**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))**

Updated October, 2013