MINOR PROCEDURES

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Today's Agenda

- Foreign Body Removal
  - Ear
  - Nose
  - Eye
  - Ring Removal
  - Soft tissue
- Hemorrhoids
- Animal Bites
- Tetanus and Rabies Immunization

Foreign Body Removal

Ears

- Cerumen Impaction
- Insects
- Other foreign bodies

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Techniques

- Manual removal
- Irrigation
- Suction
- Adhesives
- Magnets?

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Cerumen Impaction

- Causes
  - Anatomic deformities
  - Increased number of hairs in the external auditory canal
  - Physical barriers to natural wax extrusion (e.g., cotton swabs, hearing aids, earplug-type hearing protectors
- Diagnosis by history & visualization
- Ensure no recent history of trauma !
- Treatment
  - Irrigation of the external auditory canal, with or without the use of ceruminolytics
    - Jet irrigation, syringes, elephant ear, etc.
  - Cerumenolytics alone
  - Manual removal using a curette, forceps, suction or glue

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Cerumen Impaction

- Wax occludes canal
  - Diminishes hearing
  - May cause pain
- Removal
  - Ceruminolytics
  - Visual removal cerumen loop
  - Suction
  - Visual removal with alligator forceps
  - Irrigation

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Cerumenolytics

- Several drops to canal
- Allow to sit for 20-30 minutes
- Manually remove, suction, and/or irrigate with warm water
- Ensure TM is intact
- Consider antibiotic otic drops if skin traumatized
- Home self-care
  - Several drops cerumenolytic to ear
  - Allow to soften 30 minutes
  - Allow water to run into ear in shower
  - Gently massage over tragus
  - Clean gently with towel
  - No Q-tips

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Cerumen-Softening Agents

Agent	*Use*	*Dosing*	*Comment*
Water-based			
10% Triethanolamine polypeptide oleate condensate	**Soften cerumen before irrigation**	**Fill affected ear canal 15 to 30 minutes before irrigation**	**Can be irritating to the ear canal and should not be used for a prolonged period**
Docusate sodium	**Soften cerumen before irrigation**	**Fill affected ear canal with 1 cc 15 to 30 minutes before irrigation**	**In one study, one fifth of tympanic membranes were visualized without irrigation**
3% Hydrogen peroxide	**Soften cerumen before irrigation**	**Fill affected ear canal 15 to 30 minutes before irrigation**	**If not completely removed, bubbling may interfere with ability to visualize tympanic membrane**
2.5% Acetic acid	**Home treatment of impacted cerumen**	**Fill affected ear with 2 to 3 cc twice daily for up to 14 days**	**More effective in children than in adults**
10% Sodium bicarbonate	**Soften cerumen before irrigation or as an alternative to irrigation**	**Fill affected ear with 2 to 3 cc 15 to 30 minutes before irrigation, or alternatively for three to 14 days at home with or without irrigation[1]**	**More effective in children than in adults**
Water or saline	**Soften cerumen before irrigation**	**If irrigation is attempted without softening and is ineffective with the first irrigation attempt, instill water and wait 15 minutes before repeating irrigation**	

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Contraindications

- Irrigation
  - Hx TM perforation
  - Previous pain with irrigation
  - Previous middle ear surgery
  - Relative contraindications
    - lack of visualization
- Suction
  - Severe tinnitus with previous suction
  - Excessively hard cerumen
  - Uncooperative pateint

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Potential Complications

- TM preformation
- Canal laceration/abrasion
- 2º infection
- Hearing loss
- Pain
- Dizziness
- Syncope

Suction may create a cooling effect and elicit a caloric response from the inner ear causing nystagmus and vertigo

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OOPs

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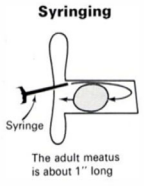
Foreign Bodies



Foreign Bodies – eraser heads, beads, cotton tips, bugs, etc…

Bugs - drown insects with mineral oil or lidocaine before attempting removal.

Removal – requires direct visualization prior to removal either via warm irrigation with syringe, or instruments like an alligator forceps.

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Manual Removal

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Suction - Irrigation -

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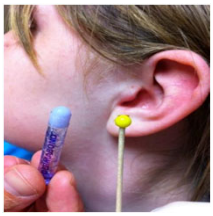
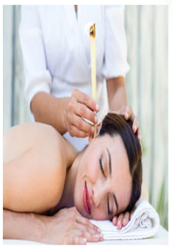
Adhesive



Ear Candling

- Originates from traditional Chinese, Egyptian, or North American medicine??
- Hollow candle made from a fabric tube soaked in beeswax
- No evidence based proof of efficacy
- Concerns for safety



And not to forget Visualization is imperative!

Take Home Points

- Remember, insects are friable – they come apart, separate
- If alive, drown with mineral oil, viscous lidocaine or other liquid
- Optimally, remove FB by irrigation
- If manual removal, irrigate to clear
- Always visualize ear canal and TM
- Consider otic antibiotics if trauma to canal
- Be ready for complications

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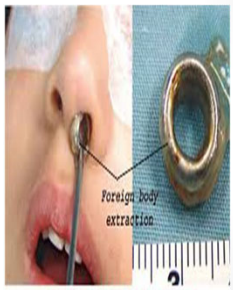
Case Study

Its 5pm on a Friday afternoon. You're about to finish working for the day in your primary care clinic when the nurse brings in one last patient. She's a disgruntled 3 year old girl with a complaint of green, offensive and malodorous discharge coming from her right nostril. On inspection of the right nasal cavity you visualize a silver bead sitting just out of reach.

How are you going to get it out?

Techniques

- Manual removal
- Suction
- Positive pressure
- Magnets
- Kissing technique
- Refer to ENT



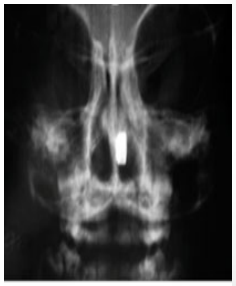
Nasal foreign body removal

Nasal Foreign Bodies

- Common complaint predominately affecting the pediatric population under 5 years, elderly with dementia or cognitively impaired individuals
- Frequent presentation: localized pain, purulent unilateral discharge, epistaxis, a voice change (with a "nasal" character), or a foul body/ breath odor.
- Most common: beads, beans, peanuts, toy parts, pebbles, paper wads, and eraser tips.

Nasal Foreign Bodies

- Most concerning foreign bodies are button batteries and magnets . Can cause localized necrosis and septal perforation in a short period of time.
- Commonly located just anterior to the middle turbinate or below the inferior turbinate; affect the right side twice as often as the left.
- Result in local inflammation, bleeding and purulent discharge.

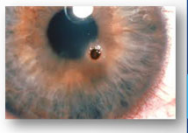


Kissing Technique

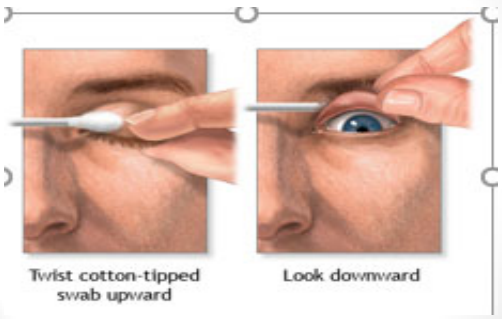
- The kissing technique has been around since 1965 and recent studies have shown that the technique has a 50% success rate, doesn't cause increase distress to the child or require sedation. This also means clinicians spend 50% less time
- The technique is performed by a parent by placing their mouth over the child's (giving a 'big kiss'), while they occlude the unaffected nostril. The parent then exhales into the child's mouth, generating positive pressure, similar to that of nose blowing
- And now……the video…….

Eye Foreign Body Removal

- Topical anesthetic
- Measure visual acuity
- Inspect cornea
- If fb is visualized attempt removal with a moistened cotton-tip applicator
- If successful, fluorescein stain and inspect
- Evert upper lid to rule out pre-tarsal fb
- If unsuccessful refer to ophthalmology



Everting Eyelids



Ring Removal

- Remove all rings before edema !!!!
- Methods
  - Lubrication
  - String method
  - Cut
- Consider anesthesia

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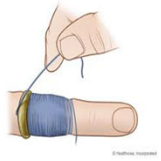
String Method

- Wrap a Penrose drain circumferentially proximal to distal
- 20-25 in piece of string
- Pass string under ring
- Wrap proximal to distal not allowing any skin to protrude
- Grasp proximal end, turn clockwise



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Ring Cutter

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Local Anesthesia

Pharmacology of Local Anesthetics

- Mechanism of action
  - Infiltrate tissue and diffuse across neural sheaths and membranes
  - Interfere with neuronal depolarization
- Onset of Action
  - pKa of an anesthetic is primary physiochemical factor that determines onset of action
  - Site of administration also influences onset
- Duration of action
  - Degree of protein binding of an anesthetic primarily determines the duration of action

Comparison of Anesthetic Agents

Agent	Concentration (%)	Max dose	Max volume	Onset	Duration
Lidocaine	0.5 - 1	300 mg	60 ml	2-5 min	1-2 hours
Bupivacaine	0.25	175 mg	70 ml	2-5 min	4-8 hours
Procaine	0.5 - 1	500 mg	60 ml	2-5 min	15- 45 min

Epinephrine Use

- **Advantages**
  - Prolongs duration
  - Provides hemostasis
  - Slows absorption
  - Increases level of blockade
- **Disadvantages**
  - No digits, ears, nose or penis
  - Impairs host defenses
  - Delays wound healing
  - DO NOT use for areas supplied by end arterioles or patients "sensitive to catecholamines"

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Local Anesthetics

- Esters
  - More likely to cause a true allergic reaction
    - Methylparaben preservative implicated as a possible mediator of allergic responses
  - Procaine (Novacaine)
  - Tetracaine (Pontacaine)
- Amides
  - Lidocaine (Xylocaine)
  - Bupivicaine (Marcaine)

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Allergic Reactions

- Acute onset of localized or generalized urticaria
- Delayed appearance of skin reaction
- Anaphylactic shock
  - Less than 1% of patients
- Management
  - ABCs
  - Epinephrine, diphenhydramine, steroids

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Alternative Anesthesia for Allergic Patients

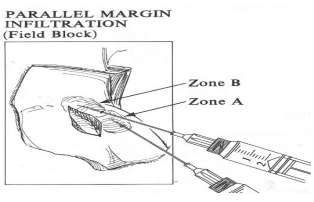
- No anesthesia
- Ice
- Pursue possibility of an ester allergy
- Use diphenhydramine (Benadryl)
  - 50 mg (1ml) diluted in a syringe with 4 ml NSS for 1 % solution
  - Local infiltrate
  - Painful

Wound Anesthesia

- Reduce Pain and Anxiety
  - Type of anesthesia
  - Needle size 25 – 30 gauge
    - Inexperienced use 25 g, 5/8 inch
- Ameliorating Discomfort
  - Buffering solution
  - Solution temperature
  - Speed of injection

Field Block

Parallel margin infiltration



Fishhook removal

- Variety of shapes and sizes
- Barb is a projection extending backward from the point of the hook.

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Fishhook Removal

- Several methods for successful removal
- Strategy depends primarily on the depth of the hook
- Caution to be taken for removal of a hook with multiple barbs
- Anesthetize the area either locally or by a digital block depending on location

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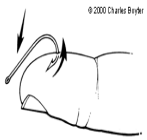
Simple Retrograde Technique

- Press skin over tip of hook to disengage barb while apply pressure downward on shank
- Back the hook out of the skin
- Most simple but least effective



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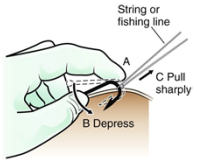
String Pull Method

- Press skin over tip of hook to disengage barb while apply pressure downward on shank
- Back the hook out of the skin
- Most simple but least effective



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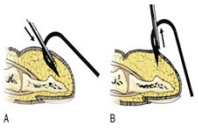
Needle Cover Technique

- Requires dexterity
- 18g needle is inserted into the entrance wound along side of the shank
- Needle follows the hook until the lumen covers the barb
- The hook and needle are withdrawn from the wound as a unit



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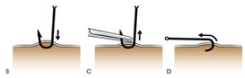
Advance & Cut Technique

- Useful for deep penetration and large hooks
- Tip is advanced through the skin
- Once exposed tip and barb are cut with wire cutters
- The remaining part is rotated back out of the wound



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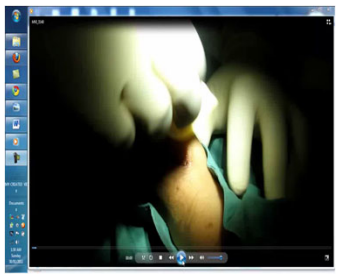

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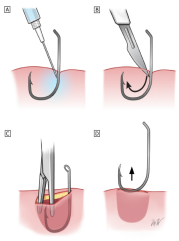
Incision Technique

- Modified needle cover technique
- Used for hooks embedded in dermis or in delicate areas
- Enlarge of wound with a #11 scalpel, follow the bend of the hook until the barb is disengaged from the tissue
- Withdraw hook through the wound



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Soft Tissue Foreign Body

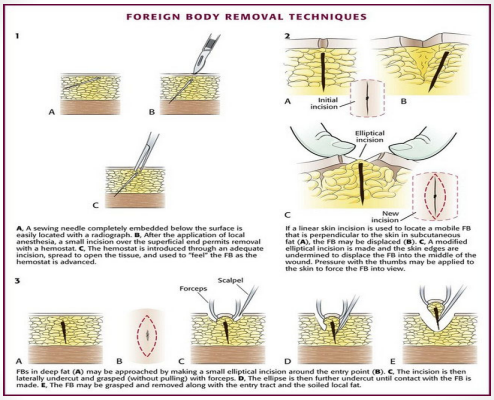
- History, History, History
  - PMH and tetanus immunization
  - Method of injury
  - Timing
  - Specific characteristics of suspected FB composition
    - Wood –causes immediate local inflammation and expeditious removal recommended
    - Glass and plastics less reactivity
    - Metallic objects are usually innocuous
- Imaging
  - Plain radiographs for radiopaque objects (glass, plastic, metals)
  - Ultrasound for radiolucent objects (wood or thorns)
  - CT used for intercranial or interocular

Soft Tissue Foreign Body Removal

- Localized FB
- Informed consent
- Cooperative patient
- Equipment
  - Good lighting
  - Drapes
  - Skin prep
  - Local anesthetic (lidocaine or Bupivicaine)
  - 25 g needle and syringe
  - #11 scalpel
  - Forceps or pick ups
  - Gauze and tape

Soft Tissue Foreign Body Removal

- Procedure
  - Clean area with chlorhexidine
  - Administer local anesthetic
  - Incise area over suspected FB
  - Using forceps grasp and remove
  - Explore for any remaining particles
  - Insure homeostasis
  - Apply dressing



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Post Procedure Care

- Tetanus immunization
- Analgesia
  - Acetaminophen or NSAIDS
- Clean daily with soap and water
- Apply clean dressing
- Return in 48 hours for a wound check
- Return immediately for redness, increased pain, swelling or fever
- Documentation
  - Thorough HPI, PMH, ROS and PE
  - Procedure note
  - Plan
    - Medications – analgesics, possibly antibiotics
    - Follow up care
    - RTC

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Hemorrhoids

- 2 types internal and external
  - Internal usually present with painless bleeding often following a bowel movement. May prolapse out of the rectum which causes pain.
  - External usually pruritic become painful with inflammation or thrombosed.
- Thrombosed hemorrhoid
  - Patient usually reports a painful lump or mass at the rectum
  - On clinical exam, the hemorrhoid appears swollen with a purplish hue and a firm tender area .
  - It is imperative to validate the thrombose as incising a swollen non thrombosed hemorrhoid can result in significant blood loss

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Conservative Hemorrhoid Management

- Indicated for non thrombosed and small thrombosed hemorrhoids
- Manage constipation
  - Hydration
  - Activity
  - Stool softeners
    - Docusate sodium
    - Polyethylene glycol 3350 (Miralax)
    - Psyllium (Metamucil)
- Sitz baths
- Anesthetic cream
  - Hydrocortisone, phenylephrine, witch hazel, lidocaine
- Oral analgesics
  - Acetaminophen or ibuprofen

Thrombosed Hemorrhoid Excision

- Equipment
  - Drapes
  - Tape
  - 25 g needle and syringe
  - Local anesthetic agent (lidocaine or bupivacaine)
  - I & D tray (#11 scalpel, forceps & hemostat)
  - Surgical foam
  - Gauze

Thrombosed Hemorrhoid Excision

- Technique
  - Position patient prone or lateral decubitus position. The buttocks maybe taped to expose the anus
  - Administer local anesthetic (lidocaine or bupivacaine) with a 25 g needle at the center of the hemorrhoid just beneath the skin, not into the hemorrhoid. Blanching of the skin will determine success of the anesthesia
  - Elevate the skin with the forceps, make an elliptical incision
  - Pick up the flap to uncover the clot
  - The clot can be removed with forceps or digital pressure
  - Apply gel foam to promote hemostasis
  - Apply dry sterile dressing once hemostasis is achieved.

Thrombosed Hemorrhoid Excision

- Post procedure care
  - Rest after procedure to minimize bleeding
  - Warm sitz baths 4 times a day for 2 days
  - Oral analgesics
    - Acetaminophen
    - NSAIDS
  - Hemorrhoidal cream
  - Stool softeners
  - Patient education
    - Follow up in 48 hours for evaluation
    - Surgical referral for those recurrent hemorrhoids
    - Return immediately for bleeding, fever, or increasing pain.

Documentation

- Documentation
  - Thorough HPI, PMH, ROS and PE
  - Procedure note
  - Plan
    - Medications
    - Follow up care
    - RTC

CPT Codes**

• Cerumen impaction	69210
• FB removal ear	69200
• FB removal nose	30300
• FB removal eyelid	67938
• FB removal conjunctiva superficial	65205
• FB removal cornea without slit lamp	65220
• FB removal soft tissue SQ simple	10120
• FB removal soft tissue SQ complicated	10121
• Thrombosed Hemorrhoid	46083
• Fishhook removal no incision	24200

**Always check for specificity of code and updates!

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ANIMAL BITE WOUNDS

Epidemiology

- Difficult to determine actual numbers because many are not reported
- CDC reports that an average of 4.5 million bites per year
- 885,000 require medical attention
- Children are the most frequent victims
- Dog bites 85-90%
- Cat bites 5-10%
- Rodent 2-3 %

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Principles of Disease

- Bites are traumatic injuries that cause damage to skin, muscle, nerves, blood vessels, tendons, joints and bones
- Wounds can be lacerations, contusions, scratches, tear or deep punctures
- Contamination with oral flora makes local wound infection the principle treatment concern along with rabies and tetanus immunization status
- Most US cities have animal bite reporting laws

Clinical Management

- Prevention and treatment of local bacterial infection and prevention, recognition and management of subsequent systemic illness
- Initial assessment for life threatening injury
- Meticulous exam and wound cleaning
- Special attention to wounds that involve joint space penetration

Clinical Management

- Facial, hands, and perineum wounds can be problematic due to the close proximity of delicate structures
- Image wounds if there is any suspicion of a foreign body
- Primary closure for cosmetic and functional issues
- Delayed primary closure is most successful
- Tetanus and Rabies immunization evaluation

Helicopter Acronym

H	History
E	Examination
L	Liberal cleansing
I	Irrigation
C	Closure & culture consideration
O	Operative cleansing and closure
P	Prophylactic or therapeutic antimicrobial use
T	Tetanus immunization status
E	Elevation
R	Rabies risk

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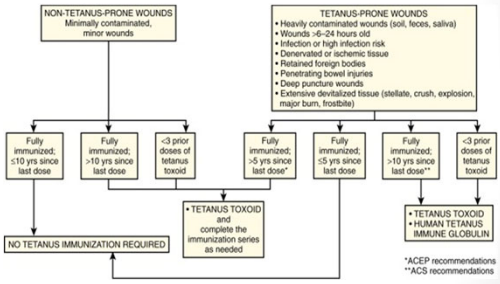
Tetanus Prophylaxis



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Rabies Prophylaxis

- Rare disease in developed countries
- Significant North American reservoirs of animal rabies exists in bats, skunks, raccoons and foxes.
- All carnivores and omnivores are potential vectors
- http://www.cdc.gov for updated information

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Dog and Cat Bites

Condition of animal at time of attack	Treatment of exposed person
Healthy and available for 10 day observation	No treatment unless animal develops rabies
Rabid, suspected rabid, or escaped	RIG and HDCV

High Risk Rabid Animals

Animal species	Condition of animal at time of attack	Treatment of exposed person
Wild Skunk, bat, fox, raccoon, bobcat, and other carnivores	Regard as rabid	RIG and HDCV

Bites from squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, mice, rabbits and hares almost never call for rabies prophylaxis. Consult local public health officials.

Rabies Immunoglobulin (RIG)

- 20 IU/kg of body weight
- If anatomically feasible the dose should be infiltrated around the wound. If not anatomically feasible ½ around the wound and the rest administered in the gluteal area
- RIG should not be administered in the same syringe or into the same anatomic site as the vaccine because RIG may partially suppress active production of antibody

Rabies Vaccine Schedule (HDCV)

- HDCV 1 ml IM deltoid area on
- Day 0
- Day 3
- Day 7
- Day 14

Case Study

- JS a 24 y/o male presents with a dog bite to his hand unknown immunization status and escaped dog. JS weighs 185 lbs. (84.1 kg).

- 84.1x 20 = 1682 international units of RIG
- RIG is supplied 150 IU/ml
- 1682/150= 11.21 ml
- 11.21/2 = 5.6 ml
- Therefore 5.6 ml infiltrate the wound and the remaining 5.6 ml divided IM in the gluteal area.

- HDCV 1 ml deltoid
- TDaP if required

Antimicrobial Treatment

- All puncture wounds
- Bites involving hands, feet, face, or genital area
- Moderate or severe wounds
- All wounds in immunocompromised patients
- Bite wounds with signs of infection

Prophylactic Antibiotics

- Refer to the Sanford Guide to Antimicrobial Therapy for specific bites
- Overall initial therapy for most bites and those not allergic to penicillin is Amoxicillin-Clavulanate
- Alternative combinations vary with specific animals

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Bats

- Most recent human rabies has been caused by bats
- Contact with bats increases suspicion of rabies exposure
- Consult local health department and CDC
- Rabies is not transmitted by bat guano, urine or blood

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Dog Bites

- 5-6 % become infected
- Pastaurella and anaerobes most common microorganism
- Capnocytophaga canimorsus rare but fulminant bacteremia following a dog bite

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Cat Bites

- 60 -80 % become infected
- Narrow sharp teeth increase the susceptibility to deliver infectious agents through puncture wounds
- Pastaurella Multocida most common microorganism
- Cat scratch disease 7-12 days after bite or scratch

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Human Bites

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Human Bite Wounds and Closed Fist Injuries (CFI)

- Associated with a high incidence of infection, approximately 60%, especially with hand injuries
- Polymicrobial, staph and strept species
- Eikenella Corrodens common bacteria
- If blood involved hep B and HIV prophylaxis may be warranted
- CDC post exposure prophylaxis 24 hour hot line, 1-888-448-4911 for consultation

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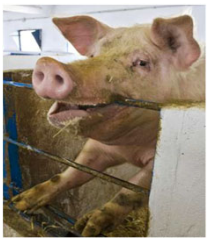
Ferret Bites

- 3rd most popular pet in the US
- Usually attack face and neck
- Little is known about the bacteriology of ferret bites
- CDC recommends management strategy similar to that for other domestic animals, 10 day observation.

Blunt/Stellabotte 2019

Domestic Herbiovores



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Horses and Pigs

- Pigs and horses can inflict serious injury with their powerful jaws and grinding teeth
- Usually require careful debridement and exploration
- High risk of infection
- Polymicrobial

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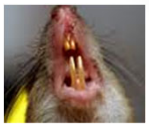
Rodent Bites



- Usually trivial
- No rabies
- Rat bite fever- 2 similar febrile illnesses diagnosis confirmed by blood culture for streptobacillus moniliformis or spirillum minus rare
- Hantavirus is also rare transmission