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The following slides were presented during the *Nancy and Bill Norton Education Series* Event at the University of Michigan Food for Life Kitchen. To view this presentation and the all videos available during this program, please visit <http://bit.ly/NES2020MI>.

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Burning questions on upper gastrointestinal (GI) symptoms

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On the Agenda

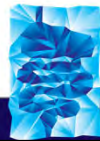
Common upper GI symptoms

- Symptoms, red flags, and gastrointestinal conditions to consider
- Functional GI diseases

Two patient cases

- Symptom presentation and treatment/work-up history
- Brief medical management
- Evidence-based dietary and lifestyle recommendations

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Common upper GI symptoms

Symptoms

- Heartburn
- Belching
- Regurgitation
- Upper abdominal pain
- Fullness
- Nausea
- Bloating



Trouble swallowing
Weight loss
Bleeding
Feeling full easily
Family history of esophageal/stomach cancer
Change in bowel habits

Other risk factors (e.g. large hiatal hernia, family history of GI diseases)

GI conditions to consider

Gastroesophageal reflux disease (GERD) complications
Esophageal tumor
Eosinophilic esophagitis
Esophageal or stomach ulcers
Stomach tumor
H pylori
Gastroparesis
Celiac sprue
Inflammatory bowel disease

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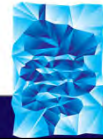
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Functional GI Diseases



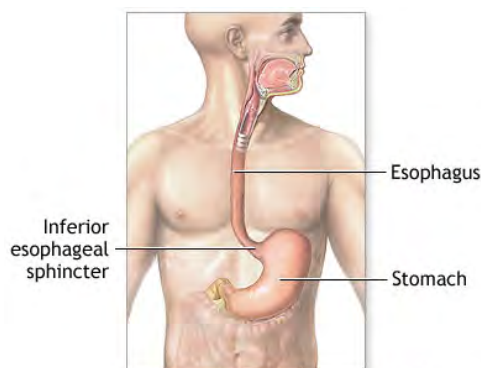
- Gastrointestinal symptoms with no detectable (anatomic or microscopic) abnormality found on diagnostic testing
- Can overlap with organic gastrointestinal conditions
- Management involves lifestyle and dietary modification as *primary* or *adjunct* therapy

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Functional GI Diseases in the Upper GI Tract



ADAM.

Globus
Functional dysphagia
Functional heartburn
Functional chest pain
Reflux hypersensitivity
Functional dyspepsia
Belching disorders
Nausea and vomiting disorders
Rumination syndrome

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Patient A

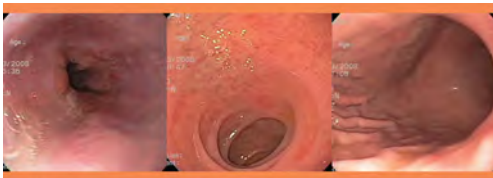


43-year-old female
Chest and throat burning
Belching after meals
Worse with stress

 trouble swallowing, weight loss, bleeding, concerning family history

Tried Prilosec OTC for 4 weeks without improvement

Upper endoscopy



View of Esophagus

View of Duodenum

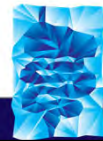
View of Stomach

SAGES.org



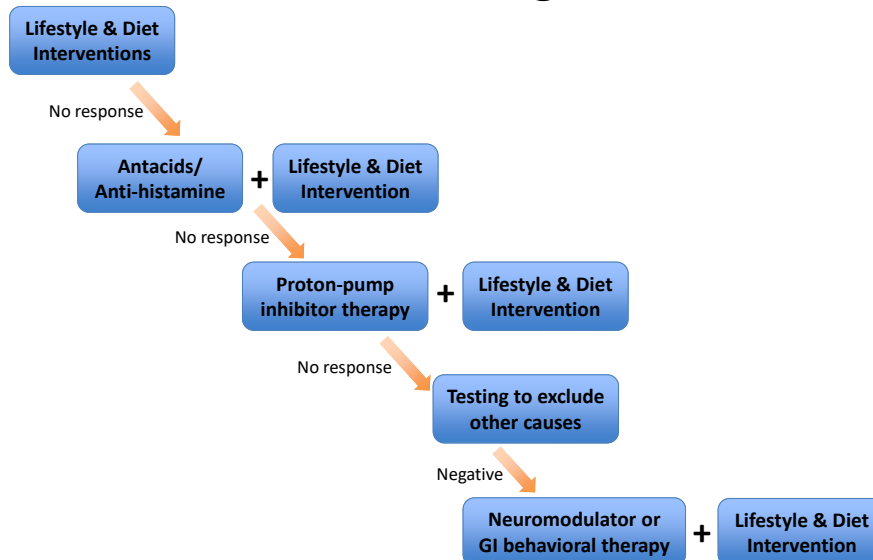
Normal 24-hour reflux monitoring

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Reflux Management



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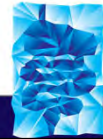
Reflux Diet: Conventional Wisdom



FOODS TO AVOID

Fried foods and unhealthy fats
 Citrus fruits
 Tomatoes
 Chocolate
 Refined Sugar
 Spicy food
 Caffeine
 Dairy Products
 Peppermint and spearmint
 Carbonated drinks

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Reflux Diet: *evidence-based* recommendations

Dietary Avoidance	Evidence	Recommend?
Alcohol	Increased acid secretion, decreased esophageal motility, and impaired gastric emptying	
Carbonated beverages	Increased gastric distension, increased TLESRs, decreased LES pressure, decreased esophageal pH	
High fat meal	Increased acid exposure time, decreased LES pressure in some studies	
Caffeine Chocolate	Decreased LES pressure in some studies. No evidence on benefit of abstinence	
Spicy foods Peppermint Citrus	No evidence of worsening acid exposure time. No evidence on benefit of abstinence	

TLESR=transient lower esophageal sphincter relaxation
 LES=lower esophageal sphincter

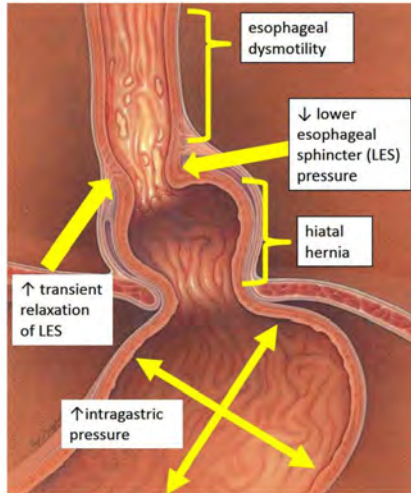
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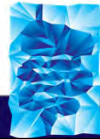
Obesity and Acid Reflux

↓
Increased abdominal pressure
 ↓
Development of hiatal hernia
 ↓
Decreased lower esophageal sphincter pressure
 ↓
Increased distal esophageal acid exposure



Chang & Friedenberg. Gastroenterol Clin North Am. 2014

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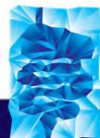
Obesity and Acid Reflux



- Weight loss of 10% resulted in improvement of reflux symptoms and enhanced effects of medication.
- Weight gain of as little as 3.5 BMI units was associated with a 3x GERD risk





Park SK, et al Neurogastroenterol Motil 2016
 El-Serag HB et al Am J Gastroenterol
 Ness-Jensen et al CGH 2016
 de Bortoli et al Dis Esophagus 2016

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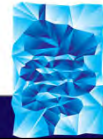
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Lifestyle Recommendations for Reflux

Lifestyle Intervention	Evidence	Recommend?
Head of bed elevation	Improved pH and symptoms, fewer TLESRs	
Avoidance of late evening meals	Improved nocturnal pH, not symptoms	
Tobacco cessation	Improvement in symptoms	
Weight Loss	Decreased gastric pressure, decreased HH, decreased esophageal acid exposure	

TLESR=transient lower esophageal sphincter relaxation
HH=Hiatal hernia

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Patient B



56-year-old male with upper abdominal discomfort (burning, pain, fullness) for years. Worse with eating but no specific food triggers.

No nausea, vomiting, weight loss, bleeding. No change in bowel habits

No family history of GI cancers or inflammatory bowel disease

Trial of proton pump inhibitor (Prilosec 40mg daily) for 4 months without improvement

Upper endoscopy did not show ulcers or inflammation. Biopsies negative for H pylori, celiac sprue, etc.

Colonoscopy normal at age 50.

Normal liver and pancreatic enzymes. Normal right-upper-quadrant ultrasound.

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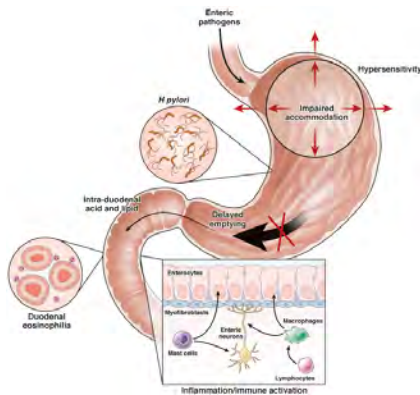


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Functional Dyspepsia (FD)

Dyspepsia (= bad digestion) affects 10-20% of Western populations.

Rome IV definition: symptoms of post-meal fullness or epigastric pain or burning that interferes with daily activities in absence of any associated structural or metabolic disease.



Potential Causes for FD:

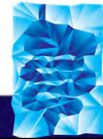
- Delayed gastric emptying
- Impaired gastric accommodation
- Gastric hypersensitivity
- Duodenal hypersensitivity to acid and lipids
- Post-infectious
- Immune activation
- Duodenal eosinophilia
- H pylori infection
- Psychosocial factors

Dietary Causes:

- Canned food
- Use of alcohol weekly
- High fat and salt diet
- FODMAP diet (IBS overlap)
- Carbonated drinks
- Hot spices
- Overall visceral adiposity

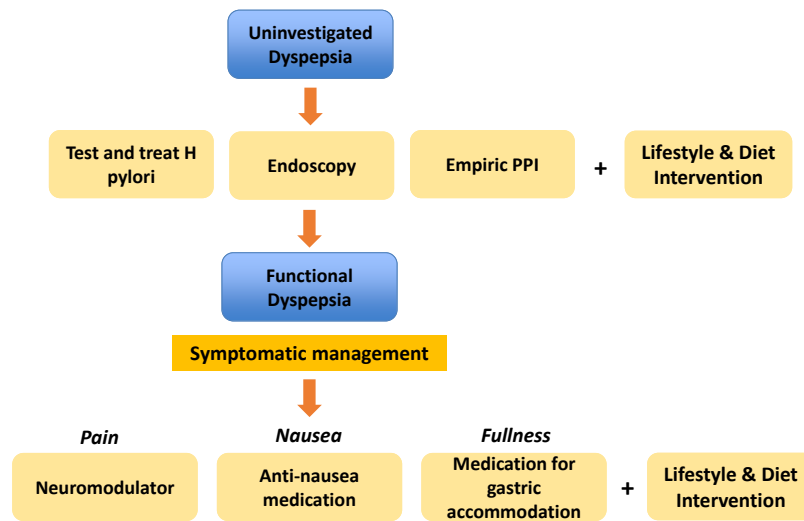
Koduru P, Clin Gastroenterol and Hepatol 2018 16(4)

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Dyspepsia Management



Koduru P et al. Clin Gastroenterol and Hepatol 2018

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Diet and Functional Dyspepsia (FD)

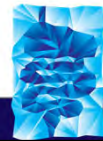


FD symptoms are associated with dietary variables:
total energy intake, total food volume, meal frequency,
specific foods.

Few clinical trials have formally evaluated dietary interventions for the management of FD

Duncanson KR. Food and functional dyspepsia: a systematic review. J of Hum Nutr Diet 2018

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Studies on Diet and Functional Dyspepsia

Wheat/Gluten

Associated with abdominal pain, bloating, post-meal fullness

Milk

Bloating frequently reported after milk consumption

Dietary fat

Induced symptoms of post-meal nausea, bloating, fullness, pain

Alcohol

Inconsistent data. Increased odds for dyspepsia in one study. Symptom induction after wine (68%) and beer (62%) consumption in another study

Coffee

Associated with symptom induction in >50% of FD patients in four studies. No association in one study

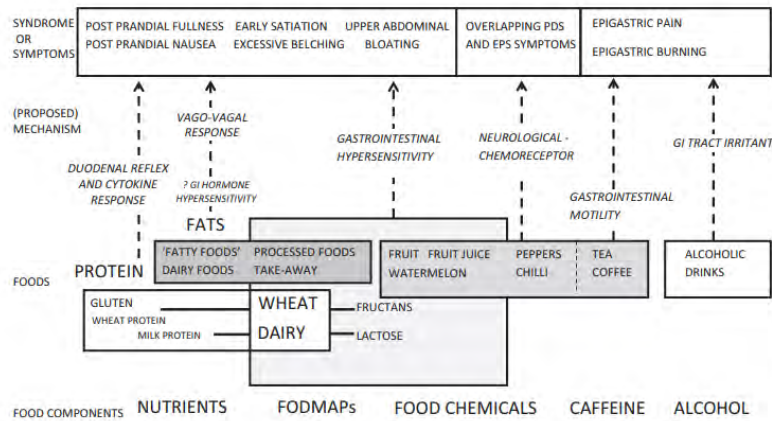
Duncanson KR. Food and functional dyspepsia: a systematic review. J of Hum Nutr Diet 2018

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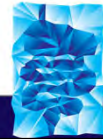
Food Components and symptoms of Functional Dyspepsia



FODMAP=fermentable oligosaccharide, disaccharide, monosaccharide and polyols

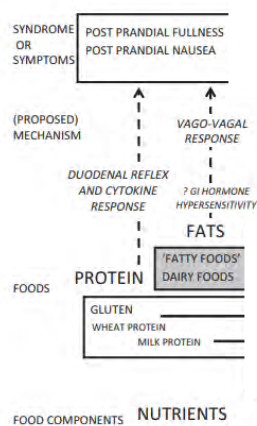
PDS=postprandial distress syndrome

EPS epigastric pain syndrome



Duncanson KR. Food and functional dyspepsia: a systematic review. J of Hum Nutr Diet 2018 Norton Education Series

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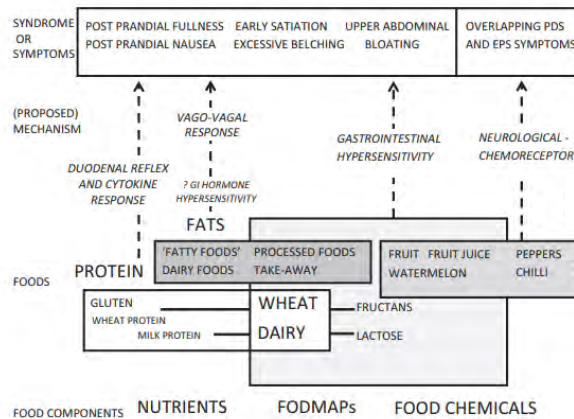
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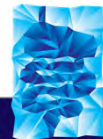


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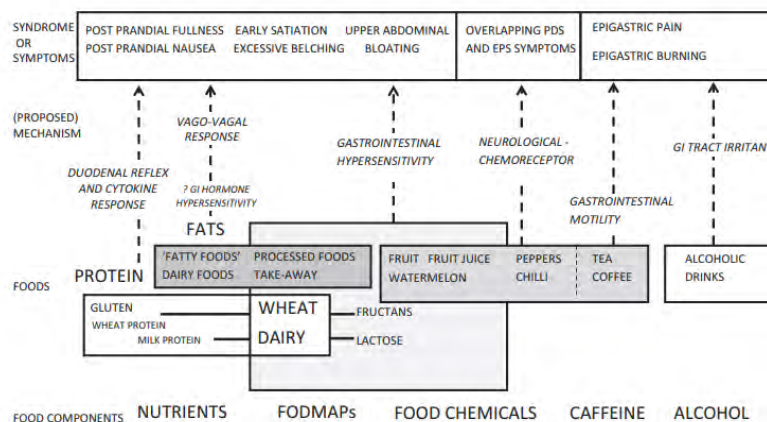
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Summary

- Dietary and Lifestyle changes may be the first steps in management of functional upper GI symptoms
- Red-flag symptoms → further medical evaluation
- Dietary recommendations for reflux include avoidance of alcohol and carbonated beverages
- Lifestyle recommendations include smoking cessation, weight loss, avoidance of eating close to bedtime and elevation of head of bed
- Cutting back on dietary gluten, dairy, fat, alcohol, and caffeine may help reduce symptoms in functional dyspepsia

