the full and updated Multi-Dimensional Clinical Profile volume (MDCP). Two smaller books, one on pediatrics and another on primary care, will round out the offering.

The Rome IV editorial process

As in previous editions, the Editors and their contributors form expert committees to develop a consensus approach to the content. Each diagnostic area has its own committee to decide on clinical management and agree on medical and scientific advances. The non-diagnostic committees are also comprised of international and interdisciplinary experts. The resulting work of these committees is peer-reviewed and ultimately based on rigorous consensus reached after several years of discussion.

In addition to evidence based information acquired through up to date searches, the diagnostic and non-diagnostic committees get help from two additional sources: the support committees and the working teams. The support committees gather relevant and specific information in advance of the other committees' consensus meetings, e.g., on questionnaire development and validation, systematic reviews and meta-analyses, primary care and its unique view of FGIDs, and development of cases for the Multi-Dimensional Clinical Profile. The working teams also gather relevant reviews on such topics as brain imaging, intestinal microbiota, the role of diet in FGIDs, and cross-cultural and multinational research, among others.

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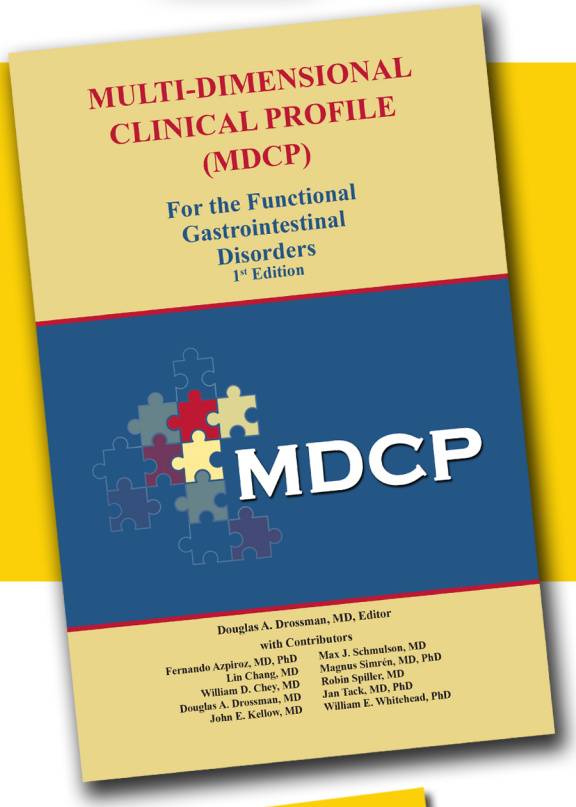

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