The integration of osteopathic philosophy into health care practices, specifically:
- the concept of body unity
- the reciprocal nature of structure (anatomy) and function (physiology)
- and the use of OMM and other interventions to promote the body’s self-healing and self-regulatory mechanisms.
Osteopathic Education

OPP Integration
• 1st and 2nd year program
• 3rd and 4th year program
• OGME
• Preceptor CME

Competency Based
– ACCOM
– NBOME
– WHO

Supervised Clinical Experience

Osteopathic manipulative treatment is a distinctive component of osteopathy. It requires both cognitive and sensory motor skills, and knowledge, and the development of these clinical and manual skills requires time and practice.

Supervised clinical practice is an essential component of the training of osteopathic practitioners and should take place in an appropriate osteopathic clinical environment so that high-quality clinical support and teaching can be provided.

World Health Organization
Minimum of 1000 hours of supervised clinical practice.
Osteopathic Principles And Practice Course

Began July 1, 2015

3 semester online BlackBoard curriculum for 3rd and 4th years

1. Systems and special populations based learning Modules
2. Online MCQ Assessment for each Module
3. Manual medicine literature search assignment
4. OMM Practice log

OMM Diagnosis and Treatment Reviews

OPP Modules

Semester 5 July 1 – Dec 31, 2015
Introduction to OPP
Module 1 – Cardiovascular
Module 2 – Respiratory
Module 3 – Gastrointestinal
Literature review assignment
OMM Treatment Log

Semester 6 Jan 1 – June 30, 2016
Module 1 – Ob/Gyn
Module 2 – Musculoskeletal 1
Module 3 – Pediatric
Literature review assignment
OMM Treatment Log

Semester 7 July 1 – Dec 31, 2016
Module 1 – HENT
Module 2 – Surgery
Module 3 – Neurology
Module 4 – Musculoskeletal 2
Literature review assignment
OMM Treatment Log
### OPP Modules

#### Semester 5

**Module 1 - Introduction to OPP**

- Osteopathic approach to lymphedema
- Osteopathic approach to myocardial infarction
- Osteopathic approach to congestive heart failure

**Module 2 – Cardiovascular**

- Osteopathic approach to myocardial infarction
- Osteopathic approach to congestive heart failure

**Module 3 – Respiratory**

- Osteopathic approach to pneumonia
- Osteopathic approach to COPD patient
- Osteopathic approach to asthma

**Module 4 – Gastrointestinal**

- Osteopathic approach to constipation
- Osteopathic approach to GERD
- Osteopathic approach to irritable bowel syndrome

#### Semester 6

**Module 1 – Ob/Gyn**

- Osteopathic approach to dysmenorrhea
- Osteopathic approach to back pain in pregnancy
- Osteopathic approach to carpal tunnel in pregnancy

**Module 2 – Pediatric**

- Osteopathic approach to colic
- Osteopathic approach to plagiocephaly
- Osteopathic approach to torticollis
- Osteopathic approach to otitis media

**Module 3 – Musculoskeletal 1**

- Osteopathic approach to ankle sprains
- Osteopathic approach to knee osteoarthritis
- Osteopathic approach to mechanical LBP
- Osteopathic approach to plantar fasciitis
- Osteopathic approach to trochanteric bursitis

### OPP Modules

#### Semester 7

**Module 1 – HENT**

- Osteopathic approach to vertigo
- Osteopathic approach to URI
- Osteopathic approach to TMJ pain

**Module 2 – Surgery**

- Osteopathic approach to the postoperative ileus
- Osteopathic approach to atelectasis
- Osteopathic approach to the post-CABG patient

**Module 3 – Neurology**

- Osteopathic approach to migraine and tension headaches
- Osteopathic approach to carpal tunnel syndrome
- Osteopathic approach to Thoracic outlet syndrome
- Osteopathic approach to cervical and lumbar radiculopathies

**Module 4 - Musculoskeletal 2**

- Osteopathic approach to De Quervain’s Tenosynovitis
- Osteopathic approach to epicondylitis
- Osteopathic approach to mechanical neck pain
- Osteopathic approach to nurse’s elbow
- Osteopathic approach to postural dysfunction
- Osteopathic approach to the shoulder entheseopathies
OPP Modules

Systems And Special Populations Based Modules
• 3-4 per semester
• Selected diagnoses
  – Overview and pathophysiology
  – Clinical Presentations
    • History, physical examination including assessment for somatic dysfunction
  – Differential Diagnoses
  – Workup
  – Management
    • Medical and surgical
    • OMM
    • Lifestyle
  – Relevant research articles provided for review
• MCQ Online Assessment for each module (20 items)

Osteopathic Approach to GERD

OPP
GERD

Definition
Gastroesophageal reflux disease (GERD) is a chronic digestive disease that occurs when an above average quantity of gastric juice irritates the esophagus. Defined as at least weekly heartburn or acid regurgitation.

Epidemiology
GERD prevalence is higher in western world at 10-20% of adults with 40% of U.S. adults experiencing heartburn at least once a month. Most patients with GERD self-treat with over-the-counter (OTC) medications.

Pathophysiology - Etiology
Nexus of stomach contents commonly occurs when the lower esophageal sphincter (LES) briefly relaxes because of a vagally mediated reflex that is stimulated by swallowing or gastric distention. The refluxed stomach contents are neutralized by weakly alkaline swallowing saliva and cleared by esophageal peristalsis. GERD occurs when stomach acid flows back into the esophagus and overwhelms the esophagus's natural defenses. The esophagus is typically protected from stomach acid by the LES pressure creating a reflux barrier, esophageal motility clearing contents from the esophagus, and esophageal epithelial defenses such as tight intercellular junctions. Reflux can occur when the LES pressure is insufficient to block stomach contents from refluxing into the esophagus.

GERD

Pathophysiology – Etiology continued
LES pressure is decreased by:
- Low LES resting tone or pressure
- Low resting tone of the LES may allow stomach contents to reflux during periods of elevated intra-abdominal pressure. Resting tone is also affected by the vagus nerve activity and local presence of acetylcholine and nitric oxide.
- Abnormal crural diaphragm tension
  - Diaphragmatic muscle tension may affect the size and shape of the diaphragmatic hiatus through which the esophagus traverses
- Abnormal phrenoesophageal ligament tension
  - The LES is attached to the crural diaphragm via phrenoesophageal ligament the and results in increased LES pressure during inspiration and increased intra-abdominal pressure
- Abnormal angle of His
  - The angle of His is the acute angle between the abdominal esophagus and the fundus of the stomach at the gastroesophageal junction. This angle becomes obtuse in the presence of hiatal hernia creating a funnel effect directing stomach contents into the esophagus.
GERD

Pathophysiology – Risk Factors
- Obesity and recent weight gain (increased intrabdominal pressure)
- Pregnancy
- Symptoms intensity decreases over 50 years of age
- Aging increases incidence of erosive esophagitis and Barrett's esophagus
- Erosive esophagitis and Barrett's esophagus more common in males
- Gender ratio for esophageal adenocarcinoma is 8:1 male to female

Clinical Manifestations
The classic symptoms of GERD are heartburn and acid regurgitation. Atypical symptoms include chest pain, dysphagia, and painful swallowing. Extraesophageal symptoms include cough, laryngitis, asthma, dental erosions, globus pharyngis, recurrent sinustis and otitis media, and idiopathic pulmonary fibrosis from recurrent aspiration. Alarm symptoms may indicate the presence of advanced disease such as esophagitis (including erosive and Barrett's esophagitis), ulceration, strictures, and adenocarcinoma. Alarm symptoms include symptoms refractory to treatment, dysphagia, weight loss, anemia, or GI bleeding (hematemesis or melena).

Physical Examination
Physical examination may reveal epigastric tenderness, abdominal diaphragmatic dysfunction with myofascial restrictions in the epigastric area and T2-T6 findings in the T2-6 area due to viscerosomatic reflex changes.

GERD

Diagnostic Testing
In the presence of typical symptoms of heartburn and GERD, a presumptive diagnosis of GERD may be made and empiric treatment may be initiated. In the presence of chest pain, cardiac causes should be excluded before GI evaluation.
- Upper Endoscopy
  - Upper endoscopy is recommended in the presence of alarm symptoms and for screening of patients at high risk for complications. While most GERD patients have no mucosal damage seen on upper endoscopy, advanced disease may demonstrate as erosive esophagitis and Barrett's esophagus. Erosive esophagitis is characterized by bright-red esophageal erosions that may be visible with endoscopy. It is differentiated from the ulcerations of the esophageal biopsy. Erosive esophagitis, which may mimic GERD, is diagnosed as >5 erosions seen per high power field on mucosal biopsy in a patient who is refractory to proton pump inhibitor (PPI) treatment. Repeat endoscopy in patients without Barrett's esophagus is not recommended for the American College of Gastroenterology in the absence of new symptoms. Biopsies for Helicobacter pylori are not recommended in patients with GERD. Barium radiographs should not be performed for diagnosis of GERD.
- Esophageal Manometry
  - Manometry uses a pressure sensitive tube to measure the pressures and patterns of muscular contractions throughout the esophagus. It is useful for detecting LES abnormalities and achalasia of the esophagus, but is not specific enough to diagnose GERD.
- Ambulatory Reflux Monitoring
  - To measure how often gastric acid enters the esophagus, a small tube connected to a pH monitor is left in the esophagus for 24 hours. Decreased pH consistent with gastric acid reflux is very sensitive (75-100%) and specific (85-100%) for erosive esophagitis, but less sensitive and specific in patients with a visually normal upper endoscopy.

Differential Diagnosis
- Achalasia
- Cholelithiasis
- Coronary artery disease
- Esophageal cancer
- Esophageal motility disorders
- Esophageal spasm
- Esophagitis
- Esophageal strictures
- Gastric ulcers
- Gastritis
- Helicobacter pylori infection
- Mental hernia
- Peptic ulcer disease
GERD

Treatment
The goals of GERD treatment are to relieve symptoms, heal erosions, prevent complications, and avoid progression and recurrence of disease.

Lifestyle Modifications
- Weight loss is strongly recommended in the presence of obesity which can increase intraabdominal pressure
- Avoid provocative foods such as alcohol, coffee, chocolate, citrus juice, and tomato-based products, peppermint, coffee, and spicy foods.
- Avoid lying flat, bending or stooping after meals
- Elevate the head of the bed at night and no eating within 3 hours of bedtime if night time symptoms are present
- Avoid eating to excessively large meals that increase intraabdominal pressure
- Encourage frequent small meals
- Avoid tight andrestrictive clothing
- Smoking cessation

Medications:
- Proton pump inhibitors (PPI) decrease acid secretion and gastric volume. First line treatment for patients with dyspepsia, epigastric pain, early satiety, belching and bloating. Long term use of PPIs is associated with an increased risk of Clostridium difficile infection, pneumonia, hip fracture, and vitamin B12 deficiencies.
  - e.g. omeprazole, lansoprazole, rabeprazole, esomeprazole, pantoprazole
- Antacids buffer acid and increase LES pressure
  - e.g. aluminum hydroxide, magnesium hydroxide
- Combination drugs that buffer acid and create a viscous mechanical layer
  - e.g. cimetidine
- H2 receptor antagonists decrease acid secretion and are the choice for patients who do not tolerate PPIs.
  - e.g. ranitidine, cimetidine, famotidine, nizatidine

GERD

Surgery
Surgical options include reduction of the hiatal hernia, repair of the diaphragmatic hiatus, strengthening of the distal junction-posterior diaphragm attachment, and Nissen/Toupet fundoplication. Bariatric surgery may be indicated in morbidly obese patients. Surgery is best for patients with refractory erosive esophagitis.

Osteopathic Manipulative Treatment
- Normalize autonomic tone to esophagus and stomach
  - Parasympathetic innervation from vagus nerve
  - Sympathetic innervation from T1-4 and T5-9
  - Diagnose and treat for spinal and paraspinal TART findings
  - Diagnose and treat collateral ganglia tissue texture abnormalities (celiac ganglion)
  - Diagnose and treat Chapman reflex points
- Optimize lymphatic and venous drainage
  - Diagnose and treat thoracic inlet
  - Diagnose and treat abdominal diaphragm
- Optimize biomechanical functioning of the LES
  - C3-5 innervation to abdominal diaphragm
  - Diagnose and treat C3-5
  - Diaphragm motion
  - Diagnose and treat hemidiaphragm and crural diaphragm tension
  - Diagnose and treat L1-3 diaphragmatic crus attachment
  - Diagnose and treat visceral sphincter myofascial tension (hiatus)

1. Assess for tenderness and tissue texture abnormalities at associated sites.
2. Treat positive reflex point by applying firm pressure with a gentle rotary motion over the point using the finger pad.
3. Continue until tissue tension and edema are decreased.
GERD – Sample OMT

OA Balanced Ligamentous Tension (indirect)
Normalize parasympathetic tone to small and large bowel to improve GI motility and secretion
Diagnosis: OA sidebend left, rotated right

Supine HVLA for Neutral Thoracic Dysfunction
Normalize sympathetic tone to esophagus to improve motility and secretion.
Diagnosis: T4-12 neutral sidebending left, rotation right

1. The physician makes a "V" with the thumb and index finger of one hand to support the posterior arch and lateral masses.
2. The other hand sidebends, rotates, and flexes/extends the occiput to bring the OAs to the balanced ligamentous tension.
3. Test respiratory phases, instructing the patient to hold the phase that provides the best BIs.
4. Repeat as needed and recheck.
5. Repeat until best motion and recheck.

GERD – Sample OMT

Direct Abdominal Diaphragm Myofascial Release with Respiratory Cooperation
Improve biomechanics of LES and promote lymphatic drainage from the abdomen.

Celiac Ganglia Inhibition
Normalize sympathetic tone to distal esophagus to improve motility and secretion

1. Grasp the lateral sides of the patient's lower rib margins.
2. Assess for motion preference for right or left rotation, right or left sidebending, and flexion or extension and observe the respiration to determine the most restricted hemidiaphragm.
3. Carry the diaphragm to the restrictive barrier in rotation, sidebending, and flexion/extension.
4. The patient takes some deep breaths as the physician maintains the fascial barrier while resisting inhalation on the side with best motion.
5. Recheck.

1. Patient is supine with knees and hips flexed.
2. Use the finger pads to apply a gentle, downward pressure along the linea alba just inferior to the xiphoid process to assess for fascial tension and tissue texture abnormalities.
3. Apply a gentle, downward pressure until resistance is felt over the most restricted area or over all three at once (also known as the linea alba release).
4. Hold the pressure until a softening or release occurs.

*Avoid compressing the aorta
OMM Review

Available every semester

- Diagnosis reviews: cranium, cervical, thoracic, ribs, lumbar, pelvis, sacrum, abdomen, upper extremity, and lower extremity.
- OMT reviews: counterstrain, cranial, muscle energy, myofascial release, high velocity low amplitude thrust, soft tissue, lymphatic, articulatory, balanced ligamentous tension, ligamentous articular strain, facilitated positional release, Still, visceral, and Chapman reflexes
- Autonomic innervations
**Sample Techniques**

<table>
<thead>
<tr>
<th>Region</th>
<th>Location</th>
<th>Treatment</th>
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</thead>
<tbody>
<tr>
<td><strong>Cervical Posterior</strong></td>
<td>PC1: Nerve: 2cm lateral and inferior to spine. PC2: Gland: On either 3-4cm lateral to midline in muscle mass.</td>
<td>PC1: Self. PC2: Self.</td>
</tr>
</tbody>
</table>

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**Research Report**

Does osteopathic manipulative treatment (OMT) improves outcomes in patients who develop postoperative ileus: A retrospective chart review

W. Thomas Crow, Lilia Gerodinsky

Inagural Family Medicine and Neuroendocrine Oncology: Research Program, Department of Medical Education, Florida Hospital East Orlando, 7675 Lake Underhill Road, Suite 210, Orlando, Florida 32822, USA

Received 5 July 2007; revised in revised form 15 December 2007; accepted 3 March 2008

**Abstract**

Introduction: The treatment of ileus has been estimated to cost the United States $750 million to $1 billion a year. In a study by Bennett-Guerrero et al., on 1016 patients who had major non-cardiac surgery, the most frequent problem that delayed discharge was persistent postoperative GI tract dysfunction in 42% of patients. Despite its huge cost to our society, there have been very few advances in our approach to treatment of ileus. Upon reviewing osteopathic literature for treatment of postoperative ileus it seemed that OMT may be of benefit to patients being treated for ileus in the hospital setting.

Materials and methods: All patients (n = 655) with a discharge diagnosis of ileus (ICD-9-CM International Code 530.1) between 2005 and 2006 were reviewed. There where 331 patients who had undergone abdominal surgery and were included in the study. Patient records were then divided into two groups, those who had received osteopathic manipulative treatment (OMT) and those who had not received OMT. The data for this study was analyzed using ANCOVA.
OPP Curriculum

Module MCQ Assessments
• Online written assessments may be completed in any order
• Deadlines posted for first, second, and third assessment throughout semester
• Student able to choose which assessment to be completed for each deadline
• Online browser lockdown
• Timed 20 items in 25 minutes
• Open book
• WORK ALONE — Honor code

OPP Curriculum

Module MCQ Assessments
• Items drawn from a blueprint
  – OMM Dx
  – OMM Tx
  – Epidemiology and pathophysiology
  – Diagnostic criteria
  – Treatment and Prognosis
  – Research

Each item has many clones that vary slightly
OPP Curriculum

Manual Medicine Literature Review Assignment

• Student search to medical literature for an article relevant to an assigned topic
• Acceptable manual medicine disciplines include osteopathic manipulative medicine, osteopathic manual therapy, chiropractic, massage, physiotherapy, and physical therapy.
• Citation and Abstract to be uploaded
• Deadlines towards the end of the semester

OPP Curriculum

OMM Practice Log

• 10 supervised clinical patients (preferred) or volunteers
• OMT to at least one body area
• Log to include date, patient vs volunteer, age, sex, chief complaint, body regions treated, types of OMT used

  • Physician who supervised the OMT must verify the performance of the OMT by electronically signing on the treatment log form
  • Practice patients may supervised by preceptor, DME, regional dean or other qualified physician MD or DO

• Students have kept OMT logs during 1st and 2nd year for many years
OMM Practice Log

OMM Practice Log
Name: ________________________________

Each semester osteopathic medical students must perform ten OMM treatments on clinical patients or volunteers. Each treatment must be verified by a supervising physician (DO or MD). Specify patient type as clinical patient (P) or Volunteer (V).

Abbreviations: A-abdomen, C-Cervical, H-Hand, L-Lumbar, P-Pelvis, R-Ribs, S-Shoulder, T-Thoracic
RUE-Right upper extremity LUE-Left upper extremity RUE-Right upper extremity RLE-Right lower extremity

<table>
<thead>
<tr>
<th>Date</th>
<th>Age</th>
<th>Sex</th>
<th>Patient Type</th>
<th>Chief Complaint(s)</th>
<th>Regions treated</th>
<th>OMT</th>
<th>Supervising Physician Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/23/14</td>
<td>96</td>
<td>M</td>
<td>P</td>
<td>Neck Pain</td>
<td>T L H S RUE RLE</td>
<td>Dr. A. J. Stil</td>
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OMM Practice Log

Supervised OMM Practice
- Outpatient
- Inpatient
- Volunteers
  - Practice sessions
  - Workshops

Supervisors
- Preceptors
- OMM Champions
- Other attendings
- MD or DO
OMM Practice Log

- Taught students how to ask preceptors to use or practice OMM
- Meet with Directors of Student Medical Education (DSMEs) (3x)
- Taught DSMEs how to ask students to use OMM
- Taught DSMEs what kinds of conditions are amenable to OMT

OPP Course Google Drive

Shared course materials via Google Drive
- DSMEs
- OMM Champions

Grades
- Pass (70-79)
- High Pass (80-89)
- Honors (90-100)
Outcomes

• No course failures (168 students)
  – Pass 10%
  – High Pass 52%
  – Honors 38%

• One student did not submit an OMM Log
• Two students submitted less than 10 treatments
• Two students did not submit a Literature Search assignment

Outcomes

Literature Search Assignment

• Manual Medicine for GI conditions
  – 26 different citations

OMM Logs

– Patients
– Volunteers
– Age range
– Musculoskeletal and Non Musculoskeletal problems
– Dates ranged from June to Dec
Lessons Learned

• Online courses have technical challenges
  – Respondus lockdown browser did not update as often as IOS
• Open exams for a second chance
  – Corrupt files uploaded to blackboard
• Human errors
  – Typos in handouts
  – Typos and miskeys on exams
• Professionalism
  – Did not complete assignments if not needed to pass
  – Copied Literature Search assignment
  – Students signed for preceptors
  – Copy and pasted preceptor signatures

OMM Practice Logs
Lessons Learned

• Failure to turn in assignments
  – OMM log submission required to Pass

• Professionalism “Cut and Paste” signatures
  – Contacted all Students
  – Contacted all DSMEs
  – Contacted individual students directly
  – Contacted individual OMM Champions

• Respondus Browser eliminated
  – Open Book
  – Large item bank with many item clones

Questions?