

# COILS

Clinical  
Osteopathically  
Integrated  
Learning  
Scenarios

Patient with

## **Congestive Heart Failure**

Prepared by: AACOM's Educational Council on Osteopathic Principles

## Part 3: Chapter 2

### Cardiac Clinical Osteopathically Integrated Learning Scenario:

# Patient With Congestive Heart Failure



## Description

This Clinical Osteopathically Integrated Learning Scenario (COILS) focuses primarily on the palpatory evaluation and supportive osteopathic manipulative treatment for a patient with congestive heart failure (CHF).

The COILS is divided into two sections:

### Section One

The **Roundtable Discussion Workshop** includes a discussion and evaluation of the patient's case history, diagnosis, pathophysiology, osteopathic principles involved, functional anatomy, treatment options, contraindications, and (if time permits) a demonstration of manipulative treatment techniques applicable to the patient's homeostatic needs.

### Section Two

The **Patient-Based Application Workshop** is the supervised application of manipulative treatment techniques for a patient with this diagnosis. The workshop is designed to evaluate the student's or physician's diagnostic and psychomotor skills when providing an osteopathic manipulative treatment for an actual (or simulated) patient.

*If time permits, the instructor may deliver the entire two-section program at one time. Ideally, however, Section One should be taught several days before Section Two to allow time for the student or physician to review and practice appropriate techniques. If an actual patient is not available for Section Two, a simulated patient may be used.*

## Section One: Roundtable Discussion Workshop

### I. Description:

*This section is a roundtable-type presentation and discussion on the osteopathic approach to the treatment of a patient with CHF.*

### II. Cognitive Components

#### A. Case Presentation

A 68-year-old female presents with a confusion, dizziness, increased edema in her legs, and a non-productive cough; worsening over the past three days. She has a medical history of Type 2 diabetes, hypertension, and coronary artery disease. She had an anterior wall myocardial infarction (AWMI) five years ago with bypass of the left anterior descending with median sternotomy.

Previously, the patient became short of breath with normal activities of daily living, however now is she experiencing shortness of breath at rest as well. She has been having difficulty sleeping and is waking up during the night gasping for air. She reports having increased leg swelling and has three-pillow orthopnea. She has increased abdominal girth and decreased appetite, and she is fatigued. She denies having palpitations; chest pain; wheezing; fever or chills; or nausea, vomiting, or diarrhea. She has had no recent medication changes. Her diet consists of mostly high-sodium canned soup.

Social history revealed no smoking, alcohol use, or nonprescription drug use. The patient is retired, having previously done clerical work. She reports no exposures to asbestos or smoke.

#### Physical Examination

**Vital signs:** Temperature, 98.7°; Respiratory Rate, 30; Blood Pressure, 94/68; Pulse, 112

**General:** Appears in mild distress; alert and oriented; pale

**Head:** Normocephalic; atraumatic; symmetrical with edema

**Eyes:** Pupils equal, round, reactive to light and accommodation; extraocular movements intact

**Ears:** Tympanic membranes intact; no fluid

**Nose:** Turbinate pink; minimal mucus

**Throat:** Jugular venous distention to 15 cm; supple; trachea midline

**Lung:** Breath sounds diminished; bilateral rales 1/3 up from base  
**Abdomen:** Distended, + bowel sounds, soft, non-tender; liver edge palpated 3 cm below costal margin; + fluid wave; + shifting dullness

**Cardiac:** Regular rhythm; II/VI SEM @ RSB; + S3, + S4

**Extremities:** 3+ pitting edema bilateral lower extremities; no clubbing; no cyanosis

## Diagnostics

**SaO<sub>2</sub>:** 87% on RA (hypoxemia)

**EKG:** Sinus tachycardia @ 112 bpm; q in V2-V4 (previous AWTMI); frequent PVCs (myocardial irritability)

**Labs:** CBC normal; electrolytes normal; LFTs slightly elevated (passive congestion); BNP level 1700; TSH normal; UA normal

**CXR:** Cardiomegaly (from remodeling post-myocardial infarction [MI]); pulmonary vascular prominence; + Kerley B lines (from dilated lymphatic ducts)

## Osteopathic Structural Examination

- Cranial: Sphenobasilar synchondrosis (SBS) in extension
- OA-ESrRl; AA rotated left; C7 RSL.
- T1/Rib1 RSL, Ribs 2-8 on left held in inhalation
- T1-T4 on left paraspinal mm hypertonicity, cool, ropey
- T6-T9 paraspinal hypertonicity, warm, boggy on right decreased diaphragmatic motion bilaterally
- T-L JCT RLSR Chapman's point in 2nd ICS on left
- Increased lumbar lordosis, L-S JCT RLSR
- Sacrum, (-) spring test, deep sulcus right, ILA prominence left, favoring sacral extension, decreased motion of the pelvic diaphragm

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## B. Pathophysiology

1. CHF is a clinical syndrome with many causes and is characterized by signs and symptoms of volume overload and inadequate tissue perfusion. The disease carries a high morbidity and mortality and is progressive.
2. In CHF, and post MI, a hypersympathetic state predominates. Increased sympathetic tone causes constriction of lymphatic ducts (lymphatic drainage of the heart and lungs occurs primarily through the right lymphatic duct), causing lymph stasis of the cardiac and peripheral tissues. Cardiac lymphostasis can cause myocardial irritability and arrhythmias. This can result in ectopy on EKG. Increased sympathetics also cause arterial vasoconstriction, increasing cardiac work. Hypersympathetics can manifest as tachycardia, pallor, and diaphoresis.

3. Constriction of renal afferent arterioles and decreased effective circulating volume activate neurohormonal mechanisms. These retain fluid and sodium and also promote pathologic vascular and cardiac remodeling through the renin–angiotensin–aldosterone cascade and other pathways. Cardiac remodeling can result in ischemic cardiomyopathy. In addition, any septal defect that impairs functional ability will increase the strain of activities of daily living and the system.
4. This pathologic triad of autonomic imbalance (increased sympathetic state), increased neurohormonal remodeling, and lymphatic and venous stasis provides the rationale for an OMM/OMT approach.

### C. Functional Anatomy

*Includes knowledge of structure and physiology necessary to properly carry out the OMM/OMT support.*

1. SBS in extension, as has been observed in patients with respiratory problems.
2. OA, AA, and C7 restricted on the left from increased motor tone.
3. T1/Rib 1 dysfunctions from increased motor and fascial tone, thus decreasing lymphatic drainage.
4. Left Ribs 2–8 stuck in inhalation from increased work of breathing, causing intercostal hypertonicity (exhalation dysfunction, “stuck up”).
5. SD at left T1–T4 represents chronic viscerosomatic reflexes resulting from the AWWMI.
6. SD at right T6–T9 represents acute viscerosomatic reflexes (from the celiac ganglion) caused by passive liver congestion 2° right heart failure.
7. Decreased thoracic and pelvic diaphragmatic excursion decreases efficiency of TAP cylinder, thus decreasing venous and lymph return to central circulation.
8. Fascial distortion maintains junctional torsions and increased lordosis, thus decreasing TAP cylinder efficiency.
9. The sacrum is in an R on R torsion, correlating with L–S JCT RLSR, and is not CCP.
10. Chapman’s reflex represents myocardial irritation.

### D. Goals for Osteopathic Manipulative Management

*Includes a review of treatment pearls; a general plan for manipulative treatment of the patient; and a discussion of treatment options, contraindications, and plans for follow-up evaluation and treatment.*

1. Increase rib cage motion to maximize respiratory effort, which helps facilitate an increase of negative intrathoracic pressure with respiration, thereby increasing the efficiency of the cardiovascular system.
2. Minimize the amount of initial cardiac pre-load due prior to treatment.
3. Normalize sympathetic/parasympathetic tone. Decrease blood pressure, vasoconstriction, and stress on heart and lungs.

4. Improve lymphatics.
5. Address acute somatic dysfunction.
6. Minimize complications associated with a bed-bound patient.
7. Support homeostasis.
8. Minimize somatic pain.
9. Start treatment centrally, and proceed to the periphery.

**Centrally:** A typical regimen would start with addressing T1/R1 to allow central lymphatic drainage. Rib raising is used to decrease sympathetic tone, disrupt reflex arcs and promote vasodilatation. Muscle energy could be used on R2–R8, focusing on R8 (key rib dysfunction) utilizing serratus anterior. For doming the diaphragm, removing myofascial strains from the junctions (e.g., HVLA), and decreasing the lumbar lordosis, the frog-leg technique is effective and will assist in generation of pressure gradients. Treat the sacral torsion to improve sacral motion, and enhance motion of the pelvic diaphragm.

**Periphery:** A combination of pedal pump, myofascial ringing, and both thoracic duct and right lymphatic duct pump should be performed.

#### E. Contraindications and Cautions Regarding Treatment

*See contraindications to treatment, Foundations, pp. 1015–1024.*

1. Mobilizing too much fluid from the periphery into the central circulation could contribute high-volume stress to the cardiac output.
2. Increasing sympathetic tone could lead to constriction of lymphatic vessels and vasoconstriction.

#### F. Instructor's Notes

Personal clinical pearls and lessons learned from previous COILS presentations.

### III. Psychomotor Components

*If time permits, this part can be carried out on a simulated patient.*

1. Practice palpatory diagnosis. See techniques under Section D above.
2. Demonstrate key treatment techniques in the body regions involved.
3. Evaluate the plan for treating the patient in the appropriate position, localization of gentle forces, and activation.

## IV. References

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## V. Examination Questions

*These multiple-choice questions involve the treatment of a patient with CHF.*

*(\* denotes answer)*

- 1. Which of the following OMM/OMT techniques would be contraindicated?**
  - A. Treatment in the supine position\*
  - B. Treatment of the long restrictors
  - C. Thoracic pump with sudden recoil
  - D. Pedal pump
  - E. Redoming of the diaphragm
  
- 2. If the patient is likely to be noncompliant with lifestyle modifications, which of the following is least likely to be helpful?**
  - A. Physician counseling
  - B. Nursing home placement
  - C. Employing community support resources
  - D. Stress reduction
  - E. Decreasing family involvement\*
  
- 3. Sympathetic facilitative changes would likely be found at which of the following levels?**
  - A. OA joint
  - B. T1-T5\*
  - C. T5-T9
  - D. T10-L1
  - E. S2-S4
  
- 4. One goal for treating rib restriction is to**
  - A. Increase facilitation
  - B. Stimulate parasympathetic response
  - C. Change the patient's respiratory rate
  - D. Lower the diastolic blood pressure
  - E. Decrease the work of breathing\*



## Section Two: Patient-based Application Workshop

### I. Description:

*This section includes the practical application of osteopathic treatment techniques to support the patient with CHF.*

### II. Psychomotor Components

*(Refer to Section One for regions of the body that are involved.)*

1. Examination of the patient using TART, including postural screen, palpation, segmental motion testing, and diagnosis of somatic dysfunction.
2. Application of philosophy and treatment technique.
3. Re-evaluation of the patient after treatment is completed to assess results. If a simulated patient is used, then the student or physician should verbalize length of treatment and future treatment goals.

### III. Cognitive Components

1. Documentation in the medical record.
2. Post-treatment discussion.

*Note. It is recommended to use the standardized outpatient form included in each of these chapters for documentation.*

Physician: \_\_\_\_\_ Date: \_\_\_\_\_

Title:  Resident (Specialty) \_\_\_\_\_

Intern       OMS III       OMS IV

**Critical Actions Evaluation Checklist of Osteopathic Principals  
Applicable to a Patient with Congestive Heart Failure**

CRITICAL ACTION	COMPLETED		COMMENTS
	Yes	No	
Become familiar with the patient's history physical examination findings, laboratory and other diagnostic findings.			
Perform an osteopathic structural examination.			
Determine significant areas of somatic dysfunction.			
Determine body region(s) to be treated with OMT.			
Apply OMT to at least the body region determined to be the most in need of treatment at present time.			
Treat other significant somatic dysfunctions if feasible.			
Document treatment and immediately observable effects.			

Trainer: \_\_\_\_\_

# Osteopathic Musculoskeletal Examination

EXAMINER \_\_\_\_\_ SIGNATURE \_\_\_\_\_ DATE OF EXAMINATION \_\_\_\_\_

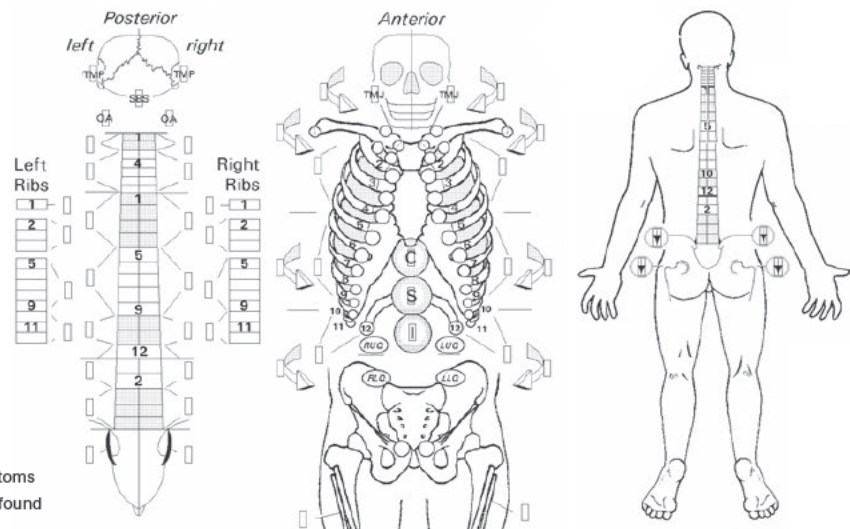
EXAMINER \_\_\_\_\_ SIGNATURE \_\_\_\_\_ DATE OF EXAMINATION \_\_\_\_\_

CHIEF COMPLAINT \_\_\_\_\_

<p><b>Required</b></p> <p><b>Ant.Post.Spinal Curves:</b></p> <p><b>Cervical Lordosis</b>  <input type="checkbox"/> Increased   <input type="checkbox"/> Normal   <input type="checkbox"/> Decreased</p> <p><b>Thoracic Kyphosis</b>  <input type="checkbox"/> Increased   <input type="checkbox"/> Normal   <input type="checkbox"/> Decreased</p> <p><b>Lumbar Lordosis</b>  <input type="checkbox"/> Increased   <input type="checkbox"/> Normal   <input type="checkbox"/> Decreased</p>	<p><b>Scoliosis (Lateral Spine Curves)</b>  <input type="checkbox"/> None   <input type="checkbox"/> Functional   <input type="checkbox"/> Mild   <input type="checkbox"/> Moderate   <input type="checkbox"/> Severe</p> <p><b>Assessment Tools</b></p> <p><input type="checkbox"/> T = Tenderness</p> <p><input type="checkbox"/> A = Asymmetry</p> <p><input type="checkbox"/> R = Restricted Motion   <input type="checkbox"/> Active   <input type="checkbox"/> Passive</p> <p><input type="checkbox"/> T = Tissue Texture Change</p>	<p>For coding purposes only</p>
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**Abbreviation Key**

- OA Occipito-Atlantal joint
- Sympathetic Ganglia:**
- C Cellac
- S Superior Mesenteric
- I Inferior Mesenteric
- TMJ Temporomandibular joint
- TMP Temporal Bone
- SBS Sphenobasilar symphysis



**Severity Key**

- 0 No SD or background (BG) levels
- 1 Minor TART more than BG levels
- 2 TART obvious (R&T esp) +/- symptoms
- 3 Symptomatic, R and T very easily found "key lesion"

Region Evaluated	Severity				Specific Major Somatic Dysfunctions
	0	1	2	3	
Head	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Neck	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Thoracic T1-4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
T5-9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
T10-12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Lumbar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pelvis/Sacrum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pelvis/Innominate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extremity Lower R	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extremity Upper R	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ribs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other/Abdomen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Major Correlations with:**

- Traumatic    Orthopedic    Neurological    Viscerosomatic    Primary Musculoskeletal    Activities of Daily Living
- Rheumatological    EENT    Cardiovascular    Pulmonary    Cardiovascular    Gastrointestinal    Genitourinary    Other

Other: \_\_\_\_\_