**CLT-LANA**

**DETAILED CONTENT OUTLINE**

**I. ANATOMY AND PHYSIOLOGY 25%**

**A Comprehension of anatomy**

1 Circulatory system (i.e., venous and arterial)

2 Lymphatic system

a Embryology

b Lymphangiogenesis

c Prelymphatic channels

d Lymphatic vessels

e Lymph nodes

f Lympho-venous anastomoses

g Watersheds and collateral anastomoses

h Superficial drainage pathways

1 Head and neck

2 Upper extremities

3 Lower extremities

4 Trunk

5 Genital

i Deep drainage pathways (e.g., abdominal, pelvic, thoracic organs,

limbs)

3 Integumentary system

4 Interstitium

**B Comprehension of physiology**

1 Function of the circulatory system including the lymphatic system

2 Microcirculation

a Starling's hypothesis and equilibrium (including updates)

b Safety factors that prevent edema

3 Lymph formation and transport

**2. LYMPH VASCULAR DISORDERS (i.e., primary and secondary lymphedema) 15%**

**A** Differentiate etiology

**B** Identify pathology and pathophysiology

**C** Classify and stage lymph vascular disorders

**D** Recognize sign and symptoms

**3. OTHER DISORDERS (e.g., lipedema, lipolymphedema, phlebolymphedema, chronic venous insuffciency, myxedema) 10%**

**A** Differentiate etiology

**B** Identify pathology and pathophysiology

**C** Recognize signs and symptoms

**4. PATIENT EVALUATION 20%**

**A Identify relevant elements of patient history**

1 Edema and prior edema treatment

2 Family history

3 Other medical history

4 Medications/supplements/diet

5 Infections

6 Symptoms

7 Functional status (e.g., Activities of Daily Living (ADL))

8 Psycho-social

**B Assess implications of patient history**

**C Recognize potential complications associated with lymphedema**

1 Medical conditions associated with lymphedema (e.g., angiosarcoma,

cellulitis, anasarca, lymphoceles, cancer recurrence)

2 Medical conditions that exclude treatment (e.g., acute congestive heart

failure, untreated cellulitis, acute deep venous thrombosis)

3 Medical conditions that may limit treatment approach (e.g., compensated

congestive heart failure, peripheral neuropathy, cognitive impairment)

4 Medical conditions that can affect lymphedema treatment outcomes (e.g.,

arthritis, hypertension, impaired mobility)

**D Conduct physical examination**

1 Weight and height

2 Appearance of involved limb(s) and adjacent areas (e.g., deepened skin

folds, lobules, discoloration)

3 Clinical signs (e.g., tissue texture, Stemmer's sign)

4 Peripheral pulses

5 Range of Motion (ROM), muscle strength, posture, and gait

6 Sensation

7 Measurements (e.g., circumferential, volumetric, perometry)

8 Skin integrity (e.g., lymphorrhea, fungal infection)

**E Comprehension of diagnostic tests (e.g., lymphscintigraphy, computerized tomography (CT), magnetic resonance imagining (MRI), venous Doppler examination, and ankle brachial index (ABI))**

1 Purpose

2 Testing procedures

**F Incorporate results of diagnostic tests in treatment planning**

**5. LYMPHEDEMA MANAGEMENT 30%**

**A Apply principles of complete decongestive therapy (CDT)**

1 Manual lymphatic drainage (MLD)

a Effects

b Technique concepts (e.g., pressure, direction, sequence) c Contraindications

2 Compression bandaging

a Effects

b Concepts (e.g., materials, gradient pressure, procedure)

c Contraindications

3 Compression garments

a Effects

b Concepts (e.g., types and styles, fitting principles, grades of

compression)

c Contraindications

4 Decongestive exercises

a Effects

b Concepts (e.g., variations, approaches)

c Contraindications

5 Skin care

6 Education

a Activities of Daily Living (ADL) modifications

b Compression bandaging

c Compression garments (i.e., wear and care)

d Exercise

e Lymphatic drainage

f Nutrition

g Precautions and risk reduction

h Self-assessment

i Skin care

j Signs and symptoms of infection

k Weight management

l Follow-up

**B Recognize principles of adjunct treatments**

1 Intermittent pneumatic compression (IPC)

2 Additional compression devices

3 Additional treatment options (e.g., laser, elastic taping, deep oscillation)

**C Adapt treatment plan to specific populations and needs (e.g., pediatric, palliative**

**care, wound care)**

**D Recognize factors that affect quality of life (e.g., psycho-social, adherence issues)**

**E Identify best practices (e.g., International Lymphoedema Framework (ILF),**

**International Society of Lymphology (ISL), National Lymphedema Network (NLN))**

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