

MODULE OVERVIEW

Module 6: Energy Based Devices – Photorejuvenation & Electromagnetic Therapies (3-day) consists of didactic & live patient hands-on training and examinations. Module 6 is a comprehensive clinical training course with advanced aesthetic medical devices, combined with extensive theoretical education. This certification course is delivered in a small class size and high instructor-to-trainee ratio to ensure a proper delivery of necessary knowledge and mastery of the skills. The prerequisite for Module 6 is Module 1: Advanced Facial & Neck Anatomy.

NORMAL SKIN, HAIR, NAIL PHYSIOLOGY & ANATOMY

DIAGNOSIS & MANAGEMENT OPTIONS FOR SKIN, HAIR, AND NAIL DISEASES PERTINENT TO PHOTO-REJUVENATION & HIGH FREQUENCY ELECTROMAGNETIC TREATMENT

1. Photo-aging
 - a) Fitzpatrick skin typing
 - b) Glogau scale of aging
 - c) Wood lamp exam
 - d) Classification and pharmacological treatment options and preventive strategies
 - e) Pharmacological and procedural treatment options
 - f) Discuss dynamic and static wrinkles and introduction to various therapeutic approach to address different levels of aging and different types of wrinkles
2. Melanotic dermatosis: freckles, solar lentigines, melasma, seborrheic keratosis, dermatosis papulosa nigra
 - a) Classification and pharmacological treatment options and preventive strategies
 - b) Pharmacological and procedural treatment options
3. Melanocytic dermatosis: junctional nevus, blue nevus, compound nevus, intradermal nevus, lentigo maligna, melanoma
 - a) Discussion of skin biopsy for malignancy detection
 - b) Diagnosis and pharmacological and procedural treatment options and preventive strategies
4. Non-melanocytic pre-malignancy/Malignancy: actinic keratosis, squamous cell carcinoma, basal cell carcinoma
 - a) Discussion of skin biopsy for malignancy detection
 - b) Diagnosis and pharmacological and procedural treatment options and preventive strategies
5. Benign tumors and hyperplasia: sebaceous hyperplasia, syringoma, rhinophyma, skin tag, keratoacanthoma, acne keloidalis nuchae
 - a) Diagnosis and preventive strategies
 - b) Pharmacological and procedural treatment options
6. Vascular disorders: rosacea, spider angioma, cherry angioma, venous lake, pyogenic granuloma, telangiectasia
 - a) Diagnosis and preventive strategies
 - b) Pharmacological and procedural treatment options
7. Scars: atrophic, hypertrophic, and keloid
 - a) Diagnosis and preventive strategies
 - b) Pharmacological and procedural treatment options
8. Infections: condyloma, warts, molluscum contagiosum, onychomycosis, hidradenitis suppurativa
 - a) Diagnosis and preventive strategies
 - b) Pharmacological and procedural treatment options
9. Immunological: alopecia areata, psoriasis, atopic dermatitis, vitiligo
 - a) Diagnosis and preventive strategies
 - b) Pharmacological and procedural treatment options

REVIEW ELECTROMAGNETIC SPECTRUM

1. Gamma & X rays
2. Ultraviolet radiation (UVA, UVB, UVC)
3. Visible radiation
4. Infrared radiation (NIR, MIR, FIR)
5. High frequency (UHF, VHF, HF)

PHOTOREJUVENATION PERTINENT TO NATUROPATHIC AESTHETIC PROCEDURES

1. Concept & definition of Photorejuvenation
2. Photo-physics & fundamental operating protocols
 - a) Concept of chromaticity, coherency, and collimation
 - b) Concept of selective absorption and chromophores
 - c) Wavelength, pulse duration, fluence, power, energy, spot size
 - d) Types of pulses: Picosecond, Q-switched (nanosecond), Quasi-long (micro-second), Long (milli-second), & Continuous (second)
 - e) Light-tissue interaction
 - f) Light safety & operational precautions
 - g) Wavelength, pulse duration, & fluence selection
3. Intense Pulse Light (IPL) Source
 - a) Definition of Intense Pulsed Light devices
 - b) Mechanism of action & target selection
 - c) Clinical utilities
 - d) Patient selection & contraindication
 - e) Review of current devices in the market
4. Low Level Light Therapy (LLLT)
 - a) Definition of LLLT
 - i. LED
 - ii. Cold laser
 - b) Mechanism of action and target selection
 - c) Clinical utilities
 - d) Patient selection & contraindication
 - e) Review of current devices in the market
5. Photo-Dynamic Therapy (PDL)
 - a) Definition of PDL
 - b) Review of photosensitizing agents
 - c) Incubation and activation techniques
 - d) Review of light sources
 - e) Clinical utilities
 - f) Patient selection & contraindication
6. Focused Ultrasound Devices
 - a) Definition of focused ultrasound
 - b) Mechanism of action & target selection
 - c) Clinical utilities
 - d) Patient selection & contraindication
7. Therapeutic Ultraviolet Devices
 - a) Types of UV devices: narrow-band UVB lamp, UVA lamp, UVB laser
 - b) Mechanism of action & target selection
 - c) Clinical utilities
 - d) Patient selection & contraindication

CONCEPTS OF ELECTROSURGERY & MEDICAL DIATHERMY & ELECTROLYSIS

FUNDAMENTALS OF ELECTROSURGERY

1. Direct & alternating current
2. Biophysics in the use of RF electricity
3. Impact & mechanism of RF electricity on tissue

PRINCIPLES OF ELECTROSURGERY

1. Components of electrosurgical units (ESU)
2. Monopolar vs. Bipolar instrument system
3. Mono-terminal vs. Bi-terminal instrument system
4. Definitions of current, voltage, impedance, ohm's law, power, energy, power density, current density, duty cycle
5. Conversion of radiofrequency electromagnetic energy to mechanical energy
6. Effect of temperature on cells and tissue
7. Effect of alternating current on cells
8. Waveforms on oscilloscope
 - a) Coagulate: interrupted, modulated, dampened, high voltage waveform
 - b) Cut: continuous or modulated, low voltage waveform
 - c) Blend: continuous low voltage and modulated high-voltage waveforms or modulated/interrupted versions of continuous waveforms
9. Tissue effects of electrosurgery
 - a) Electrodesiccation
 - b) Electrofulguration
 - c) Electrocoagulation
 - d) Electrosection
10. Tissue reaction in relation to tissue exposure time and size, shape of the electrode
11. Concept of resistive heating
12. Variables impacting the tissue effects of electrosurgery
 - a) Power density, electrode surface area, electrosurgical generator power output, tissue impedance, waveform
 - b) Time on or near tissue
 - c) Media between electrode and tissue, carbon deposit on active electrode, and formation of steam envelope

HF DEVICE TYPES

1. HF RF devices for surgical cutting, blending, coagulating
 - a) Monopolar vs Bipolar
 - b) Insulated electrode vs non-insulated
2. Aesthetic HF RF devices
 - a) Surface contact electrode types: Solta Medical Thermage®, BTL Exilis™, Pollogen TriPollar RF, Ellman Pellevé®
 - i. Monopolar, Bipolar, Multipolar
 - ii. Epidermal protection and discomfort reduction technologies
 - iii. Clinical indications, contraindication, and general operating protocols for devices in this classification
 - b) Penetrating needle electrode types: Lutronic INFINI™, Syneron ePrime™, Invasix Fractora™, Jeisys INTRAcel™, Viol Scarlet-S™, Pollogen Surgen
 - i. Insulated needle types vs non-insulated needle types
 - ii. Clinical indications, contraindication, and general operating protocols for devices in this classification
 - c) Non-contact RF: BLT Vanquish
 - i. Clinical indications, contraindication, and general operating protocols for devices in this classification
3. Argon beam HF coagulator
4. Electrolysis devices
 - a) Review of concept
 - b) Overview of epilation techniques
 - c) Safety tips

OPERATOR PROTECTION

1. Viral airborne transmission via plume: HIV, Hep B, HSV, and HPV
2. Smoke evacuation system
3. Protective mask and glasses

PREOPERATIVE PREPARATION & CONSIDERATION

1. Local anesthesia
 - a) Injectable (Lidocaine & Bupivacaine)
 - i. Dosage, toxicity, epinephrine
 - ii. Complications of peripheral nerve anesthesia
 - iii. Allergic reaction
 - iv. Local toxicity
 - v. Systemic toxicity
 - vi. Complications & treatment scenarios
 - vii. Patient preparation
 - viii. Infiltration techniques
 - b) Topical (EMLA 5%, Lidocaine 5% gels, BLT)
 - i. Dosage, incubation time, penetration depth
 - ii. Application area & systemic toxicity
 - iii. Allergic reaction
 - iv. Irritant reaction, alkaline burn, acid burn
2. Patient specific considerations
 - a) Existing conditions: bleeding diathesis, poor healing, vasculopathy, malnutrition, diabetes, keloid/hypertrophic tendency, cutaneous viral dermatosis (viral prophylaxis), history of severe allergic reactions, active local skin infection, active local skin inflammation
 - b) Facial implants: rhinoplasty, mentoplasty, other injectable implants
 - c) Implanted devices: cardiac pacemaker, deep-brain stimulators, implantable cardiac defibrillators
 - d) Safety checklist: grounding, electro contact, electrical leakage new copy
 - e) Patient preparation: Removal of jewelry, non-alcohol containing solution, perianal moist packing, aseptic skin preparation, patient positioning
 - f) Lifestyle: martial arts, deep tissue facial massage, etc.

OPERATIVE CONSIDERATION

1. Treatment area specific considerations
 - a) Channeling
 - b) Arching
 - c) Conduction via nerves & blood vessels
 - d) Tissue hydration status
2. Selection of suitable electrode type for required effect
3. Special technique for deep and complex structure
 - a) Indirect contact through metal instrument
 - b) Direct contact using insulated electrode
4. Waveform selection based on indications
 - a) Electrodesiccation and/or electrofulguration
 - i. Epidermal nevus, seborrheic keratosis, sebaceous hyperplasia, skin tag, warts, syringoma, dermatosis papulosa nigra, molluscum contagiosum
 - b) Electrocoagulation
 - i. Telangiectasia, pyogenic granuloma, spider angioma, cherry angioma, venous lake, actinic keratosis, keratoacanthoma, superficial/nodular basal cell carcinoma
 - c) Electrosection
 - i. Condyloma, rhinophyma, hidradenitis suppurativa, acne keloidalis nuchae
5. Risk reduction strategies
 - a) Electrical burn, electrocution, electric shocks
 - b) Infection transmission
 - c) Eye injury

POST-OPERATIVE CONSIDERATION

1. Wound dressings
 - a) Non-adherent fabric
 - b) Absorptive dressing
 - c) Occlusive/moisture retentive
 - i. Foam
 - ii. Film
 - iii. Hydrocolloid
 - iv. Hydrogels
 - v. Alginate
 - vi. Hydrofiber
 - vii. Hyaluronic acid dressing
2. Microbial prophylaxis
3. Management of cutaneous viral eruption
4. UV protection

LIVE DEMONSTRATION & HANDS-ON TRAINING WITH CUTTING EDGE DEVICES

1. IPL Photorejuvenation
2. Low Level Light Therapy (LLLT)
3. Photo-Dynamic Therapy (PDT)
4. RF Ablative and non-ablative skin resurfacing & body contouring
5. Focused ultrasound

RISK REDUCTION & MANAGEMENT OF COMPLICATIONS

1. Systematic approach to minimize complication
2. Ideal room setup, patient preparation, and operator preparation for best safety
3. Post-procedural infection
4. Thermal burn
 - a) Burn physiology and classification
 - b) In-clinic emergency treatment for various levels of burn cases
 - c) At-home management for various levels of burn
 - d) Short-term and long-term burn wound management
 - i. Rapid re-epithelialization
 - ii. Post-inflammatory hyperpigmentation
 - iii. Atrophy & textural changes
 - iv. Surgical repair options
5. Electromagnetic nerve injury
 - a) Physiology of electrical nerve injury
 - b) In-clinic emergency treatment for various levels of electrical nerve injury
 - c) Short-term and long-term management
6. Staff training requirements & strategies to properly handle emergency situations
 - a) Post-procedure inquiries including recovery time, sun-avoidance, onset of therapeutic benefit, and duration of therapeutic benefit
 - b) Side effect inquiries including erythema, edema, scabs, peeling, acne breakouts, viral skin breakouts, bacterial infection, bruise, and skin sensitivity

WRITTEN EXAM

The written exam consists of 60 multiple choice and 10 short answer questions. Digital media is used to present clinical cases for the 10 short answer questions. Trainees must be able to demonstrate their knowledge in the course material. A grade of 70% or higher is required to pass the course.

PRACTICAL EXAM

Trainee is required to treat a live patient while being monitored by the instructor. Trainee is required to demonstrate competency in the aesthetic consultations, treatment planning, pre-and post-treatment instructions, choosing the appropriate device, choosing right pharmacology and additional procedures to provide the highest standard of treatment or to manage complications appropriately. Trainee's performance is marked by the instructor. A grade of 80% is required to pass the course. A fatal misdiagnosis, omission, and/or errors which may jeopardize the patient's safety automatically disqualifies trainee from passing the course regardless of the final score.