CEN REVIEW
2017

MAXILLOFACIAL/OCULAR
ORTHO/WOUND
EMERGENCIES
## Certified Emergency Nurse Detailed Content Outline

### G. Maxillofacial, Ocular, Orthopedic and Wound Emergencies

<table>
<thead>
<tr>
<th>Total # ITEMS</th>
<th>21</th>
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</table>

**A. Maxillofacial**
1. Abscess (i.e., peritonsillar)
2. Dental conditions
3. Epistaxis
4. Facial nerve disorders (e.g., Bell’s palsy, trigeminal neuralgia)
5. Foreign bodies
6. Infections (e.g., Ludwig’s angina, otitis, sinusitis, mastoiditis)
7. Acute vestibular dysfunction (e.g., labrinitis, Meniere’s disease)
8. Ruptured tympanic membrane
9. Temporomandibular joint (TMJ) dislocation
10. Trauma

**B. Ocular**
1. Abrasions
2. Burns
3. Foreign bodies
4. Glaucoma
5. Infections (e.g., conjunctivitis, iritis)
6. Retinal artery occlusion
7. Retinal detachment
8. Trauma (e.g., hyphema, laceration, globe rupture)
9. Uveitis/Heratitis

**C. Orthopedic**
1. Amputation
2. Compartment syndrome
3. Contusions
4. Costochondritis
5. Foreign bodies
6. Fractures/Dislocations
7. Inflammatory conditions
8. Joint effusion
9. Low back pain
10. Osteomyelitis
11. Sprains/Strains
12. Trauma (e.g., Achilles tendon rupture, blast injuries)

**D. Wound**
1. Abrasions
2. Avulsions
3. Foreign bodies
4. Infections
5. Injection injuries (e.g., grease gun, paint gun)
6. Lacerations
7. Missile injuries (e.g., guns, nail guns)
Maxillofacial Injuries
Peritonsillar Abscess

- Forms from an infection penetrating the tonsillar capsule and superior constrictor muscle into the surrounding areolar tissue.
- Symptoms: sore throat, fever, odynophagia, trismus (inability to open mouth), & uvular deviation.
- Strep bacteria are common pathogen
Peritonsillar Abcess Treatment

- Maintain airway, breathing
- Administer oxygen
- Elevate HOB 60-90 degrees
- IV catheter for hydration & medication
- Warm saline throat irrigations
- Antibiotics, topical anesthetics, narcotic analgesia, antipyretic
- Ice collar to throat
- I & D if necessary
- Pulse oximetry
Fractured Tooth

- Trauma may cause fx or injury to teeth

  - Ellis I- involves **only enamel**
    - May be cosmetically repaired by dentist

  - Ellis II- **enamel and part of the dentin**
    - Treatment is age dependent- under 12 has less dentin & can expose pulp to bacteria more easily. These pts should be referred to dentist within 24 hours.

  - Ellis III- **enamel, dentin, & pulp**
    - Dental emergencies that require immediate referral & attention by an endodontist because of risk of infection & disruption of neurovascular supply. Use dry gauze to cover.
Avulsed Tooth

• “Loosening of teeth”
  ○ Most prevalent in 7-10 years
  ○ Determine degree of mobility in socket by applying gentle pressure along gum line
    ▪ Minimal- will usually heal w/in 2 wks on a soft diet
    ▪ Pulp exposed or gross mobility- referral to a dentist or maxillofacial surgeon
      ○ Stabilize
  ▪ Complete avulsion is a dental emergency
    ○ Should be re-implanted w/in 30 min
    ○ Place tooth in moist saline gauze or milky solution if unable to replace in socket
Epistaxis

• Spontaneous erosion of the superficial blood vessels originating from the internal & external carotid arteries.
• Can occur from ethmoid artery
Epistaxis Treatment

- **Anterior**
  - Apply firm pressure to bleeding site x 10 min
  - If not successful, locate the bleeding site
  - Vasoconstrictors and cautery may be necessary

- **Posterior**
  - Usually requires packing
  - Balloon tip catheters
  - Nasal tampons
Bell’s Palsy

- Paralysis of all facial muscles on one side of the face
- Etiology unknown
- Occurs without evidence of cerebral pathology
- Pain is in the post auricular region and ear
- Presumed to be caused by swelling of the facial nerve as the result of viral or an immunodeficiency disease. The nerve becomes compressed and ischemic
- Usually unilateral, but can be bilateral
Bell’s Palsy Treatment

- Artificial tears
- Moist heat & facial massage
- Passive/active facial muscle exercise
- Analgesics, steroids
Trigeminal Neuralgia

- Neurological disorder of 5th cranial nerve
- Recurrent paroxysms of excruciating facial pain
  - Pain similar to electrical shock
  - Right side affected more often than left
- May be brought on by exposure to hot/cold, drinking & washing face
Trigeminal Neuralgia

- Medications
  - Carbamazepine
  - Phenytoin
  - Narcotics (minimally effective)

- Surgical interventions
Ingested Foreign Body

- Common cause of accidental death in US among <6 years old.
  - “If there is an orifice they will put something in it”
- Airway management is priority
- Subjective data
  - Vocal changes
  - Drooling
  - Coughing/Wheezing
  - Difficulty swallowing or breathing
  - Difficulty speaking
Treatment

- CXR w/ end-inspiratory and end-expiratory views
- Soft tissue radiograph of neck
- Indirect laryngoscopy
- Finger sweep or heimlich as indicated
- IV
- HOB 60-90 degrees
- Prepare for emergency medical interventions as necessary
Foreign body in Nose

- Most common in children
- Foul-smelling rhinorrhea if extended time
- Difficulty breathing, stridor, lethargy, & failure to eat may be indicators of FB aspiration and require immediate attention.
- Removal- have parent gently blow into child’s mouth while obliterating the unaffected nostril, simple nose blowing, or suctioning.
  - Difficult retrieval- pass a 6 or 8 Fr foley cath beyond the obstruction, inflate balloon, deflate & FB may be easily removed
Foreign Body in Ear

- Common in children
- Produce local irritation & swelling
- Removal
  - Vegetables- do not irrigate with water- causes swelling. Try to remove with forceps or alcohol w/water
  - Insects- fill canal with mineral oil lidocaine to immobilize the insect or use a flashlight to attract the live insect out of canal
  - Maggots- calomel powder
Ludwig’s Angina

• Usually results from a secondary dental infection of the lower second & third molars
  ○ Symptoms
    - Bilateral diffuse swelling & extending cellulitis
    - Compromised breathing due to swelling of oropharynx
    - Fever, chills, & trismus
Treatment

- Treatment of infection
  - Penicillin, third generation cephalosporins, clindamycin
  - Incision & drainage to relieve swelling & infection protect the airway
  - Fowler’s position & protect airway
  - IV
  - Anticipate need for cricothyrotomy
  - Rinse w/ warm NS & apply warm compress while awake
Labyrinthitis

- Inflammatory response of the inner ear. May involve the nerves connecting the inner ear to the brain (neuronitis).
- Can be bacterial or viral infection that causes inflammation
- Vertigo, nausea, vomiting, ringing in ears, sensitivity to loud noises, ear pressure, headache
Meniere’s Disease

- Disorder of the vestibular system in the inner ear
- Cause is unknown
  - Abnormal fluctuations in the fluid or endolymph accumulate in the cochlea & labyrinth
- Severe rotary vertigo, nausea, vomiting, & tinnitus
- Attacks may last several hours and be recurrent for several weeks
Meniere’s Disease

- Signs/Symptoms
  - Disequilibrium: falls toward affected ear
  - Decreased hearing in affected ear
  - Moist, pale skin
  - Nystagmus
Meniere’s Disease Treatment

- Antiemetics
- Antihistamines - may increase blood flow to inner ear & minimize vertigo
- Diuretics - used to stabilize body fluid levels and avoid secondary fluctuations in the endolymph
- Balance sugar and salt intake
- Avoid caffeine, alcohol, and smoking
- Hydration is important - rehydrate losses from heat or exercise
Ruptured Tympanic Membrane

- Primarily caused by infection, but may result from trauma
  - Hearing may be reduced until healed
  - May take several weeks to resolve
  - Administer medications- analgesics, antibiotics, & antipyretics
  - Do not irrigate the ear until you can visualize the eardrum
- Dislocation of anterior & superior jaw with spasms
- Unilateral or bilateral
- Malocclusion
- Pain upon palpating masseter muscle
Fractures

Mandibular

- MVC most common cause/ direct blow to mandible
- U shape make it most susceptible
  - Malocclusion
  - Facial asymmetry
  - Paresthesia/numbness of lower lip
  - Trismus (inability to open mouth)
  - Ruptured tympanic membrane
Assessment

- **Subjective**
  - Pain/tenderness
  - Swelling
  - Bleeding
  - Infraorbital mobility &/or paresthesia
  - Ecchymosis
  - Epistaxis
  - Rhinorrhea (CSF)
  - Visual disturbances

- **Objective**
  - Asymmetry/distort
  - Malocclusion or anterior open bite
  - Periorbital edema or ecchymosis
  - Bony defect
  - Subconjunctival hemorrhage
  - Wounds
  - pain
Priorities

- Ensure patent airway
- Assess C-spine
- Prevent aspiration of teeth, bone fragments, blood clots, vomitus, etc
- Control bleeding & swelling
- Elevate HOB if C-spine clear
- Analgesics
Maxillary

- MVCs, altercations, & trauma common causes
- Less common so are considered to reflect massive facial trauma and are frequently associated with multi-system injuries
LeFort Maxillary Fractures

- LeFort I- transverse fracture
- LeFort II- pyramidal fracture
- LeFort III- craniofacial disjunction
  - Complete separation of cranial attachments from the facial bones
Lefort I
Lefort II
Lefort III
Zygomatic fractures

- Usually result of direct blows to the prominence of the zygoma or malar eminence and falling on the side of the face
- Frequently associated with orbital floor fractures
Assessment

- Visual disturbances
  - diplopa
- Pain with jaw movement
- Swelling or edema
- Periorbital ecchymosis (most common)
- Point tenderness along zygomatic arch
- Paresthesia of cheek, nose, & upper lip on affected side
- SQ emphysema may indicate fx into paranasal sinuses
A 30 yr old male presents with a 5-day history of unilateral sore throat. He is also complaining of ear pain, fever, and difficulty swallowing. If you consider these symptoms, the patient most likely has which of the following conditions?

1. Mononucleosis
2. Epiglottitis
3. Peritonsillar abcess
4. Pharyngitis
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Which of the following actions of glucagon hydrochloride makes it useful in the management of esophageal food impaction?

1. Relaxation of smooth muscles
2. Increased production of cyclic AMP
3. Decreased Gastrointestinal (GI) motility
4. Positive inotropic effects
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A 4-year old presents to the ED with an avulsed tooth. She was hit in mouth with a toy 45 minutes ago. Her day care attendant has the tooth wrapped in clean cloth. Bleeding is minimal. Which is correct?

1. Treatment of the tooth should begin within 60 min of the avulsion
2. The avulsed tooth should be gently cleaned & placed in sterile water
3. The avulsed tooth should be scrubbed & gently replaced in the gum.
4. Baby teeth are seldom re-implanted
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1. Treatment of the tooth should begin within 60 min of the avulsion (30 min)
2. The avulsed tooth should be gently cleaned & placed in sterile water (moist saline or gauze)
3. The avulsed tooth should be scrubbed & gently replaced in the gum. (not scrubbed)
4. Baby teeth are seldom rei-implanted
Anterior epistaxis accounts for 90% of nosebleeds. Most patients with anterior epistaxis can be managed by direct pressure and which of the following?

1. Arterial ligation or embolization
2. Nasal packing and cautery
3. Nasal tampons and external carotid artery pressure
4. Vasoconstrictive agents and use of epistaxis balloon
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A swallowed meat bolus may be treated with a variety of methods, providing the patient can manage his or her own secretions. Which of the following treatment methods carries the greatest risk for perforation?

1. Administration of glucagon IV
2. Use of proteolytic enzymes such as meat tenderizer
3. Use of sedation and waiting up to 12 hours before treatment
4. Endoscopy
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1. Administration of glucagon IV (no risk of perf)
2. Use of proteolytic enzymes such as meat tenderizer
3. Use of sedation and waiting up to 12 hours before treatment (OK)
4. Endoscopy
A tripod fracture is another name for what type of fracture?

1. Le Fort I
2. Lefort II
3. Orbit
4. Zygomatic
A tripod fracture is another name for what type of fracture?

1. Le Fort I
2. Lefort II
3. Orbit
4. **Zygomatic** (involve all of the zygomatic suture lines)
Labyrinthitis is characterized by acute onset of a severe vertiginous episode often accompanied by which of the following?

1. Tinnitus
2. Nausea & vomiting
3. Hearing loss
4. Otalgia
Answer

- Nausea & vomiting
  - None of the other symptoms accompany labyrinthitis
A woman presents complaining of “shooting pains” in the left cheek region. The pain started when she was washing her face. Which of the following should be considered a likely diagnosis?

1. Herpes zoster
2. Trigeminal neuralgia
3. Glossopharyngeal neuralgia
4. Temporal arteritis
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Ocular Emergencies
Ocular Structures
Assessment

- **Focus survey items**
  - Injury & pain
  - Appearance of eye
  - Changes in Visual acuity
  - Medical history-
    - Corrective lenses, chronic eye diseases, past injury or disease, family hx
    - Systemic diseases- diabetes, cardiac, hypertension, allergies, TD status
Analysis & planning

- Pain control
- Risk for infection - antibiotic therapy
- Sensory-perceptual alterations - safety issues
- Priorities
  - ABCs
  - Prevent further damage
  - Minimize complications or further injury
<table>
<thead>
<tr>
<th>Interventions</th>
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<tbody>
<tr>
<td>Remove contact lenses</td>
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<tr>
<td>Provide darkened environment</td>
</tr>
<tr>
<td>Maintain asepsis</td>
</tr>
<tr>
<td>Control pain</td>
</tr>
<tr>
<td>Minimize complications</td>
</tr>
<tr>
<td>Help relieve anxiety or apprehension - provide support</td>
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</tbody>
</table>
Age related consideration

- **Pediatrics**
  - May need a picture eye chart
  - May have delayed presentation
  - Pearls
    - Have great patience
    - Infants & small children may need to be restrained to facilitate exam

- **Geriatrics**
  - Vision diminishes gradually until 70 & then more rapidly
  - Decreased ability to use standard eye chart
  - Decreased accuracy of visual exam
  - Near vision is problematic
  - Cataracts, glaucoma, detached retina, retinal bleeds more common
  - May need home health referral for adm of meds
Glaucoma

- Intense headache & pain
- Decreased vision
- Halos around lights
- Photophobia
- Cornea appears hazy, steamy, lusterless
- Increased intraocular pressure
Central Retinal Artery Occlusion

- Blockage of the artery by thrombus or embolus.
  - Embolus usually originates from carotid artery atherosclerotic plaque or from the cardiac valves.
- Requires prompt recognition & treatment within 1-2 hours for preservation of vision.
- TRUE ocular emergency.
Retinal Detachment

- Separation of the two primitive retinal layers, with the accumulation of serous fluid or blood between the sensory retina and the retinal epithelium.
  - Decrease of blood & oxygen supply to retina
- Most common cause is degenerative, but head trauma or injury may result in detached retina.
Retinal Detachment

- Cloudy, smoky vision
- Flashing lights
- Curtain over visual field
- Medical history
- Visual field deficit
- May be asymptomatic
Comparison chart

Glaucoma
- Sudden onset, unilateral
- Severe pain
- Decreased vision unilateral

CRA Occlusion
- Sudden onset
- Painless
- Loss of vision unilateral

Retinal detachment
- Gradual onset
- Painless
- May be asymptomatic
- Cloudy, smoky, flashing lights, veil/curtain over vision
Corneal Abrasion

- Trauma to eye
- Pain- mild to severe
- Tearing
- Fluorescein stain enhances abrasion
- Topical anesthesia
- Patch 12-24 hours
Globe Rupture

- Mechanism of injury
- Sudden visual impairment or loss
- Minimal to severe pain
- Asymmetry of globe
- Extrusion of vitreous humor
- Direct observation of FB
Ocular Pharmacology

- Topical anesthetics- “caines”
- Steroids
- Mydriatics
- Glaucoma
  - Alpha & beta blockers
  - Carbonic anhydrase inhibitors
Practice

- A pt has ruptured globe secondary to blunt trauma. Which of the following is an expected outcome for the ED treatment of this pt?

1. There is no loss of aqueous humor
2. Pain is relieved with topical anesthetics
3. Consensual eye movement is minimized
4. Antibiotic therapy is initiated with topical ointments
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C is correct. The goal is limiting eye movement and preparing for surgery.
A 56 year old man has sudden, painless loss of vision. Med hx includes hypertension and coronary artery disease. The patient’s history and symptoms suggest:

1. Glaucoma
2. Optic neuritis
3. Retinal detachment
4. Central retinal artery occlusion
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1. Glaucoma
2. Optic neuritis
3. Retinal detachment
4. Central retinal artery occlusion
The emergency nurse should be most concerned about which of the following physical findings that may indicate a globe disruption?

2. Visible blood settled in the anterior chamber
3. A steamy or hazy cornea with scleral injection
4. Limited and painful movement of the extraocular muscles.
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Orthopedic & Wound Emergencies
Orthopedic Trauma

- The aim in caring for the patient with an orthopedic emergency is to restore and preserve function
- With any trauma DO NOT forget your primary and secondary assessments!
- Be familiar with anatomy of the skeletal system
- Review peripheral nerve assessment
- Review age-related considerations
  - Child’s bone structure (immature and is largely cartilaginous
  - Geriatric: loss of bone minerals and mass
    - Bones more brittle
Contusions/Hematoma

- **Contusion:**
  - Closed wound in which a ruptured blood vessel that has hemorrhaged into the surrounding tissues
  - Blood may form a hematoma if bleeding is sufficient and has been contained

- **External force or exertional stress**

- **Symptoms:**
  - Swelling, discoloration, and tenderness

- **Populations are risk**
  - Those involved in physical activities, sports, or abusive relationships, and anticoagulant therapy or who have a history of clotting disorders
Contusions and Hematomas

- **Interventions**
  - Rest affected extremity
  - Elevate
  - Splint extremity
  - Apply cold packs to stimulate vasoconstriction
    - Use for 20 minutes at a time, four times per day, for the 1st 48-72 hours
    - Wrap cold packs to protect skin
  - Apply pressure to decrease hemorrhage and swelling
  - Administer pain medication
  - Lots of education
Sprains and Strains

- **Sprain**
  - The stretching, separation, or tear of a supporting ligament

- **Strains**
  - The separation or tear of a musculotendinous unit from a bone
Interventions

- **RICE**
  - Rest
    - Non-weight bearing with crutches
    - Protect from stress; avoid use
    - Splint to decrease movement
  - Ice
    - Application of ice promotes vasoconstriction and reduces swelling
    - Know the “rules”
  - Compression
    - Provides support and helps reduce swelling
  - Elevation
    - Raise injured part to level of heart for 1st 24 hours

*** analgesics and anti-inflammatory agents ***
Low back pain

- Affects up to 60-80% of population
- Common causes
  - Intervertebral disk disease
  - Disk herniation
  - Disk degeneration
- Symptoms
  - Will vary
  - Some will radiate
- Most back pain is benign
- Think: what caused the pain?
  - Must obtain good history
  - What are risk factors for patient?
    - i.e previous back injury, Obesity, Occupation
    - infections
Specific Emergencies of Bony Skeleton

- Certain fractures and virtually all dislocations constitute an emergency in the sense that they are a threat to a person’s life or limb
- Dislocations
- Fractures
- Traumatic amputations
- Joint effusions
- Costochondritis
Fractures

- Break in the continuity of a bone
- Closed or open
- Crushed injuries
- Elderly more prone to fractures
- Goal
  - Restore bone alignment and function and reduce disability
- Must provide good assessment
- Review different types of fractures
Interventions

- Immobilization
- MAST trousers
- Immobilize above and below fracture
- Splints
- IV access
- Elevate
- Cold packs
- If open fracture:
  - IV antibiotics
  - Cover wound with sterile dressing
  - Surgical debridement
  - Tetanus
Fractures

- Closed reduction
  - Permit
  - Conscious sedation
  - Monitoring
  - IV regional anesthesia:
    - Monitor tourniquet times and effectiveness every 5 minutes
  - Immobilize after reduction
  - Pain medication
  - Cast care
Dislocations

- Occurs when the articular surfaces of bones forming a joint are no longer in contact and lose anatomical position

- **Emergency condition**
  - Danger of injury to nerves and blood vessels in the form of compression, stretching, or ischemia
  - Good assessment is required
    - Splint limb
    - Neurovascular assessment
    - Radiographic assessment
    - Reduce ASAP
Traumatic Amputations

- Remain focused on the Identification of life-threatening injuries
- Do not get distracted on the amputation
- Remember your ABCDs
- Amputated part may or may be reimplantable
  - Excessive bacterial contamination
  - Prolonged period of time
  - Severe degloving or avulsing
Traumatic Amputations

- **Absolute contraindications for replantation**
  - Significant life-threatening injuries
  - Extensive damage to soft tissue injury
  - Inappropriate handling

- **Relative contraindications for replantation**
  - Avulsion injury
  - Ischemia time greater than 4-6 hours if not cooled
  - Ischemia time greater than 18 hours if cooled
  - Amount and type of contaminants
  - Previous surgery or injury to part
Traumatic Amputations

- Interventions for patient
  - ABCDs
  - Primary and Secondary Assessment
  - Control hemorrhage
    - Do not use tourniquets or clamps
  - Splint and elevate injured part
  - Do not manipulate distal part
  - NPO
  - Use only saline to clean wound
  - Medications
  - Provide support
  - Transfer to other facility
Traumatic Amputations

- Interventions for stump
  - Gently lift off contaminants
  - Do not rub or clean with soap, water, or antiseptic solution
  - Wrap in sterile gauze
    - Moisten wrap with saline or RL
    - Do not soak, wrap in, or use any type of water
      - Place wrapped part in plastic bag and seal
      - Place sealed bag in ice
        - Do not allow part to come in direct contact with ice
        - Do not freeze
Life-Threatening Orthopedic Injuries

- Hemorrhage from fractures
  - Blood loss associated with fractures
    - Mild to severe
    - Visible or concealed
  - Estimated blood loss
    - Humerus: 1-2 liters
    - Pelvis: 1.5-4.5 liters
    - Femur: 1-2 liters
    - Hip: 1.5-2.5 liters
Compartment Syndrome

• Occurs when compartmental pressures increase from an internal or an external force

• Causes
  o Rigid casts
  o Splints
  o Pneumatic antishock pants

• Tends to occur
  o Lower arm
  o Hand
  o Lower leg
  o foot
Compartment Syndrome

• Signs and Symptoms
  ○ Pain that is out of proportion to injury
  ○ Paraesthesia
  ○ Paralysis
  ○ Pallor
  ○ pulse
Compartment Syndrome

- Diagnostic procedures
  - Compartment pressure measurement
    - 10 mm Hg is considered normal
    - Urine for myoglobinuria
    - Enzyme levels
- Interventions
  - Remove all forms of external compression
  - Do not impede circulation
  - Avoid ice application
  - Avoid excessive elevation of limb
  - Assist with fracture reduction
  - Analgesics
  - Operative fasciotomy
  - Support
Treatment for carpal tunnel syndrome includes anti-inflammatory medications and:

1. Elastic compression bandage
2. Sling
3. Volar cockup splint
4. Thumb spica splint
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An orthopedic emergency that usually requires immediate intervention is:

1. Talus fracture
2. Elbow fracture
3. Bimalleolar fracture
4. Knee dislocation
A subungual hematoma is caused by a:
1. Laceration to the palmar aspect of a finger
2. Contusion to the tongue
3. Fracture of the wrist
4. Crush injury to the finger or nailbed
Radial head fractures classically involve pain and point tenderness, particularly with:

1. Wrist flexion
2. Wrist extension
3. Finger extension
4. Supination
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Wound Management

- Primary and secondary assessments
- Lacerations
- Abrasions
- Avulsions
- Puncture wounds
- Foreign bodies
- Missile injuries
- Human bites
- Wound-related infections
Lacerations
- Result from tearing or sharp cutting
- Laceration tensile strength is not adequate at the time of suture removal
  - Application of tape is generally recommended after suture removal
Wound Management

- **Interventions**
  - ABCDs
  - Control bleeding
  - IV if major blood loss
  - Affected part in position of comfort
  - Shave as little hair as possible
    - *Never shave eyebrows*
  - Cleanse and irrigate wound
  - Assist with debridement and repair of wound
  - Apply splint
  - Immunization
  - Antibiotics
  - Discharge instructions
    - *Use sun block over wound for at least 6 months*
Abrasions

- Partial thickness denudations of an area of skin
- Falls, scrapes, cycle injuries
- Very painful
  - Interventions
    - Immunizations
    - Part in position of comfort
    - Cleanse area
    - Medications
    - Avoid direct sunlight for 6 months
Avulsions

- Full-thickness tissue loss that prevents wound edge approximation
- Degloving injuries
  - Full thickness of skin is peeled away
  - Results in devascularization, Surgery required
- Interventions
  - Immunizations and antibiotics
  - Elevate part
  - Apply sterile, saline gauze
  - Apply steady pressure
    - Care of amputated tissue
      - Do not allow tissue to come in contact with ice
      - Keep tissue clean, wrap in sterile gauze with saline
      - Seal in container or plastic bag
      - Place bag in bath of ice saline
Puncture Wounds

- Tissue is penetrated by sharp or blunt objects
- Stepping on nails, tacks, needles, or broken glass
- Puncture wounds bleed minimally
  - Tend to seal off
  - Creates a high risk for infection
Puncture Wounds

- Wounds near joints
  - Risk for bacterial inoculation and sepsis
  - Plantar aspect of foot
    - Risk for cellulitis, chondritis, and osteomyelitis
  - Plantar puncture wounds through shoes increase the risk of Pseudomonas infection and osteomyelitis
Puncture Wounds

- Local anesthetic
- Mild analgesia
- Assist with removal of FB
- Immunizations
- Antibiotics
- Discharge instructions
Foreign Bodies

- Include wood, mental, glass, clothing, fragments from GSWs, pins, needles, fishhooks, thorns
- Vegetative foreign bodies (thorns, wood)
  - Highly reactive, lead to infection
  - Should be removed as quickly as possible
Foreign Bodies

- Interventions
  - Cleanse area around entry site
  - Do not soak part containing wooden splinters
  - Local anesthesia
  - Mild analgesia
  - Appropriate dressing
  - Immunizations
  - Antibiotics
Missile Injuries

- Stab wounds
- GSWS
- Rock from lawn mower
- Bolt from high power machine
- Paint and grease guns, staple or nail gun

Interventions
- Remain alert to the potential for occult neurovascular injury
- Forensic considerations
- Careful removal of clothing
- Appropriate handling and disposition of bullets and weapons
Stab wounds

- Type of instrument
- Location of wound
- Estimate of length of instrument
- Estimate of depth inserted
- Angle of entrance
- Direction of force
- Male or female???
Gunshot wounds

- Location of wound
- Movement of bullet
- Tissue characteristics
- Type of weapon
- Distance of victim from weapon
- Characteristics of bullet
Interventions

- Primary/Secondary Assessment
- Control bleeding
- Elevation of part
- Cleanse/irrigate wound
- Local anesthesia
- Pain medication
- Immunizations
- Antibiotics
- Provide support
- Contact proper authorities
Human Bites

- Lacerations or puncture wounds
- Increase risk of infection
- Self-inflicted or person-to-person contact
- Wound sepsis
- Clenched-fist injuries: increased risk of joint penetration and infection
Human Bites

- Interventions
  - Affected part in position of comfort
  - Photographs
  - Cleanse wound with mild antiseptic soap
  - Irrigate with saline
  - Wound debridement
  - Delayed closure is preferred
  - Immunizations
  - Antibiotics
  - Provide support
Wound-related infections

- Common-wound-related infections
  - Staphylococcus infections
  - *Staphylococcus aureus* gram-positive bacteria
  - Usually localized abscess
  - Infection may become systemic
Wound-related infections

- Pasteurellosis
  - Pasteurella multocida
  - Necrotizing infection associated with animal bites
  - Progresses to cellulitis, osteomyelitis, sinusitis, pleuritis
Wound-related infections

- Cat-scratch fever
  - Unknown etiological organism
  - Associated with cat or dog scratches
  - Regional or local lymphadenitis, self-limiting
Wound-Related Infections

- Wound botulism
  - Anaerobic Clostridium botulinum
  - Associated with crush injuries or major trauma
  - Incubation period
    - 4-14 days
  - Symptoms
    - Weakness, blurred vision, difficulty speaking/swallowing, dry mucous membranes, dilated fixed pupils, progressive muscular paralysis
Wound-Related Injuries

- Gas gangrene
  - Anaerobic Clostridium perfringens
  - History of intestinal or gallbladder surgery or minor trauma to old scar containing spores
  - Incubation period 1 day to 6 weeks
  - Symptoms
    - Thrombosis of local vessels
    - Soft tissue crepitus
    - Severe pain
    - Thin, watery, brown or brown-gray drainage
    - Low-grade fever
    - Tachycardia
    - Anorexia, vomiting, diarrhea, coma
Wound-Related Infections

- Tetanus
  - Anaerobic Clostridium tetani
  - Found in soil and human and animal intestines
  - Entry to body through break in skin
  - Incubation period 2 days to several months
  - Prodromal symptoms
    - Restlessness, headache, muscle spasms
    - Pain (usually in back, neck or face)
    - Low back pain
  - Progression of disease
    - Extreme stiffness, tonic spasms of voluntary muscles
    - Convulsions
    - Respiratory depression
Rabies

- Neurotoxin virus acquired from saliva of rabid animal
- Major source:
  - Raccoons, skunks, bats, squirrels, opossums
  - Incubation period: 10 days to several months
  - Children under 12 more susceptible
Rabies

- Signs and symptoms
  - General malaise
  - Fever
  - Headache
  - Lymphadenitis
  - Photophobia
  - Muscle spasms
  - Coma
  - Osteomyelitis
  - Abscesses
  - Necrotizing fascitis
Rabies

- Interventions
  - Meticulous wound care
  - Topical anesthetic
  - Incision and drainage to relieve pressure and provide drainage
  - Antibiotics
  - Analgesics
  - Current immunizations
  - Prophylactic rabies therapy
    - Human diploid cell vaccine (HDCV) initially and on days 3, 7, 14, and 28
  - Supportive care
An adolescent male is being evaluated after he jammed his finger playing basketball. On exam, capillary refill is brisk and sensation is intact. The finger is held in flexion at the proximal interphalangeal joint and he is unable to extend it. The nurse ED nurse should suspect that this patient has:

1. Fractured the distal phalanx
2. Lacerated the digital artery
3. Ruptured the extensor tendon
4. Contused the digital nerve
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When the ED nurse is evaluating foreign bodies in soft tissue, which of the following is considered a reactive object?

1. Sewing needle
2. Glass fragment
3. Wood splinter
4. Graphite from a pencil
When the ED nurse is evaluating foreign bodies in soft tissue, which of the following is considered a reactive object?

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A 14 year old boy is brought to the ED by his parents after he was taken down in a hard tackle during a football scrimmage. He complains of left shoulder pain. A deformity of the left clavicle is visible. The priority nursing assessment is to evaluate:

1. The peripheral nerves
2. Breath sounds
3. Brachial pulse
4. Pain
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Practice

X-ray confirms a clavicular fx. The nurse should be most alert for serious underlying injuries if the fracture is:

1. Located in the medial aspect of the clavicle
2. Displaced
3. Located in the middle third of the clavicle
4. angulated
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