

Pediatric Seminar:  
Primary Care  
Office Emergencies

November 4-5, 2023

## Potpourri of Office Emergencies

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Experts in pediatrics,  
**Advocates for children.**  
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## Disclosures

- This speaker has no disclosures.



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## Objectives

- Identify potential pediatric office emergencies related to ocular emergencies, anaphylaxis, febrile seizures, and a variety of other emergencies.
- Describe causes and characteristics of the various pediatric office emergencies identified.
- Discuss current evaluation and management of the identified emergencies.


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## "The Red Eye"

- "Cardinal Sign on Ocular Inflammation"
- Most common cause is conjunctivitis
- Other differential diagnosis to consider
  - Blepharitis
  - Corneal abrasion
  - Foreign body
  - Scleritis
  - Subconjunctival hemorrhage
  - Keratitis
  - Iritis
  - Glaucoma
  - Burn



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## Structures of the eye

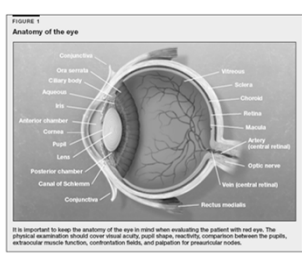


FIGURE 1  
Anatomy of the eye

It is important to keep the anatomy of the eye in mind when evaluating the patient with red eye. The physical examination should cover visual acuity, pupil shape, reactivity, comparison between the pupils, extraocular muscle function, confrontation fields, and palpation for preauricular nodes.

The most common ophthalmic occlusive uses by primary


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## History

- Duration of symptoms
- Visual changes
- Severity of Pain
- Photophobia
- Response to previous treatments
- Use of contact lenses
- History of allergies or systemic illness



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### Ocular exam

- Inspection of eyelids
- Lacrimal sac
- Pupil size
- Reactivity to light
- Corneal involvement
- Pattern and location of Hyperemia
- Visual acuity
- Presence or absence of preauricular lymph node involvement
- Fluorescein exam with a Woods Lamp if available



### "Is it bacterial, viral or allergic-or something else?"



#### Bacterial

- Gluey or sticky eyelids when waking up with mucoid or purulent discharge.
- Crusting/glued eyelashes/eyelids
- Purulent, thick, yellow-green d/c
- Swelling or gritty feeling
- Bilateral
- Winter
- Concurrently with otitis media or with rhinitis, sinusitis
- Younger children



#### Viral

- Presents unilateral, then spreads to the other eye
- Cornea opacities
- Tearing, fever
- Discharge- serous, clear, watery
- Presents with viral infection, esp. pharyngitis or sore throat.
- Common in spring and fall
- Older children



### Cont.



#### Allergic

- Itching
- Bilateral
- Spring or fall
- Acute onset of conjunctival injection and edema
- Lid edema
- Large papules on palpebral conjunctivae of the upper lid
- Watering
- Stringy, ropy discharge, if any

#### Something Else...

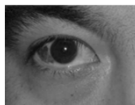
- Unilateral red eye
- Condition is chronic
- Red eye duration is 2 weeks or longer
- Photophobia
- Pain
- Decrease visual acuity

### Signs and symptoms

- Ocular Trauma
  - Irregularity of pupil size or shape; absence of deep-formed anterior chamber; hyphema; visible prolapse of iris or other ocular tissue
- Corneal Abrasion
  - Pain in the eye; foreign body sensation.
- Subconjunctival hemorrhage
  - Hemorrhage from the conjunctival and episcleral vessels with or without conjunctival laceration.
- Iritis
  - Photophobia; deep conjunctival or episcleral blood vessel injection around the limbus; decreased vision in the affected eye; involved eye may have a smaller pupil
- Hyphema
  - Blood in the anterior chamber; sign of severe trauma; heme may layer out inferiorly as a red line behind the cornea

### Treatment

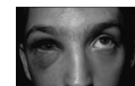
- Conjunctivitis
  - Determine Allergic, viral or bacterial
  - Treatment based on above determination
- Subconjunctival Hemorrhage
  - No treatment
  - But in children less than 2, consider non-accidental trauma if no other explanation
- Corneal abrasion
  - Patching is no longer recommended.
  - +/- antibiotic ointment



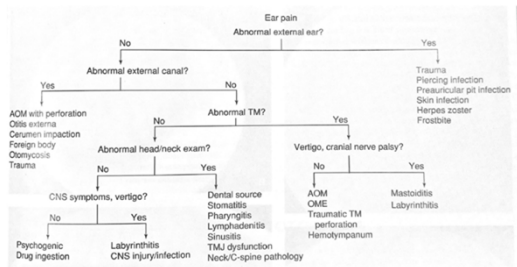
### Ophthalmologist consultation



- Acute visual changes with photophobia and red eye with visual changes, symptoms of iritis
- Symptoms of an orbital fracture or hyphema, severe ocular trauma
- Abrasions which appear deep, or abrasions which are large, or cross over onto the iris/pupil
- Concerning foreign body or one that penetrates cornea



## Earache/ear emergencies



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## External Anatomy



- Try to use the right words to describe location of pain/injury

- Outer ear = auricle= pinna

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## Ear emergencies

- Work from distal to proximal
- Image, what does it look like
- Differential Diagnosis
- How did this happen?
- How do we treat it?
- Anticipatory Guidance

What are we looking at in these two different pictures?



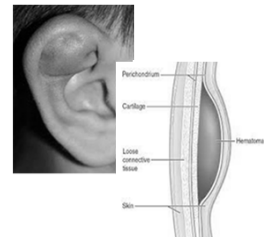
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## Outer Ear emergencies

### Perichondritis

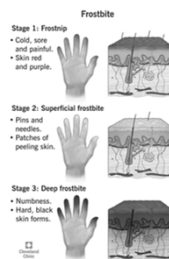


### Auricular hematoma



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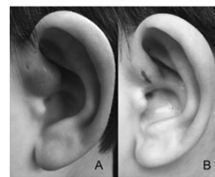
## What's this one?



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## What do you see here?

### Infected preauricular cyst



### Juvenile Spring Eruption



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### Embedded earring back



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### Split Ear lobe and laceration to the ear



- Careful approximation required
- Must incise along the defect with scalpel to make new edges
- Deep sutures with absorbable suture
- Skin closure of front and back
- Risks: can be complicated by notching and recurrence
- Repair will leave a scar
- Several months needed to heal before piercing again

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### What is this?



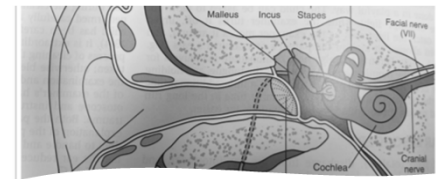
- Herpes zoster oticus (Ramsey Hunt syndrome)



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### Inner ear anatomy

- Anatomy is important because most serious causes of ear pain are due to extension of infection to adjacent structures
- If you have otalgia PLUS +cranial nerve palsy, + vertigo + AMS → need a more extensive workup
- Note where CN 7 passes through
- Note position of mastoid bone
- TM is angulated in infants- drum is tilted at an angle of 130 degrees → harder to see landmarks

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### How do you hold the otoscope? How do you position the child?

If having a hard time looking in the ears, hold arms above head.

If unable to turn their head, wiggle the otoscope light in front of their eyes and then move it to the opposite side of the ear you want to look in. The child will often track with the light and turn their head so their ear is then right in front of you. Have parent stabilize the head.



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### What is this?

#### Cerumen impaction

- Home attempts may push wax up against the TM
- Best to remove under direct visualization
- Saline irrigation, peroxide-containing drops, docusate liquid



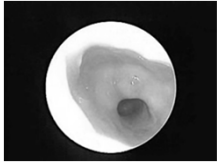
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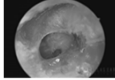


### Drainage and perforation



### Traumatic perforation


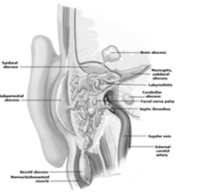
- Tried to belly flop in lake and landed on his side
- Pain
- Any difference for lake vs pool?
- Anyone treating with antibiotics?
- Would you treat with antibiotics for a patient with PETs swimming in lake/pool?



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### Mastoiditis

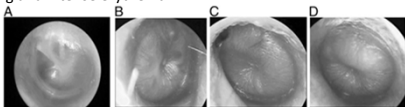
- Diagnosed with ear infection Sunday night
- Monday afternoon looked mildly red,
- After bath noted to be super swollen
- What do you want to think about with your physical exam?
- What imaging do you want?

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### 2013 AAP AOM guidelines

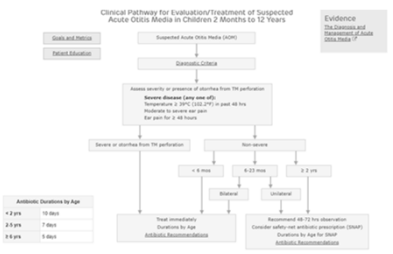
- The most specific diagnostic criteria of AOM is the bulging of the tympanic membrane according to the 2013 AAP Clinical Practice Guideline February, 2013.
- Further diagnostic criteria:
  - Moderate to severe bulging of tympanic membrane
  - New onset of otorrhea not due to acute otitis externa
  - Mild bulging (full) AND recent (less than 48 hours-acute) onset of ear pain
  - Mild bulging and intense erythema



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### Clinical Pathway for Evaluation/Treatment of Suspected Acute Otitis Media in Children 2 Months to 12 Years



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### AOM antibiotics

Indications	Antibiotic	Adverse to First-line Agent
Initial Therapy if No Amoxicillin in Preceding 30 Days	Amoxicillin, PO • < 2 months: 20 mg/kg/day in 2 divided doses • > 2 months: 40 mg/kg/day in 2 divided doses Max: 2,000 mg/day	None severe allergy: Ceftriaxone, IV • < 6 months: 7 mg/kg/once daily for 5-10 day duration • 6 months to 12 years: 14 mg/kg/once daily for 10 day duration Max: 500 mg/day
Initial Therapy if Patient Received Amoxicillin in the Preceding 30 Days or has Concurrent Concomitant (Suggests 2nd infection)	Amoxicillin-clavulanate, PO • < 2 months: 20 mg/kg/day of amoxicillin component in 2 divided doses • > 2 months: 40 mg/kg/day of amoxicillin component in 2 divided doses Max: 2,000 mg/day For oral suspension, use ES formulation and for tablet, use ES formulation	Ceftriaxone, IV • < 2 months: 10 mg/kg/day in 2 divided doses Max: 500 mg/day Ceftriaxone, IV or IM • 6 months to 12 years: 14 mg/kg in a single dose Max: 1,000 mg/once
Amoxicillin Failure	Amoxicillin-clavulanate, PO • < 2 months: 20 mg/kg/day of amoxicillin component in 2 divided doses • > 2 months: 40 mg/kg/day of amoxicillin component in 2 divided doses Max: 2,000 mg/day For oral suspension, use ES formulation and for tablet, use ES formulation	Not appropriate
Amoxicillin-clavulanate or Oral Cephalosporin Failure	Ceftriaxone, IV or IM • 6 months to 12 years: 14 mg/kg/once daily for 10 days Max: 1,000 mg/once	Levofloxacin, PO • > 6 months and < 18 years: 10 mg/kg/once daily Max: 375 mg/once • > 18 years: 10 mg/kg/once daily Max: 750 mg/once

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### Treatment failures

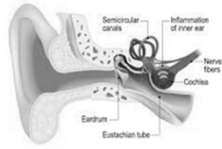
- Antibiotic treatment failure: no clinical improvement in 48-72 hours
- Ceftriaxone is **not** recommended as first-line therapy due to broad spectrum of activity
  - **Single dose** of ceftriaxone is effective for uncomplicated otitis media
  - **Three doses** of ceftriaxone are recommended for treatment failure

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### One more strange thing- Labyrinthitis

- Inflammation of the vestibular apparatus, often from bacterial or viral infections such as otitis media, causes acute labyrinthitis.
- Symptoms include hearing loss, vomiting, and intense vertigo exacerbated by head movements [20-22].
- **Labyrinthitis may be difficult to distinguish from acute cerebellar ataxia in a toddler**
- Ear pain + normal external ear + abnormal TM + vertigo +/- CN palsy



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### Fever in infants less than 90 days

- Rectal temperatures  $> 38 (100.4)$  or greater
- 8-12.5% of febrile young infants have an SBI, with the prevalence up to 20% in infants less than 28 days old
- Invasive Bacterial infection (IBI) more common in infants younger than 90 days
  - UTI
  - Bacteremia
  - Soft tissue infection
  - meningitis
  - Pneumonia
- 44% of cases of bacteremia in infants 0-90 days old are caused by E.coli

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### HPE (History and Physical Exam) red flags

- Infants less than 28 days old
- Decreased tone, inconsolable, lethargic
- Stridor, grunting, wheezing, retractions, or nasal flaring
- Mottling, pallor, cyanosis of the skin
- Poor Feeding

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### Who gets the full sepsis workup?

- Ill appearing infants (respiratory or circulatory compromise, irritability, poor tone, or lethargic)
- Any infant with findings that suggest HSV infection
- Infants younger than 60 days of age with any of the following risks:
  - Rectal temp  $\geq 38.6$
  - Congenital or Chromosomal defects known or suspected to increase risk of infection
  - Technology dependent
  - Antibiotic therapy in the past 3-7 days
  - In neonates younger than 28 days with maternal factors

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### Gray area: 29-90 days

- Infants with focal infection
  - Cellulitis
  - Abscess
  - Osteomyelitis
  - Bacterial arthritis
  - Bacterial pneumonia
- Ill appearance
- Abnormal WBC, ABC, or inflammatory markers (procalcitonin, PCT) and/or C-Reactive Protein, CRP)
- Some believe these patients should have an LP in order to minimize missing bacterial meningitis

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### Well appearing 29-90 day old infant?

- Complete blood count (CBC) with differential
- PCT (only if results are rapidly available [e.g., within 60 minutes])
- CRP (only if results are rapidly available [e.g., within 60 minutes])
- Blood culture
- Urinalysis
- Urine culture (by transurethral bladder catheterization or suprapubic aspiration)
- Chest radiograph in patients with signs of respiratory illness (e.g., cough, tachypnea, or abnormal breath sounds)
- Consider viral testing based on the season but that does not always exclude concomitant bacterial infection

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### LP will be considered if:

- White blood cell count  $\leq 5000/\text{microL}$ ,  $\geq 15,000/\text{microL}$
- ABC  $> 1500/\text{microL}$
- PCT  $> 0.3 \text{ ng/mL}$  (if obtained)
- CRP  $> 20 \text{ mg/L}$  (if obtained)
- If obtained, findings of pneumonia on chest radiograph

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### Things to consider

- Well-appearing febrile infants 28 to 90 days of age who have a recognizable viral infection (e.g., bronchiolitis, croup, influenza, or enterovirus)
- Well-appearing febrile infants 61 to 90 days of age without a focal bacterial infection on examination
- Can be observed with close follow-up.

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### Other causes of ill appearing infants

- In addition to sepsis
  - congenital heart disease
  - congenital adrenal hyperplasia
  - inborn errors of metabolism
  - malrotation with volvulus
- Infants with clinical manifestations suggesting a diagnosis other than or in addition to serious infection warrant additional studies based upon specific findings.

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### No real consensus

- Evidence is lacking regarding the best approach to well-appearing febrile infants 42 to 90 days of age who have received immunizations within the previous 48 hours and febrile infants over 60 days of age with acute otitis media. The expert contributors to this topic vary in their practice.
- Be sure you are following how your collaborating physicians practice if you are in a collaborating agreement.

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### A Few Words on Pediatric Febrile Seizures...



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### Febrile Seizures

- Definition: an event occurring in infancy or childhood (usually from 3 months to 5 years) associated with fever but without evidence of intracranial infection or defined cause
- Frequency:
  - 2-4% of children in the US
  - 75,000-100,000 cases per year



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## Febrile Seizures

- Classification:
  - simple: single, isolated generalized seizure in a febrile child between 6 months to 5 years of age
  - complex: seizure that is greater than 15 minutes, recurs within 24 hours, or has focal features

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## Risk Factors for a First Simple Febrile Seizure

- Family history of febrile seizures
  - General population = 2-5%
  - Sibling had FS = 10-15%, Parent had FS = 10-20%
- Neonatal discharge > 28 days
- Delayed development
- Very high fever

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## CBC or Urine Studies?

- Should only perform studies if no source for a fever has been identified by history or PE in the child with a febrile seizure.
- Follow fever guidelines for age
  - CBC/Blood Culture (WBC may be elevated after a seizure)
  - UA/Urine Culture
    - Boys < 6 months
    - Girls < 2 years

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## Lumbar Puncture?

- Textbooks present conflicting opinions
- Should base the need on history and PE
- To consider in specific patients
  - Pre-treatment with antibiotics
  - Complex febrile seizure
  - Age < 12-18 months - use your own judgement

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## Neuroimaging???



- Not recommended in the first unprovoked seizure in otherwise healthy children and not usually necessary for Febrile seizures
- Indications:
  - Focal seizure/Todd's Paralysis (focal weakness in a part of a body after a seizure)
  - Abnormal neuro exam
  - Suspected head trauma
  - Suspected intracranial tumor or bleed
  - Prolonged seizure with unknown cause

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Pediatric Seminar:  
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### A few words about Anaphylaxis Or Severe Allergic Reaction



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## Definition of Anaphylaxis

- Highly likely if the patient has acute illness (minutes to hours) with one of the following:
  - No Known** allergen exposures with the findings of 1) skin and/or mucosal involvement AND 2) either respiratory compromise or hypotension.
  - Likely or possible** allergen exposure with 2 or more of the following findings (skin and/or mucosa involvement, respiratory compromise, hypotension, and/or other signs of end-organ dysfunction, gastrointestinal symptoms)
  - Known** allergen exposure with hypotension. Regardless of the number of symptoms involved, a patient in distress after a known or suspected exposure should be treated as **anaphylaxis** until proven otherwise

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## Signs and Symptoms

- Skin/mucosa:** itching, flushing, urticarial, angioedema, morbilliform rash, swelling of lips/tongue/uvula, piloerection.
- Respiratory:** nasal congestion or itching, rhinorrhea, sneezing, throat itching or tightness, dysphonia, hoarseness, stridor, cough, tachypnea, wheezing, dyspnea, shortness of breath, hypoxia, cyanosis, respiratory arrest.
- Gastrointestinal:** abdominal pain, nausea, vomiting, diarrhea, dysphagia, metallic taste.
- Cardiovascular:** chest pain, tachycardia, bradycardia, arrhythmias, palpitations, hypotension (which may manifest as urinary or fecal incontinence), other signs of end-organ dysfunction, cardiac arrest.
- Central nervous system:** uneasiness or sense of impending doom, sudden behavioral change (in nonverbal patients), altered mental status, headache, tunnel vision, dizziness, confusion, syncope, hypotonia.

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## Diagnosis

- Based on patient presentation, exam findings, and all possible events/exposures in the hours preceding the symptom onset.
- Patient challenges and risk factors in making accurate diagnosis
  - Nonverbal
  - Hearing or vision impairment
  - Underlying neurologic or psychiatric conditions
  - Concomitant sedating medications
  - Concomitant beta-blockers Or ACE inhibitors
  - Underlying Cardiac diseases
  - Underlying asthma/respiratory diseases
  - Underlying allergic diseases

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## If yes....

- Discontinue offending agent
- Assess ABCs ( CABs as now taught in PALS)
- Epinephrine IM in the anterolateral thigh
  - Repeat every 5-15 minutes as needed
  - Push orange tip of auto injector against the thigh until it clicks, then hold in place for 10 minute
- Consider supplemental Oxygen
- Support airway as needed
- Attempt IV access
- Call 911 to transfer



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## While waiting on 911 to arrive...

- Consider second line glucocorticoids, diphenhydramine, ranitidine.
- NS bolus over 5-10 minutes, push-pull, if time before transport arrives
- Repeat Epinephrine IM (every 5-15 minutes)
- Albuterol if wheezing
- Racemic Epi if stridor is present

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## Medication dosing

- First Line Therapy: Epinephrine IM in anterolateral thigh. (To administer, place orange tip onto anterolateral thigh until it "clicks", then hold in place for 10 seconds to ensure adequate drug delivery)**
  - Dose for **<10 kg:** 0.01mg/kg (0.1mL/kg) **IM** of **1:10,000** product
  - Dose for **10-25 kg:** **Epicene Jr** (0.15mg) **IM**
  - Dose for **>25 kg:** **Epicene** (0.3mg) **IM**
  - If no pre-filled syringe is available* (such as Epi Pen or Epi Pen Jr, then **Epinephrine IM** dose is 0.01mg/kg of **1:1,000** concentration (maximum dose of 0.5mg/0.5mL)

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## Medication drug dosing

- **Second Line Therapies:** *Please note that no high-quality evidence from clinical trials or placebo-controlled randomized controlled clinical trials with these drugs have been conducted in anaphylaxis*
  - Glucocorticoids: proposed mechanism to down-regulate the allergic inflammatory response; traditionally given to decrease the likelihood and/or severity of symptoms and biphasic reactions
    - Prednisone or prednisolone: 1 mg/kg PO (maximum dose 60 mg)
  - Diphenhydramine (H<sub>1</sub> antihistamine): 1 mg/kg IM or PO (maximum dose 50 mg)
  - Ranitidine (H<sub>2</sub> antihistamine): 2 mg/kg PO (maximum dose 120 mg)

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## Medication dosing

- **Adjunctive Therapies:**
  - Albuterol: 2.5 mg (<30 kg) or 5 mg (≥30 kg) nebulization q10-20 minutes for bronchospasm
  - Racemic Epinephrine: 2.25% (0.5 mL drug mixed in 3 mL NS) nebulization q20 minutes for upper airway obstruction

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## Other things to consider

- **Patient Positioning:** The patient should remain supine with lower extremities elevated or in a position of comfort (if respiratory distress or emesis). Sudden changes in position such as sitting upright or standing should be avoided.
- **Biphasic Reactions:** These are reported to occur in up to 23% of anaphylactic reactions, ranging from 1 hour to up to 72 hours after the initial presentation. The most recent reported median time to biphasic reaction was approximately 9 hours; the second reaction may be anaphylactic or non-anaphylactic in nature.

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## Additionally

- **Disposition:** The current evidence recommends an observation time of 4-10 hours for mild presentations versus admission for those with more severe presentation (i.e., Refractory to initial treatment, requiring more than 1 dose of IM epi, recurrence of symptoms). Close follow up with PMD is recommended, as well as prescribing Epi Pen (with teaching provided). Definitive allergy testing as an outpatient is also recommended.

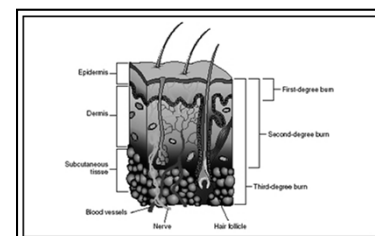
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## INJURIES TO THE SKIN

Burns  
Other Wounds  
Nail Injuries  
Animal bites

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## Anatomy of the Skin



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## Burns

- Fires and burns are the leading cause of injury-related deaths in the home
- Types: smoke inhalation, flame contact, scalding; as well as electrical, chemical, and ultraviolet burns
  - Scalding is the most common type of burn in children
  - Sunburn is a common thermal injury
- Burns are classified according to their depth and size
- Current designations of burn depth are superficial, superficial partial-thickness, deep partial-thickness, and full-thickness

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## Burns

- Estimate per cent of body surface area burned, noting superficial, partial, or full thickness
- If <10%, oral rehydration, >10% IVF required
- Refer for burns which:
  - are partial thickness, >10% BSA
  - are circumferential
  - are located on the face, hands, feet, genitalia, or over major joints
  - are electrical burns (including lightning)
  - are associated with inhalation injury
  - are associated with a comorbid condition
  - are associated with concomitant trauma (fractures)
  - have not begun epithelialization after two weeks

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## Burns

- Superficial burns involve only the epidermal layer of skin. They are painful, dry, red, and blanch with pressure
- Generally, heal in three to six days without scarring
- Treatment involves simple cleansing and acetaminophen, or Tylenol as needed. Topical antibiotic ointment should be applied as well



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## Burns

- Superficial partial-thickness burns involve the epidermis and superficial portions of the dermis. They are painful to temperature and air.
  - Usually form blisters, and blanch with pressure
  - They heal in 7 to 21 days; scarring is unusual, although pigment changes may occur
  - Unroof blisters with cloudy fluid or if rupture is imminent



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## Burns

- Deep partial-thickness burns extend into the deeper dermis, damaging hair follicles and glandular tissue
  - They are painful to pressure only
  - They almost always blister (easily unroofed), are wet or waxy dry, and have variable color from patchy cheesy white to red
- Full-thickness burns extend through and destroy the dermis
  - They are usually painless
  - waxy white to leathery gray to charred and black

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## Burns

- Managing partial thickness burns
  - Clean using mild soap
  - Topical antibiotic should be applied to any non-superficial burn to prevent infection (triple antibiotic ointment)
    - Silver Sulfadiazine (SSD) use controversial in ambulatory management of burns as evidence suggests it may slow wound healing
  - Basic gauze dressing provides good burn coverage
    - Placed after the application of topical antibiotic
    - Application of non-adherent gauze (e.g., adaptic) placed over the burn,
    - Followed by a second layer of fluffed dry gauze, and an outer layer of elastic gauze (e.g., Kerlix)

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## Abrasions

- Management
  - Most managed at home
  - If severe- large area, deep, painful, infected, FB
    - Clean using mild antibacterial soap
    - Irrigate with NS or water if needed
    - Debride loose skin
  - Generally, leave open to air
  - Cover if needed with non adherent dressing
    - Apply topical antibiotic ointment
  - Advise family to watch for signs of infection

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## Puncture Wounds

- Common pediatric injury- "nail in foot"
- Classified as superficial or deep
  - Skin, adipose tissue, muscle, cartilage involvement
  - Deeper wounds concern for infection, soft tissue and bone
- Consider tetanus status
- Topical antibiotics indicated, unless evidence of cellulitis
  - Cover using dicloxacillin or cephalexin
  - IV for severe infections- joint, bone, failing outpatient therapy (refer)
- Management
  - Antibiotic prophylaxis (PO) until culture results known
    - Dicloxacillin Or Amoxicillin
    - Cephalexin
    - Erythromycin
      - Liquid tastes terrible, significant GI upset in some
  - Cover for staph or pseudomonas;
    - review signs of cellulitis- or osteo.
    - If infection near joint, will need x-rays to assess bony areas.
    - General rule is in foot, x-rays to rule out any retained FB
    - IV nafcillin or cephalozin

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## Nail Hematomas

- Bleeding into the nail bed related to trauma
  - Consider X-ray of digit
- Management
  - **Nail trephination** using cautery (although can lead to a burn) or with sterile #11 scalpel blade, or angio-cath
  - Keep nail bed clean and dry
  - Instruct parents child may lose nail, but it will grow back
  - Antibiotics indicated if concomitant tufts fracture
    - Augmentin or Keflex

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## Dog Bites

- Dog bites are frequently caused by animals known to the victim
- Dog bites to the head and neck are common in young children
- Dog bites to the extremities, including the dominant hand, in school aged children are common
- Ortho consult is indicated in bites involving a joint, periosteum, or neurovascular bundle
- Complications may include: scarring, CNS infection, septic arthritis, osteomyelitis, endocarditis, sepsis

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## Dog Bites: Treatment

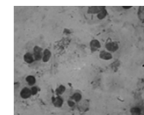
- Irrigation of the wound with normal saline is necessary, with removal of debris, and cleansing with a mild soap
- Suture only if necessary because wound closure increases risk for infection
- Prophylactic antibiotics often used (Augmentin, if PCN allergic, use clindamycin with Bactrim)
- Pathogens which infect dog bites:
  - *Pasturella canis*, *P. multocida*, streptococci, staphylococci, and anaerobes
- Severe and/or deep dog bites may require IV antibiotics

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## Cat Bites

- Infection risk is higher with cat bites compared to canine bites because they produce a deeper puncture wound
- Should NOT be sutured unless absolutely necessary, as they create a puncture wound inoculum
- Prophylactic antibiotics are recommended:
  - Cover for *Pasturella multocida*
    - Augmentin, or if PCN allergic, Bactrim plus Clindamycin
- Complications include those associated with canine bites, and also include cat scratch disease

Gram negative bacteria of *P. multocida*



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## Other Animal Bites

- The principals of other animal bites remain the same
  - Squirrels, rabbits, rodents, guinea pigs
- Broad spectrum antibiotic coverage may be indicated
  - Salmonella coverage with Bactrim in iguana bites
- Consider rabies vaccine

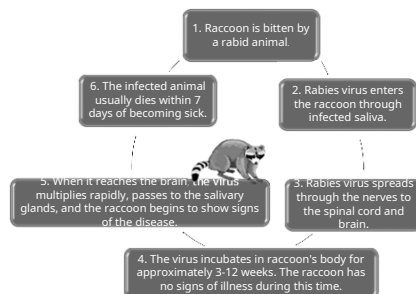
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## Rabies Considerations

- Fatal viral disease primarily acquired from the bite of a rabid animal
- In the US, bats, raccoons, skunks, foxes and coyotes are common carriers
- All bites from animals that can be infected with rabies virus carry a risk of rabies transmission
- If the animal is captured and is an unknown carrier, it can be observed for signs of illness for up to 10 days
- Rabies Immune Globulin can be given via wound infiltration, 20units/kg, then the rest injected IM in the thigh- Day 0 of exposure
- PLUS
- If required, the rabies vaccine may be given IM on days 0, 3, 7, 14, post exposure (immunocompromised- day 28)

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## Infectious Path of Rabies Virus



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## Human Bites

- Usual places for human bites are the face and extremities, and frequently occur related to rough play with another child.
- Cultures most commonly grow:
  - Streptococci, staphylococci, anaerobes, and *Eikenella corrodens*
- Treatment for human bites in children often do NOT require antibiotics
  - In cases of deeper bites, Augmentin or Bactrim PLUS clindamycin is required
  - The practitioner should also require Hep B vaccine PLUS HBIG

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## Spider Biter

### Black Widow



- Found almost anywhere in the US
- The initial bite causes severe pain, muscular cramping, abdominal pain, and shock can occur
- Convulsions are more common in children
- The acute phase of the reaction is complete within 3 days, however neurological sequelae persist for weeks
  - Paresthesia's, nervousness, transient muscle spasm



The light brown areas are where in the world the black widow may be found

### Brown Recluse

- Seen in the Central and Northwestern US
- Bite produces a localized reaction with severe pain within 24 hours
- The initial lesion is noted on a red ischemic base and is replaced by a black eschar within 1 week
- Systemic signs include cyanosis, morbilliform rash, fever, arthralgia's, hemolytic reactions with jaundice and delirium. DIC has been reported.



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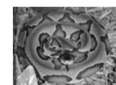
## Scorpion and Snakebites

### Scorpions



- Most common in the arid US
- Edema pain with the sting
- The bark scorpion causes tingling or burning paresthesia's that begin at the site of the sting
- Systemic symptoms include hyper salivation, restlessness, muscular fasciculation, abdominal pain, opisthotonos, seizures, urinary incontinence, respiratory failure
- Administration of antivenom in severe cases
- Symptomatic care for seizures, hypertension, tachycardia; intubation may be required

### Snakes



- Nearly all poisonous snake bites in the US are caused by rattlesnakes, water moccasins, and copperheads
- Instruct families to have children wear boots and trousers if family lives/works around snake infested areas
- Rattlesnakes: Swelling and pain ensue envenomation has occurred.
  - Swelling and ecchymosis extends proximally from bite
  - If untreated, can lead to coagulopathy, respiratory difficulties, and shock result in death
- Splint the affected extremity to minimize movement and transfer to medical facility for anti venom

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## Insect Bites and Stings

- Bees
- Hornets
- Wasps



- All are painful, but rarely dangerous
- In some cases, death from anaphylaxis can occur
- Bee venom has hemolytic, neurotoxic and histamine-like activities which can cause life threatening reactions
- Etiology: IgE mediated hypersensitivity

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## Insect bites and stings

- General treatment involves keeping the bite/sting clean and dry.
- In bee, wasp, yellow jacket, or hornet stings:
  - Remove any visible stingers
  - Localized treatment may include cold compresses, topical steroids, or antihistamines to minimize swelling and pruritus
  - If antihistamines are given, they should be used for 48-72 hours to prevent rebound symptoms

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## Insect bites and stings

### PE Findings

- Mild local reaction: inflammation, tenderness, erythema, urticaria
- Severe reaction
  - Respiratory distress
  - Difficulty swallowing
  - Hoarseness, thickened speech
  - GI upset, abdominal pain
  - Dizziness, weakness, confusion
  - Collapse, unconsciousness, death

### Management

- Moderate/severe reactions
  - PO/IM antihistamines
    - Diphenhydramine
    - Ranitidine/Cimetidine (H2 blockers, IM)
  - Corticosteroids
    - Methylprednisolone
  - Bronchodilators
    - Albuterol 2mg/2.5ml NS, per nebulizer
  - Epinephrine

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## Insect bites and stings

- Education
  - Prescribe child:
    - EpiPen > 30 kg
    - EpiPen Jr.: < 30 kg
      - As a twin pack with practice pen
  - Inform call 911 if used

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Pediatric Seminar:  
Primary Care  
Office Emergencies

November 4-5, 2023

## And a few miscellaneous items...

Straddle Injuries  
Nasal Foreign Bodies

Experts in pediatrics.  
Advocates for children.

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## Straddle Injuries

- Straddle injuries occur when a child straddles an object as he or she falls, striking the urogenital area with the force of his or her body weight
- Occur during bicycle riding, falls, and playing on monkey bars
- A thorough H&P must be obtained to confirm the injury does not correlate with sexual trauma

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## Straddle Injuries

- Girls
  - Increased vascularity and decreased labial fat result in vulvar hematomas and lacerations, leading to pain and difficulty urinating
    - Treatment is supportive including rest, ice packs, sitz baths, analgesia. When sitting, use an air filled or rubber foam "doughnut"
    - Ensure the child can urinate
  - Vaginal injury is associated with penetrating trauma, and should be referred to the ER
- Boys
  - Most instances referral to the ER is indicated
  - Injury may occur at the urethra blood at the meatus, difficulty voiding, and peri-urethral or perineal swelling
  - Penile injury is rare in children
  - Testicular and scrotal injuries are more common in infants and young boys, and should be managed with a urologist

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## Nasal Foreign Bodies

- Beads are the most commonly found foreign body in the nose of children (although they will try just about anything)
- Delayed findings: unilateral rhinorrhea, foul smell, halitosis, bleeding, or nasal obstruction
- Removal may include: vigorous nose blowing, removal using instruments and topical anesthesia, nasal decongestants might help
- Again, small disk type batteries are an emergency
- Refer if unable to remove, or if there is a good history but the object is not visible



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