

ACMS Core Curriculum

I. BASIC SCIENCE

A. *Cutaneous Oncology*

1. Theories of carcinogenesis
2. Current knowledge about epithelial carcinogenesis
3. Ultraviolet radiation - physics and clinical implications

B. *Epidemiology*

1. Geographic variation in incidence of non-melanoma skin cancer and malignant melanoma
2. Demographics of skin cancer

C. *Clinical Research*

1. Non-melanoma skin cancer
2. Melanoma

D. *Mohs Micrographic Surgery*

1. History
 - a. Fixed tissue technique
 - b. Frozen tissue technique
2. Principles and literature of MMS
 - a. Tissue conservation
 - b. Maximal cure rate

E. *Anatomy and Physiology*

1. Classic anatomy with emphasis on the head and neck region
2. Topographical features and underlying bony and cartilaginous structures
3. Blood supply of the face
4. Sensory innervation of the head and neck
5. Motor innervation of the head and neck
6. Muscles of facial expression
7. Lymphatic drainage
8. Relaxed skin tension lines, cosmetic units and junction lines
9. Characteristics of the skin in different cosmetic units
10. Reservoirs of excess skin available on the head and neck
11. Anatomic free margins
12. Anatomic convexities and concavities
13. Microscopic anatomy of the skin and subcutaneous tissues
14. Photoaging and intrinsic aging
15. Physiology of the skin and soft tissues

F. *Wound Healing*

1. Basic science
 - a. Phases of wound healing
 - b. Tensile strength
 - c. Theories of epidermal and dermal wound healing
2. Factors that influence wound healing
 - a. Environmental
 - b. Local
 - c. Systemic
 - d. Genetic

3. Anatomic and skin type considerations
4. Microbiology
 - a. Normal skin flora
 - b. Pathogenic organisms
5. Biomechanics and histology of normal skin and scars
6. Wound dressings
 - a. Materials
 - b. Technique

G. Therapeutic Technology

1. Electrosurgery
 - a. Galvanic current
 - b. High frequency electrosurgery
 - c. Fulguration
 - d. Dessication
 - e. Coagulation
 - f. Cutting
2. Cryosurgery
 - a. Cryobiology
 - b. Effect of cold on normal and abnormal skin tissue
3. Laser
 - a. Nature of light energy
 - b. Biology of laser tissue effects with various lasers
4. Radiation
 - a. Electron beam
 - b. Ortho-voltage
 - c. Tissue effects
 - d. Wound healing in radiated field
5. Surgery
 - a. Instrumentation
 - b. Instrument preparation
 1. Theory of sterilization
 2. Methods of sterilization
 3. Resources necessary for sterilization
 - c. Closure materials

II. CLINICAL SCIENCE

A. Indications for Mohs Micrographic Surgery

1. Basal cell carcinoma (BCC)
 - a. High risk for aggressive behavior
 1. Clinical features
 - a. Ill-defined clinical borders
 - b. Anatomic sites
 - i. Periorbital
 - ii. Central third of face
 - a. Perinasal including embryologic fusion planes
 - b. Perioral
 - iii. Peri-auricular/ear canal
 - iv. Scalp/temple
 - c. Previous surgery with positive histologic margin

- d. History of radiation therapy/exposure
 - e. Recurrent tumor
 - f. Large size
 - g. Rapid growth or aggressive behavior
 - h. Immunosuppression
 - i. Genodermatoses
 - j. Other
 - 2. Histologic pattern
 - a. Morpheaform
 - b. Infiltrating
 - c. Basosquamous (metatypical)
 - d. Deep tissue/b
 - e. Perineural or perivascularone involvement
 - 3. Anatomic areas for tissue preservation
 - a. Nose
 - b. Lips
 - c. Periocular
 - d. Ear
 - e. Digits
 - f. Genital/Perianal
 - g. Other
2. Squamous cell carcinoma
- a. High risk for aggressive behavior
 - 1. Clinical features
 - a. Ill-defined clinical borders
 - b. Anatomic sites
 - i. Periorbital
 - ii. Central third of face
 - iii. Peri-auricular/ear canal
 - iv. Scalp/temple
 - v. Mucosal
 - vi. Genital
 - vii. Hands and feet
 - viii. Nail bed and matrix
 - c. Previous surgery with positive histologic margins
 - d. History of radiation therapy exposure
 - 2. Conditions associated with high risk of metastasis
 - a. Discoid lupus erythematosus
 - b. Chronic osteomyelitis
 - c. Thermal or radiation injury
 - d. Chronic sinuses and ulcers
 - e. Recurrent tumor
 - f. Large size
 - g. Rapid growth or aggressive behavior
 - h. Immunosuppression
 - i. Long standing duration
 - j. Genodermatoses
 - k. Other
 - 3. Histologic considerations
 - a. Anaplastic histologic differentiation
 - b. Deep tissue or bone involvement
 - c. Perineural or perivascular tumor
 - 4. Anatomic areas for tissue preservation
 - a. Nose
 - b. Lips

- c. Periocular
 - d. Ear
 - e. Digits
 - f. Genital/perioral
 - g. Other
3. Other tumors
- a. Appropriate selection for MMS
 - 1. Ill-defined clinical margin
 - 2. Previous surgery with positive histologic margins
 - 3. Recurrent tumor
 - 4. Large size
 - 5. Rapid growth or aggressive behavior
 - 6. Anatomic consideration
 - 7. Histologic pattern
 - 8. Other
 - b. Tumor types
 - 1. Melanoma including lentigo maligna
 - 2. Verrucous carcinoma
 - 3. Keratoacanthomas (aggressive, recurrent, or mutilating)
 - 4. Dermatofibrosarcoma protuberans
 - 5. Atypical fibroxanthoma
 - 6. Malignant fibrous histiocytoma
 - 7. Leiomyosarcoma
 - 8. Adenocystic carcinoma of the skin
 - 9. Sebaceous carcinoma
 - 10. Extramammary Paget's disease
 - 11. Microcystic adnexal carcinoma
 - 12. Apocrine carcinoma of the skin
 - 13. Merkel cell carcinoma
 - 14. Certain aggressive locally recurrent benign tumors
 - 15. Oral and central facial paranasal sinus neoplasms
 - 16. Other

B. *Peri-operative Assessment and Management*

- 1. Pre-operative evaluation
 - a. Patient evaluation
 - 1. Past medical history/Review of systems
 - 2. Allergies
 - 3. Medications
 - a. Anticoagulants
 - b. Drug interactions
 - 4. Need for antibiotic prophylaxis
 - 5. Alcohol and tobacco use
 - 6. Social history
 - b. Appropriate surgical preoperative physical examination
 - c. Cutaneous assessment
 - 1. Tumor evaluation
 - 2. Anatomic considerations
 - 3. Histologic assessment
 - d. Appropriate diagnostic studies
 - 1. Laboratory studies
 - 2. Indicated imaging studies
- 2. Development of treatment plan
 - a. Assessments of risks/benefits of treatment plan
 - b. Informed consent to include alternative therapies

3. Interdisciplinary considerations
 - a. Appropriate medical consultation
 - b. Appropriate surgical consultation
 - c. Appropriate tumor board presentation

C. *Surgical Technique*

1. Wound classification
 - a. Clean
 - b. Clean-contaminated
 - c. Contaminated
 - d. Dirty
2. Antiseptic preparation
 - a. Surgical site preparation
 1. Choice of antiseptic solution
 2. Skin prep technique
 - b. Staff preparation
 1. Hand washing/surgical scrubbing
 2. Gowning and gloving
 - c. Surgical site draping
 - d. Instrument handling and sterility
3. Anesthesia
 - a. Topical
 - b. Local
 - c. Regional
 - d. Special Considerations
 1. Preoperative anxiolytics
 2. Conscious sedation
4. Performance of MMS
 - a. Tissue acquisition
 1. Conventional specimens versus Mohs specimens
 2. Beveled Mohs excision
 - b. Specimen handling
 1. Orientation
 2. Division

D. *Laboratory/pathology*

1. Tissue mapping
2. Tissue marking
3. Mounting techniques
4. Epidermal margins
5. Effects of temperature on tissue
6. Microtome
7. Staining techniques
 - a. H & E
 - b. T blue
 - c. Immunohistochemical stains (e.g., CD34, HMB 45, cytokeratin, etc.)
 - d. Special stains
8. Frozen versus fixed tissue

E. *Medical Aspects of Surgical Care Including Emergency Procedures*

1. Management of surgical emergencies
 - a. Office emergency equipment
 - b. Staff/physician preparedness
 - c. Management of office and surgical emergencies including but not limited

to:

1. Syncope
 2. Convulsions
 3. Hemorrhage
 4. Anesthetic toxicity
 5. Allergic reactions
 6. Anaphylaxis
 7. Myocardial infarction
 8. Cardiac arrest
2. Knowledge and techniques of Basic and Advanced Cardiac Life Support (ACLS Curriculum)

F. Reconstruction

1. Surgical techniques employed in reconstructive surgery
 - a. Atraumatic tissue handling
 - b. Hemostasis
 - c. Suture technique
 - d. Dressing
 - e. Wound management
2. Reconstructive options
 1. Second intention healing
 2. Primary closure
 3. Skin flap (e.g., advancement, rotation, transposition, tubed pedicle, island pedicle ...)
 4. Split thickness skin grafts
 5. Full thickness skin grafts
 6. Artificial skin and allograft, xenograft

G. Complications

1. Theory, management, and prevention of complications:
 - a. Tissue necrosis
 - b. Bleeding, hematoma
 - c. Infection
 - d. Wound dehiscence
 - e. Postoperative patient education regarding possible complications, wound care, activity level, and need for surgical revision
 - f. Management of chronic or non-healing wounds

H. Interdisciplinary Care of the Patient

1. Interdisciplinary care for complicated oncology cases
2. Interaction with other medical and surgical specialists to provide optimal care to cutaneous oncology patients
3. Education of other medical and surgical specialists in the unique skills of the Mohs micrographic surgeon

I. Alternate Therapies

1. Local surgical procedures
 - a. Electrodesiccation and curettage
 1. Appropriate selection of technique
 2. Advantages/disadvantages/risk of recurrence
 - b. Conventional excision
 1. Indicated margins

2. Patient and tumor selection
3. Risk of recurrence
4. Complications
5. Contraindications
2. Radiation treatment (RT)
 - a. Treatment modalities
 1. Orthovoltage
 2. Superficial x-ray
 3. Grenz ray
 4. Electron beam
 5. Iridium wire implants
 - b. Patient and tumor selection
 1. Medical risks/benefits
 2. Complications of radiation
 3. Contraindications
 4. Histologic considerations
3. Cryosurgery
 - a. Treatment modalities
 1. Cryosurgery equipment
 - b. Patient and tumor selection
 1. Medical risks/benefits
 2. Complications of cryosurgery
 3. Contraindications
 4. Histologic considerations

J. **Related Procedures**

1. Nail surgery
 - a. Anatomy
 1. Nail matrix
 2. Nail bed
 3. Nail plate
 4. Digital anatomy
 - a. Arterial supply
 - b. Nerve supply
 - b. Diagnosis and management
 1. Benign lesions and conditions
 2. Premalignant lesions
 3. Malignant lesions
 - c. Surgical procedures
 1. Anesthesia
 - a. Ring block
 - b. Digital block
 2. Nail avulsion
 3. Biopsy techniques
 - a. Punch
 - b. Incisional
 - c. Excisional
 - d. En bloc biopsy
 4. Matricectomy
 - a. Chemical
 - b. Surgical
 - c. Laser
 5. Reconstruction
 - a. Linear
 - b. Flaps

- i. Local
 - ii. Pedicle
 - c. Grafts
 - i. FTSG
 - ii. STSG
 - 2. Scar revision
 - a.Principles of wound healing
 - 1. Scar formation
 - a. Normal
 - b. Hypertrophic
 - c. Keloid
 - b.Recognition and management of suboptimal scar
 - 1. Hypertrophy
 - 2. Keloid
 - 3. Dyschromia
 - 4. Erythema
 - 5. Wound contracture
 - 6. Other
 - c.Principles of scar revision
 - 1. Elongation and reorientation
 - a. Z-plasty
 - b. W-plasty
 - c. Geometric
 - 2. Resurfacing
 - a. Dermabrasion
 - b. Shave abrasion
 - c. Skin graft
 - d. Laser
 - 3. Non-surgical approaches
 - a. Intralesional and topical steroids
 - b. Silicone gel sheeting
 - c. Massage
 - 3. Laser
 - a.Indications
 - b.Pre- and post-operative patient care
 - c.Complications
 - d.Laser safety
 - 1. Safety/protection of patient and operating room personnel
 - 2. Eye protection
 - 3. Infectious disease risk
 - e.Laser options
 - 1. Vascular lesion lasers
 - 2. Carbon dioxide laser
 - 3. Other lasers
 - 4. Other procedures
 - a.Hair restoration
 - b.Liposuction and lipotransfer

III. PROFESSIONAL/REGULATORY TOPICS

A. *Quality Control*

1. Laboratory

- a. Slide preparation
- b. Slide interpretation
- c. Incomplete tissue sampling
- 2. Procedure room
 - a. Patient care
 - 1. Anesthesia
 - 2. Wound care
 - 3. Infection control
 - 4. Perioperative complications
 - 5. Special considerations:
 - a. Diabetes
 - b. Heart disease
 - c. Bleeding disorders
 - d. Immunosuppression

B. *Medical-legal Issues*

- 1. Risk assessment in the surgical patient
 - a. Preoperative
 - b. Intraoperative
 - c. Postoperative
 - d. Medical complications/contraindications for surgery
- 2. Medical record documentation
 - a. Written patient questionnaires
 - b. Preoperative evaluation
 - c. Operative report
 - d. Postoperative instruction
 - e. Documentation of telephone calls for appointments/advice/prescriptions
- 3. Quality assurance (QA) and continuous quality improvement (CQI)
 - a. Understanding of concepts of QA and CQI
 - b. Participation in QA or CQI project
- 4. Informed Consent
 - a. Concept of informed consent
 - 1. Expressed or implied
 - 2. Written versus verbal
 - 3. Who may provide consent
 - 4. Medical record documentation
 - b. Elements of informed consent
 - 1. Problem to be treated
 - 2. Proposed test or treatment
 - 3. Indications for test or treatment choice
 - 4. Expected results or goals of test or treatment
 - 5. Disclosure of risks, complications and side effects
 - 6. Reasonable alternative methods of diagnosis or treatment
 - 7. Consequences of no treatment or delayed treatment
 - 8. Documentation of informed consent
 - c. Medical and surgical standard of care
- 5. Photographic Reproduction
 - a. Photographic informed consent
 - b. Use of images (e.g., medical records/publication/presentation)
 - c. Patient's right to privacy

C. *Regulatory Issues*

- 1. OSHA
 - a. OSHA regulations as they relate to the Mohs Laboratory
 - 1. Federal, state and local compliance requirements

2. Hazard determination and safety procedures
3. Hazard chemical inventory including material safety data sheets (MSDS)
- b. Monitoring/updating program
 1. Log of hazard communication program
 2. Inventory update log
 3. MSDS update log
 4. MSDS request log
- c. Special labeling requirements
- d. Preparation for inspection
2. CLIA 88
 - a. CLIA 88 regulations as they pertain to management of a Mohs surgery laboratory
 1. Role of laboratory director
 2. Diagnostic value of the test (frozen tissue specimen)
 3. Written laboratory procedure manuals
 - a. Patient preparation
 - b. Specimen collection and processing
 - c. Slide rejection
 - d. Slide handling, storage, preservation and identification
 - e. Materials and reagents
 - f. Calibration (system for control slides)
 4. Systems for:
 - a. Maintaining a log and record of results
3. Bloodborne pathogens (BBP)
 - a. OSHA regulations regarding BBP
 - b. Epidemiology, mode of transmission and symptoms of BBP
 - c. Universal precautions
 - d. Exposure control plan for the Mohs unit
 1. Reduction of exposure to BBP
 2. Personal protective equipment
 3. Post-exposure management plan for BBP

D. Professional Ethics

1. Professional ethical standards
 - a. Doctor/patient relationship
 - b. Physician interactions
 - c. Medical ethics
 - d. Business ethics
 - e. Other
2. Selection of the most cost-effective treatment plan given the patient, tumor location, and tumor characteristics which will result in a high rate of cure