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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](http://bit.ly/NES2020MI).

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**Burning questions on upper gastrointestinal (GI) symptoms**

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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

### On the Agenda

#### Common upper GI symptoms

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>GI conditions to consider</th>
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<tbody>
<tr>
<td>Heartburn</td>
<td>Gastroesophageal reflux disease (GERD) complications</td>
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<tr>
<td>Belching</td>
<td>Esophageal tumor</td>
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<tr>
<td>Regurgitation</td>
<td>Eosinophilic esophagitis</td>
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<tr>
<td>Upper abdominal pain</td>
<td>Esophageal or stomach ulcers</td>
</tr>
<tr>
<td>Fullness</td>
<td>Stomach tumor</td>
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<tr>
<td>Nausea</td>
<td>H pylori</td>
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<tr>
<td>Bloating</td>
<td>Gastroparesis</td>
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<tr>
<td></td>
<td>Celiac sprue</td>
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<tr>
<td></td>
<td>Inflammatory bowel disease</td>
</tr>
<tr>
<td>Trouble swallowing</td>
<td></td>
</tr>
<tr>
<td>Weight loss</td>
<td></td>
</tr>
<tr>
<td>Bleeding</td>
<td></td>
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<tr>
<td>Feeling full easily</td>
<td></td>
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<tr>
<td>Family history of</td>
<td></td>
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<tr>
<td>esophageal/stomach cancer</td>
<td></td>
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<tr>
<td>Change in bowel habits</td>
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<tr>
<td>Other risk factors (e.g. large</td>
<td></td>
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<tr>
<td>hiatal hernia, family history of</td>
<td></td>
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<tr>
<td>GI diseases</td>
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</tbody>
</table>
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

Functional GI Diseases in the Upper GI Tract

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

Normal 24-hour reflux monitoring

Reflux Management

Lifestyle & Diet Interventions

Antacids/ Anti-histamine + Lifestyle & Diet Intervention

No response

Proton-pump inhibitor therapy + Lifestyle & Diet Intervention

No response

Testing to exclude other causes

Negative

Neuromodulator or GI behavioral therapy + Lifestyle & Diet Intervention
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

Reflux Diet: evidence-based recommendations

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

TLESR=transient lower esophageal sphincter relaxation
LES=lower esophageal sphincter
Obesity and Acid Reflux

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


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

El-Serag HB et al Am J Gastroenterol
Ness Jensen et al CGH 2016
de Bortoli et al Dis Esophagus 2016
Lifestyle Recommendations for Reflux

<table>
<thead>
<tr>
<th>Lifestyle Intervention</th>
<th>Evidence</th>
<th>Recommend?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of bed elevation</td>
<td>Improved pH and symptoms, fewer TLESRs</td>
<td>Thumb up</td>
</tr>
<tr>
<td>Avoidance of late evening meals</td>
<td>Improved nocturnal pH, not symptoms</td>
<td>Thumb up</td>
</tr>
<tr>
<td>Tobacco cessation</td>
<td>Improvement in symptoms</td>
<td>Thumb up</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>Decreased gastric pressure, decreased HH, decreased esophageal acid exposure</td>
<td>Thumb up</td>
</tr>
</tbody>
</table>

TLESR=transient lower esophageal sphincter relaxation
HH=Hiatal hernia

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.
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

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**Dyspepsia Management**

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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*

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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
Food Components and symptoms of Functional Dyspepsia

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

Norton Education Series
Food Components and symptoms of Functional Dyspepsia

FODMAP=fermentable oligosaccharide, disaccharide, monosaccharide and polyols
PDS=postprandial distress syndrome
EPS epigastric pain syndrome

Norton Education Series
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