Disclosures

• I have no conflicts or financial investments pertaining to the School Health Institute
• Please turn cell phones to vibrate
• Please limit side bar conversations
• “Common Sense Prevails”

Goals of the Session

o To share information regarding dermatological issues, abdominal pain, gynecological and genitourinary systems

o Have a few laughs

o Get CEU’s
Clicker Use

Anonymous

Short window to answer

Keeps the learner engaged

Verifies to the presenter if the lesson was learned

How far did you travel to get here?

1. 1-10 miles
2. 10-20 miles
3. 20-30 miles
4. 30-40 miles
5. 40-50 miles
6. Over 50 miles
7. So far, I flew in by plane

How long have you been in school nursing?

1. Under 5 years
2. 5-9 years
3. 10-14 years
4. 15-19 years
5. 20-24 years
6. 25 years or over
What level of school nursing do you practice?
1. Preschool
2. Elementary
3. Middle
4. High School

What documentation system do you use in your practice?
1. SNAP
2. Health Office
3. Another electronic health record system
4. Paper Records

The Philtrum can be found on the:
1. Arm
2. Fingernail
3. Face
4. Knee
A “Bell Clapper Deformity” involves the:
1. Face
2. Hands
3. Feet
4. Testicles
5. Ovaries

The Rule of 9’s applies to:
1. IV Infusions
2. Burns
3. Medication Dosing
4. Hematocrit and Hemoglobin Ratio

What is the largest organ of the body?
1. Liver
2. Brain
3. Skin
4. Lungs
Wounds

1. Lacerations
2. Incision
3. Abrasions
4. Puncture
5. Avulsions
6. Amputations

Laceration

Abrasions
Purpose of Wound Closure

1. Assist in homeostasis
2. By closing the wound, you decrease the risk of infection
3. Minimize scarring

To suture or not to suture......

1. Depth
2. Width
3. Location
4. Type of Wound-Mechanism of Injury
5. Time Elapsed Since Injury
6. Underlying Health and Immune Status

Depth

- If you can see subcutaneous fat
- If bleeding doesn’t stop within 10 minutes of pressure and elevation
- More than ¼ inch deep
Width

- Are the edges of the wound easily approximated?
- Are the edges jagged?

Location

- Areas of body that “stretch” i.e. over joint
  FYI- Dermabond “glue” is not usually used on hands/fingers or over joints
- Any wounds on face- including mouth, eye, nose, lip, and/or ear

Parts of the Lips
Lip Wounds
Lip—important to repair if through the vermillion border—even 1 mm of vermillion misalignment may be noticeable

Call Plastic Surgeon if:
- Large flaps where food can get lost
- Large amounts of the vermillion border missing
- Macerated wounds
- Involvement of the commissure (corners of lips)
- Loss of more than 25% of the lips
- Lacerations through the eyelid, the philtrum, and vermillion border

Type of Wound
- Is it a bite?
- Is it a “clean” vs “dirty” wound?
- Is it a puncture wound?
- Is there dirt, debris or foreign bodies in wound?
- Is the bleeding controlled?

Time Elapsed Since Injury
- Not clearly defined
- Most resources say up to 6-8 hours post injury
- Face and Scalp Wounds can be sutured up to 24 hours post injury due to the extensive blood supply
General Health

- All students with diabetes
- All immunocompromised students
- Other co-morbidities

Topical Anesthetics

LET Cream
- Combination of Lidocaine, Epinephrine and Tetracaine
- Gel based
- Apply 30 minutes before wound repair, cover with gauze
- Can be left on for up to 2 hours
- Other preparations are available - EMLA

Tissue Adhesives

- Bonds in 2.5 minutes
- Same strength as sutures 7 days out
- Can be applied using a topical anesthetic
- Faster repair time
- Water resistant covering
- Does not require suture removal
- Adhesive peels off in 5-10 days
Tissue Adhesives

Contraindications
- Jagged lacerations
- Bites, puncture or crush wounds
- Contaminated wounds
- Mucosal surfaces
- Axillae and perineum - high moisture areas
- Hands, feet and joints unless kept dry and immobilized

Tissue Adhesives

Do not apply topical antibiotic as it can interfere with wound healing

Can shower but no bathing until adhesive falls off

Puncture Wounds - Need MD Eval if:
1. Bleeding over 10 minutes
2. PW in head, neck, chest, abdomen or throat
3. PW overlying joint
4. Tip of object is missing or broken off
5. Feels like something is in wound
6. Won’t stand or bear weight on foot
7. Needle Stick from used needle
8. Tetanus Prophylaxis
9. Can’t clean wound
10. Severe Pain
11. Signs of infection
12. Fever
13. PW is caused by rusty object
Puncture Wound

1. Do not remove impaled object
2. PW penetrates sneakers-
   Pseudomonas grows well in the inner layers of sneakers (work boots too)
3. Send students with PW to foot wearing the sneakers he/she had on, to PCP for eval
3. There is an increase in risk of infection in foot due to structure of foot and increased cartilage

Tetanus Prophylaxis

Tetanus- caused by Clostridium tetani

Dtap & DT- given to children younger than 7 yo

Tdap & Td- given to individuals over 7 yo

Animal and Human Bites

• Hands carry an increase risk of infection than to bites in any other part of the body
• No consensus for prophylactic antibiotic coverage
• If Rx- dog and human bites- Amoxicillin, Ampicillin, Doxycycline, Clindamycin, Ciprofloxacin
Which wound would you most likely refer for sutures?

1. A severe abrasion on the back
2. A puncture wound of the tongue
3. A laceration to the lower lip that extends through the vermilion border
4. A superficial laceration on the forearm with clean edges

Types of Burns

1. Thermal
   - Flash-explosions
   - Flame-fires
   - Scalds-hot liquids
   - Contact—hot items—metals, glass, coals
2. Chemical
3. Electrical
4. Radiological

Great Resources

http://hospitals.unm.edu/burn/classification.shtml

http://ameriburn.org

Burn Awareness Week February 1-7, 2015
Not sure when it is in 2016
Incidence of Burns
(Massachusetts Burn Injury Reporting System M-BIRS)

1. Scalds account for most common type of burn

47% in 2013 (cooking liquids, hot beverages)
aalmost equal male vs female
Preschoolers highest incidence (83%)

Burn Classification
First Degree Burn
Second Degree Burn
Third Degree Burn
Fourth Degree Burn

Anatomy of Skin
First Degree Burn

**Depth:** Epidermis (outer layer of skin)

**Appearance:** Red and painful, no blisters

**Texture:** Dry

**Healing:** Usually in one week or less, injured layer of skin peels away from healthy skin

**Level of Sensation:** Painful, tender, sore

**Complications:** None

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Second Degree Burn

Can be classified as Partial or Full Thickness

**Partial Thickness**

**Depth:** Involves entire level of epidermis and the upper layer of dermis

**Appearance:** Pink, Red, Clear Blisters

**Texture:** Wet appearing, moist, wound will blanch when pressure applied

**Healing:** 10-21 days without grafting, scarring minimal

**Level of Sensation:** Very painful

**Complications:** Infection

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First Degree Burn
Second Degree Burns
Can be classified as Partial or Full Thickness

**Full Thickness**

**Depth:** Involves entire level of epidermis and most of dermis

**Appearance:** Can be red or white, oozing blisters

**Texture:** Will appear dry, blanching is sluggish or absent

**Healing:** Usually 4-6 weeks depending on surgery, will need excision and grafting

**Level of Sensation:** Painful, but may have decreased sensation

**Complications:** Infection, scaring, may evolve into 3rd degree burn

Second Degree Burn

Third Degree Burn

**Depth:** Hypodermis, involves all layers of the skin

**Appearance:** Black, brown, red, pale pink or white; may or may not have blisters

**Texture:** Will appear dry, charred, leathery, blanching is sluggish or absent

**Healing:** May take weeks to months, depending on surgery, will need excision and grafting, scaring present

**Level of Sensation:** very little or no pain

**Complications:** Infection, Tetanus, Contractures, Scaring, Hypothermia
Third Degree Burn

Fourth Degree Burn

**Depth:** Down to bone and muscle

**Appearance:** Brown, charred, eschar

**Texture:** Dry, leathery open wound

**Healing:** May take years without a graft, will need excision and grafting, scaring present; Has high mortality rate

**Level of Sensation:** No pain

**Complications:** Infection, Amputation, Tetanus, Contractures, Scaring, Functional Impairment, Gangrene

**Emergency Treatment of Burns**

1. Wash with mild soap and cool water
2. Remove any jewelry (or clothing if it is not in the burn) around the area
3. Do not break blisters
4. Can put a thin layer of Bacitracin, Neosporin, Aloe or Silvadene
5. Apply a sterile, non-adhering dressing
6. Check tetanus status
Factors to Consider in Burns

1. Very young and very old have thinner skin, so it is easier to damage

2. Scar formation depends upon level and location of skin destruction and the individual’s tendency to scar

Rule of “nines”
-used to calculate body surface area
Pediatric Rule:
   Head is assigned 18%, 14% each leg
   Each year above one, add 0.5% to each leg and subtract 1% from head
   Do that until reach adult numbers (9% for head and 18% for each leg)
**Alternative to Rule of Nines**

Compare burn area to size of patients palm

Patients palm size is 1% BSA

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**When to Refer Burns for Medical Attention**

1. On feet, face, hands, genitals or buttocks
2. Larger than 3 inches in diameter
3. There is impaired breathing/circulation
4. Burn is over a joint-knee, shoulder
5. Pain
6. Tetanus Prophylaxis

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James comes into the clinic after spilling scalding hot water on his hand during culinary class. There is a blister the size of a tootsie roll noted on the palm of his hand the rest of the inner aspect of his hand is red.

What would you do?
A. Wash the area with soap and water
B. Pop the blister with a sterile instrument
C. Apply ice directly to the blister
D. Call James parent/guardian and refer him to his PCP

1. A and B
2. B and C
3. A and D
4. C and D
Macule

Papule

Pustule
History of Skin Complaints

1. When did it start?
2. How did it start?
3. Where did it start?
4. Has it changed over time?
5. Where is it now?
6. Is it anywhere else?
7. What does it feel like? (itchy, painful)
8. Does anything make it better or worse?
9. Have you ever experienced this before?
10. How have you treated this in the past?
Areas to assess in skin disorders
1. Symptoms - local and general
2. Contact history of contagious conditions
3. PMH
4. Family History
5. Medication History
6. Travel History
7. Social History
8. ICE: Ideas, Concerns and Expectations
   - What do you think may be causing this skin problem?
   - Are you concerned or worried about it?

When describing skin lesions:
S - Size/Shape/Texture
C - Color
A - Arrangement
L - Lesion Type
D - Distribution
A - Also check Mucous Membranes, Nails, Hair and Skinfold areas

“Red Flags”
1. SSSS
2. Meningococcemia
3. Necrotizing Fasciitis
4. SJS-TEN
5. DRESS
Staphylococcal Scalded Skin Syndrome (SSSS)

- Skin infection caused by Staph bacteria that produces a toxin, creating skin blisters and desquamation
- Usually occurs in students under age 5 yo
- Also known as Ritter’s Disease

SSSS

Sx:
- Blisters
- Fever
- Painful Skin
- Red Skin
- Large areas of desquamation
- Nikolsky’s Sign – separation of skin with gentle touching

Dx:
- Clinical Picture/History
- CBC
- Skin, Nose, Eye, Throat and Blood Cultures

SSSS

Tx:
- Depends on age and severity of case
- Hospitalization – Burn Unit
- Antibiotics
- Supportive Care
- Fluid and electrolyte replacement

Complications:
- Cellulitis
- Septicemia
Kawasaki Disease

- Acute febrile illness of unknown etiology primarily affects children under 5 yo
- Slightly more common in boys
- Higher rates in children of Asian descent
- It is an acute systemic vasculitis
- It can also affect the lymph nodes, skin and mucous membranes
- Leading cause of acquired heart disease in US

Kawasaki Disease

Sx: fever X 5 days, conjunctivitis, rash, swollen, red skin on hands and soles of feet, LN swelling, desquamation of skin on hands and feet, joint pain, N,V and D

Dx: diagnosis of exclusion, must meet 4 of the clinical criteria, EKG and Echocardiogram
Diagnostic Criteria for Kawasaki Disease

Fever for at least 5 days and the presence of 4 out of the 5 following criteria:
1. Changes in extremities-redness, edema and desquamation
2. Polymorphous exanthema
3. Bilateral, painless conjunctivitis
4. Changes in lips and oral cavity
5. Cervical Lymphadenopathy

Kawasaki Disease

Tx: IV Gamma Globulin (IVIG)
    ASA (may need for 6 weeks)

Complications:
    Cardiac- aneurysms, clots, valvular issues, myocarditis

Meningococcal Meningitis

Caused by bacterium Neisseria meningitidis

Causes infection of the brain and spinal cord or bloodstream

Spread via respiratory secretions of infected person

Dx: Made by clinical picture/history
    CSF Testing and Blood Work
**Symptoms of Meningococcal Disease**

- Sudden onset high fever
- Headache
- Stiff neck
- Nausea
- Vomiting
- Photosensitivity
- Rash (in septicemia)
- Confusion
- Seizures (meningitis)

**Meningococcemia**

![Meningococcemia Image]

**Meningococcal Disease**

**Treatment:**
- Hospitalization-ICU
- Antibiotics-Ceftriaxone, Penicillin

**Complications:**
- Death
- Brain damage
- Hearing loss
- Loss of limbs
- Renal failure
Prevention of Meningococcal Disease

Vaccine
First vaccine-1978-MPSV4
Second Vaccine-2005- MCV4
Menveo: ages 2yo-55 yo
Menactra: ages 9 mos-to 55 yo

When to give?
First vaccine: 11-12 yo
Booster: 16 yo (or 3-5 years after primary dose)

Stevens-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN)
- Severe cutaneous hypersensitivity reactions
- Very similar syndromes
  - SJS affect < 10% of BSA
  - TEN affects > 30% of body
- Rare: affects 1-5 people out of a million
- Increased incidence in: bone marrow transplant recipients, Pneumocystis jirovecii-infected HIV pts., SLE pts

SJS and TEN
Etiology
Medications cause 50% SJS and 95% TEN (usually 10-20 days after starting drug)
Other causes: Infections, Vaccinations and graft-vs-host disease

Incidence: very rare
- 0.4 to 1.2 cases per 1,000,000 people/year

Dx:
- Clinical Picture/History
- Skin biopsy
SJS and TEN

Sx:
Prodrome: malaise, fever, headache, cough, conjunctivitis
Macules appear on face, neck and upper trunk, then progress to the rest of the body
Macules turn into large fluid bullae
Bullae slough off over 1-3 days
May have respiratory involvement
May develop Hepatitis and Glomerulonephritis

SJS and TEN

Tx:
- Most successful with early dx & treatment
- Supportive care - ICU or burn unit
- Drug treatment: controversial
  - Cyclosporine
  - Corticosteroids
- Plasma Exchange
- IVIG
- Mortality Rate:
  - 5% SJS
  - 30-40% TEN

Steven Johnson Syndrome
Toxic Epidermal Necrolysis

DRESS-Drug Reaction with Eosinophilia and Systemic Symptoms
- Rare, unexpected reaction to a medicine
- Affects multiple organs—skin, liver, kidneys, lungs and/or heart
- Generally starts 2-8 weeks after taking medication responsible for syndrome

DRESS
Sx: High fever
    Widespread rash (last several weeks)
    Enlarged lymph nodes
    Blood dyscrasias
    Liver enlargement
    Kidney Disease
    Myocarditis/Pericarditis
    Meningitis
    Pneumonia, ARDS
Drugs associated with DRESS in two or more cases

- Abacavir
- Allopurinol
- Amitriptyline
- Captopril
- Carbamazepine (Tegretol)
- Celecoxib
- Dapsone
- Hydroxychloroquine
- Ibuprofen
- Lamotrigine
- Mexiletine
- Minocycline
- Nevirapine
- Oxcarbazepine
- Phenobarbital
- Phenytoin (Dilantin)
- Sulfasalazine (Azulfidine)
- Sulfamethoxazole
- Vancomycin

http://www.medicine.virginia.edu/clinical/departments/pediatrics/education/pharmacy-current/201211.pdf

DRESS

Dx: Clinical Picture/History
- Skin Biopsy
- Blood Work

Tx: Stop the Offending Medication
- Supportive Care/Hospitalization
- Steroids
- IVIG, Antihistamines, Plasmapheresis
- Imminomodulatory Drugs

Mortality Rate:
- 10-20% usually due to liver failure

DRESS

Insert photo of DRESS
“Red Flags” in Dermatology

1. Student looks unwell
2. Student has other serious co-morbidity
3. Large area of skin is involved
4. There is mucosal or ocular involvement
5. Specific Conditions with serious complications

How many in the room have had Chicken Pox?

1. Yes
2. No
3. Got the vaccine

How many in the room had had Chicken Pox?

1. Yes
2. No
3. Got the vaccine
Chicken Pox (Varicella)

Caused by the varicella-zoster virus
Highly Contagious-droplet, contact
Contagious-up to 5 days (usually 2) before rash and five days after rash appears or until lesions have crusted over
Incubation: 10-21 days (usually 14-16)
Sx: fever, anorexia, malaise, rash (trunk→limbs)
Tx: Supportive
Complications: pneumonia, encephalitis

Chickenpox

Ulcer
Blister
Papule

Chicken Pox

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 3</th>
<th>Day 5</th>
<th>Day 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Day 1" /></td>
<td><img src="image2.jpg" alt="Day 3" /></td>
<td><img src="image3.jpg" alt="Day 5" /></td>
<td><img src="image4.jpg" alt="Day 10" /></td>
</tr>
</tbody>
</table>
Varicella Vaccine
Live attenuated vaccine
Came out in 1995
In 2005, MMRV for ages 12 months through 12 years
First Dose: 12-15 months of age
Second Dose: 4-6 years of age
Catch Up Schedule: 13 yo two doses at least 28 days apart
If they do get chicken pox, will get a milder, shorter case
About 1% get chicken pox from vaccine
Can be given up to 72 hours after exposure to chicken pox

Chicken Pox and School Attendance
State reported disease- report to local BOH

When can they come back to school?
- Not until all lesions are dried (usually 5 days)
- No new lesions appear (usually 5 days)

Check immunosuppressed students who would have had contact with the case

Shingles (Herpes zoster)

Painful rash caused by same virus that causes chickenpox, varicella zoster virus

After getting chicken pox, virus lies dormant in nerve root

Shingles can not cause shingles in another person, BUT if you have not had chickenpox or been vaccinated, you can get chicken pox from exposure to shingles

Shingles is contagious while rash is blistering-no before rash erupts or after crusting

Shingles

Lesions should be completely covered

If they can’t be covered, stay home until the lesions are crusted over

May need to remove students who are not immunized or immunocompromised from class

Shingles (Herpes)
Measles (Rubeola)

- Contagious viral infection (parvovirus B19)
- Seen more commonly in late winter and spring
- “slapped cheek disease”
- Spread by respiratory route (droplet)
- Not contagious once rash appears
- Little health risk EXCEPT to pregnant women

German Measles (Rubella)

Fifth's Disease

- Contagious viral infection (parvovirus B19)
- Seen more commonly in late winter and spring
- “slapped cheek disease”
- Spread by respiratory route (droplet)
- Not contagious once rash appears
- Little health risk EXCEPT to pregnant women
Fifth’s Disease

Sx:
- Initially: fever, runny nose, headache
- 1-3 days later: “slapped cheek rash”
- Followed by “lacy rash” on rest of body
- May get painful or swollen joints

Dx:
Clinical Picture/History
Blood test to check immunity after infection

Tx:
Supportive
Refer pregnant teachers to their OB MD’s
Dr Willy Burgdorfer
Swiss-born researcher

Discovered the bacteria that caused Lyme disease-1982

The spirochete was named Borrelia burgdorferi

Lyme Disease
Caused by bacterium-Borrelia burgdorferi

Spread through the bite of infected ticks

In most cases ticks need to be attached for 36-48 hours or more before the Lyme disease can be transmitted

Lyme Disease

Sx:
Classic, red “bulls eye” rash-usually within 7 days
Facial or Bell’s Palsy
Headaches and stiff neck

Dx:
Clinical Picture/History
Blood Work
Lyme Disease Treatment

Antibiotics
- Doxycycline for children over 8 yo
- Amoxicillin or Cefuroxime under 8 yo
- 14-21 day course is recommended
- Treatment is based on pts symptoms and stage of disease

Complications of Lyme Disease

Fatigue
Arthritis
Cardiac Conduction Issues
Parasthesias
Cognition and Memory Issues
Hand, Foot and Mouth Disease

Common viral illness affects children younger than 5 yo
Enterovirus –Coxsackievirus is most common

Virus can be found in infected person’s: nose and throat
secretions, blister fluid and feces

Virus can be spread by:
- close personal contact
- through the airborne (droplet) route
- contact with feces
- contaminated objects and surfaces

Hand, Foot and Mouth Disease

Sx: Fever, Anorexia, Malaise, Sore Throat
2 days latter: Oral Lesions and Skin Rash

Dx: Clinical Picture/History
Throat or Stool Culture

Tx: Supportive
Tylenol/Motrin for fever and pain
Mouth swishes for oral lesions
### Scarlet Fever

**Bacterial infection caused by group A strep**

**Sx:**
- Fever, Chills
- Sore Throat
- Vomiting and Abdominal Pain
- "strawberry tongue"
- Rash (1-2 days after other sx) - first appears on neck, underarm and groin - then rest of body
- Rash is fine, red bumps - "sandpaper rash"

### Scarlet Fever

**Dx:**
- Clinical Picture/History
- Throat Culture

**Tx:**
- Antibiotics

**Complications:**
- Rheumatic Fever
- Kidney Disease
- Abscesses
- Pneumonia

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### Scarlet Fever

![Image of Scarlet Fever rash]

- First appears on neck, underarm and groin, then rest of body
- Rash is fine, red bumps - "sandpaper rash"
**Impetigo**

Bacterial skin infection caused by strep or staph

Is contagious and can be spread by contact with infected lesions

**Dx:**
- Clinical Picture/History
- Culture of lesion

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**Impetigo**

**Sx:**
- Small red spots, that turn into blisters
- Lesions ooze fluid and look crusty
- Lesions increase in size and number
- Lesions are not painful, but maybe itchy

**Tx:**
- Antibiotic Cream
- Can return to school after 24 hours of treatment

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**Impetigo**

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Molluscum Contagiosum

Contagious viral infection

Spread by direct contact or contact with an object that has the virus on it, i.e. a towel

Sx: pearly or flesh colored bumps
    bumps may appear alone or in clusters

Molluscum Contagiosum

Dx: Clinical Picture/History

Tx: No treatment
    Self Limiting-but can take up to 6-9 months to resolve

Molluscum Contagiosum
Ringworm (Tinea corporis)
Skin infection caused by a fungus
Spreads easily, transmitted by direct contact or from contact with contaminated objects
Sx: Rash—starts as small area of red, raised spots and pimples
    rash becomes “ring shaped”, red raised border and a clearer centers
    rash can be “itchy”

Ringworm (Tinea corporis)
Dx: Clinical Picture/History
    Scrapping of skin- using a KOH test
Tx: Antifungal Creams
    Use cream bid X 7 days
    can take up to 4 weeks to heal

Ringworm
A student from the wrestling team comes into the clinic and is concerned that he has a “lesion” on his skin. All of the following are concerns for the student wrestler EXCEPT:

1. Ringworm
2. Lyme Disease
3. MRSA
4. Impetigo

Documenting “bruises”

1. Students description of how bruise occurred
2. The shape of the bruise
3. The size (give width and length OR a comparison)
4. The location on the body
5. If there is any break in the skin integrity

Bruises

What causes a bruise?

Bleeding beneath the skin, usually caused by impact between a body part and another object or surface. The tissue is either compressed or crushed → blood vessel damage → bleeding into subcutaneous tissues
Factors Affecting Bruises

1. Depth
   - Superficial: may discolor immediately
   - Deep: may take days to appear

2. Location
   - Periorbital and genital bruises will appear sooner than extremity bruises

3. Skin Complexion

4. Bruise may not always show at original impact due to gravity

5. Size may not correlate with the severity of the trauma

Evolution of Bruises

<table>
<thead>
<tr>
<th>COLOR</th>
<th>TIME AFTER BRUISE</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>0-1 day</td>
<td>Fresh - contains iron and O2</td>
</tr>
<tr>
<td>BLUE</td>
<td>1-2 days</td>
<td>Lost O2, iron released into area</td>
</tr>
<tr>
<td>BLUE/BLACK/</td>
<td>2-5 days</td>
<td>Lost O2, iron released into area</td>
</tr>
<tr>
<td>PURPLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREEN/YELLOW</td>
<td>5-7 days</td>
<td>Breakdown of hemoglobin → biliverdin</td>
</tr>
<tr>
<td>YELLOW/BROWN</td>
<td>8-10 days</td>
<td>Final breakdown product of hemoglobin → bilirubin</td>
</tr>
<tr>
<td>RESOLVED</td>
<td>10-21 days</td>
<td></td>
</tr>
</tbody>
</table>

Symptoms of Physical Abuse

Bruises

Unexplained bruises and welts:
- On face, lips, mouth
- On torso, back, buttocks, thighs
- In various stages of healing
- Cluster, forming regular patterns
- Reflecting shape of article used to inflict (electric cord, belt buckle)
- On several different surface areas
- Regularly appear after absence, weekend or vacation
Symptoms of Physical Abuse

Burns
- Unexplained burns:
  - Cigar, cigarette burns, especially on soles, palms, back or buttocks
  - Immersion burns (sock-like, glove-like doughnut shaped on buttocks or genitalia)
- Patterned like electric burner, iron, etc.
- Rope burns on arms, legs, neck or torso

Unexplained fractures:
- To skull, nose, facial structure
- In various stages of healing
- Multiple or spiral fractures

Unexplained laceration or abrasions:
- To mouth, lips, gums, eyes
- To external genitalia
Cellulitis

- Acute bacterial infection of the skin and subcutaneous tissue
- Most often caused by strep or staph
  - strep: diffuse, rapidly spreading
  - staph: more local, mostly occurs in open wounds or abscesses

Sx: unilateral red, tender, warm area may or may not have fever

Dx: Clinical Picture/History

Tx: Antibiotics
  - Dicloxacillin or Keflex
MRSA

Necrotizing Fasciitis
- Rare infection, very rare in children
- Also known as “flesh eating bacteria”
- Bacteria can enter the body via surgery or injury
- Commonly caused by Group A Streptococcus (GAS) bacteria
- Occurs when bacteria infect the fascia (under the skin)

Necrotizing Fasciitis
Sx: Initial Sx
- Increase pain at site of skin opening
- Redness and warmth at site
- Flu-like symptoms-diarrhea, nausea, fever, dizziness, weakness and malaise
Necrotizing Fasciitis

Sx: Three to 4 days later:
- Swelling (purplish rash)
- Large violet colored marks → blisters (foul smelling)
- Discoloration, peeling as gangrene sets in

Sx: Four to Five Days Later
- Severe hypotension
- Septic Shock

Necrotizing Fasciitis

Dx: Clinical Picture/Exam Cultures

Tx: Hospitalization 
- Supportive Care 
- Antibiotics 
- Medications to treat hypotension 
- IVIG 
- Surgery
Henoch-Schönlein Purpura (HSP)
- Exact cause is not known
- Vasculitis of small blood vessels
- Most commonly seen in children ages 2-11 yo
- In 2/3 of cases, it is preceded with a URI
- Usually resolves in 4-6 weeks

Henoch-Schönlein Purpura

Sx:
- Rash: initial appearance is hive-like, then looks like bruises
- Rash: lower legs, buttocks, knees, elbows
- Joint Pain and swelling
- Abdominal Pain
- Kidney Issues

Henoch-Schönlein Purpura

Dx:
- Clinical Picture/History
- Biopsy
- Urine and Blood Tests

Tx:
- Supportive
- NSAID’s – Tylenol, Ibuprofen
Henoch-Schönlein Purpura

ITP - Idiopathic Thrombocytopenic Purpura
Bleeding disorder where the immune system destroys the platelets
Usually follows a viral infection
Dx: Clinical Picture/History
CBC with Platelet Count
Clotting Studies
Bone Marrow Aspiration

ITP - Idiopathic Thrombocytopenic Purpura
Sx: Bleeding into Skin (pinpoint red spots)
Easy Bruising
Nosebleed or bleeding in mouth
Heavy menstrual bleeding
Tx: Steroids
Danazol
Gamma Globulin infusions
Drugs that stimulate bone marrow to make platelets
Precaution: Do not have them take ASA, or ibuprofen, as they interfere with platelet production
Scabies

Contagious parasitic (mite)

Sx: Itching (worse at night)
    Rashes (between fingers)
    Thin, pencil lines on skin

Dx: Clinical Picture/History
    Skin Scraping

Tx: Premethrin 5% cream
    Environmental Control
    Supportive Care
Scabies

Hives

Bed Bugs
Contact Dermatitis

Poison Ivy (Contact Dermatitis)
- Urushiol oil is the offending substance
- Most common allergy in US, the CDC reports 80-90% of population exhibits an allergic reaction to Urushiol at even low doses (grain of salt!)
- Urushiol oil stays active on any surface for as long as 5 years!

Poison Ivy (Contact Dermatitis)
Sx:
- Linear rash
  - Appears in 24-48 hours, but can take 4-7 days to appear
  - Rash lasts 2-3 weeks
- Itching
- Swelling
- Blisters
Poison Ivy (Contact Dermatitis)

- Not contagious person to person
- Breaking blisters does not cause it to spread
- It can take multiple exposures to develop a sensitivity to the urushiol
- Animals can get the urushiol on their fur and spread the oil to humans

Poison Ivy (Contact Dermatitis)

Prevention
1. Ivy Block – apply before going near plant
2. Wear long sleeves and pants
3. Wash skin as soon as possible after contact
4. Wash clothes immediately
5. Bathe pets

Poison Ivy (Contact Dermatitis)

Treatment:
1. Prevention
2. Cool Compresses
3. Hydrocortisone cream
4. Calamine
5. Benadryl po prn
6. Refer to MD if:
   a. Widespread or severe rash
   b. Involves the face or genital area
   c. Blisters are oozing pus /area looks infected
   d. fever greater than 100 F
   e. Breathing difficulties or coughing after exposure to burning weeds
Amy comes into the clinic complaining of a red itchy area on her leg. Her history includes that she was recently hiking in the woods with the family dog. Upon exam, you note that she has a red, linear rash on her lower medial leg. It is raised and there appears to be some clear blisters in the rash. What would the best course of action be to return Amy to class?

What would the best course of action be to return Amy to class?

A. Education  
B. Calamine or Hydrocortisone cream to area  
C. Applying warm soaks to the area  
D. Referring her to her PCP to prevent spread to area

1. A, B and C  
2. A, C and D  
3. A, B and D  
4. B, C and D

Mosquito Bites
Bee Sting