

## **SUBJECT: NAIL STRUCTURE & GROWTH**

### **LESSON OBJECTIVES:**

Upon completion of the lesson, the student will be able to.

- Describe the structure and composition of nails
- Discuss how nails grow

Inspirational thought for the day: “Only those who dare to fail greatly can ever achieve greatly.” – Robert Francis Kennedy

### **I) THE NAIL**

#### **A) Definition**

- 1) Onyx

#### **B) Composition**

- 1) Keratin
- 2) Nail plate
- 3) Healthy nail
- 4) Nail porosity
  - (a) 15% to 25% water content
  - (b) Water content affects nail's flexibility
  - (c) Oil-based conditioner

### **II) Nail anatomy**

#### **A) Basic parts**

- 1) Nail bed
- 2) Matrix
- 3) Nail plate
- 4) Cuticle
- 5) Eponychium
- 6) Hyponychium
- 7) Specialized ligaments
- 8) Nail folds

#### **B) Nail bed**

- 1) Skin where nail plate rests
- 2) Extends from lunula to just before free edge
- 3) Attached to nail plate
- 4) Supplied with many nerves

#### **C) Matrix**

- 1) Where nail is formed
- 2) Composed of matrix cells that produce the nail plate
- 3) Contains nerves, lymph, blood vessels to nourish nails
- 4) Extends from under nail fold base of nail plate
- 5) Injury to matrix

#### **D) Nail plate**

- 1) Horny nail plate or nail body
- 2) Rests on/slides across nail bed
- 3) Formed by matrix cells
- 4) Constructed in layers
- 5) Free edge extends over tip of finger or toe

#### **E) Cuticle**

- 1) If normal, it is loose and flexible

- 2) Seals area against foreign material and microorganisms
  - 3) Helps prevent injury and infection
  - 4) Eponychium is the extension of the cuticle at the base of nail body that partly overlaps lunula
  - 5) Hyponychium is the thickened skin beneath free edge
- F) Specialized ligaments
- 1) Attach the nail bed and matrix to underlying bone
  - 2) Located at base of matrix and around edges of nail bed.
- G) Nail folds
- 1) Folds of normal skin surrounding nail plate
  - 2) Form nail grooves

### III) NAIL GROWTH

- A) The growth process
- 1) Grows forward, starting at matrix and extending over fingertip
  - 2) Grows in a variety of shapes
  - 3) Average growth is 1/10" per month
  - 4) Growth is faster in summer than winter
  - 5) Children's nails grow faster than adults
  - 6) Middle finger nail grows fastest
  - 7) Thumbnail grows slowest
  - 8) Toenails grow slower than fingernails
  - 9) Not shed automatically
- B) Nail malformation
- 1) y water can trigger fuzzy memory