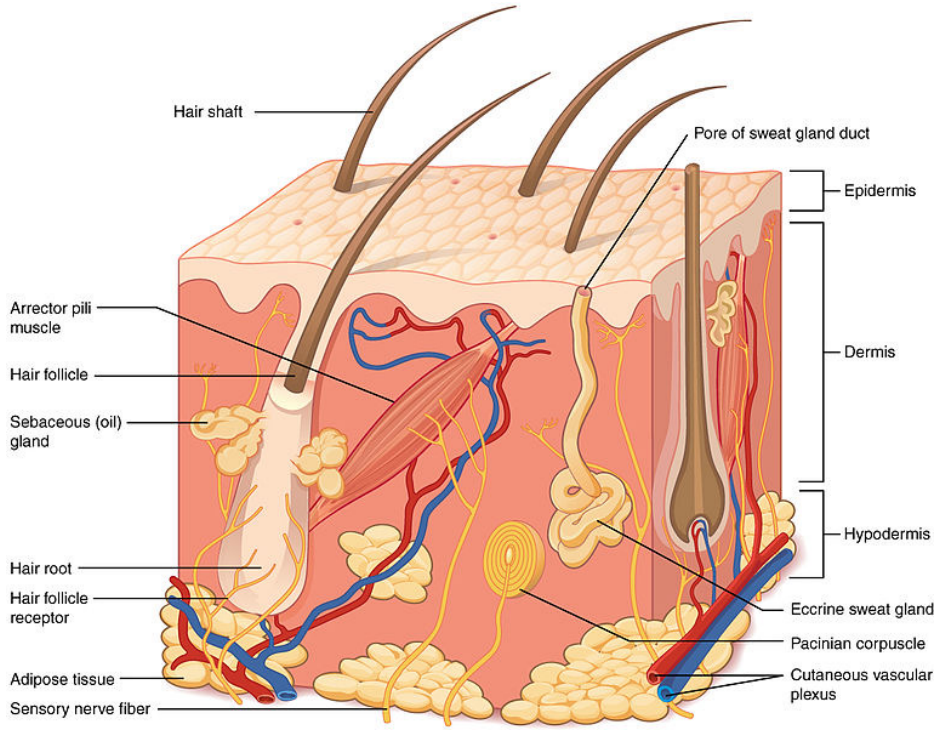
Soft Tissue & Skin Infections (SSTIs)

- Impetigo
- Ecthyma
- Intertrigo
- Folliculitis
- Furuncle
- Carbuncle
- Abscess
- Paronychia
- Felon
- Cellulitis
- Erysipelas
- Lymphangitis
- Necrotizing fasciitis
  - Including Fournier gangrene
- Antibiotics



https://commons.wikimedia.org/wiki/File:501_Structure_of_the_skin.jpg

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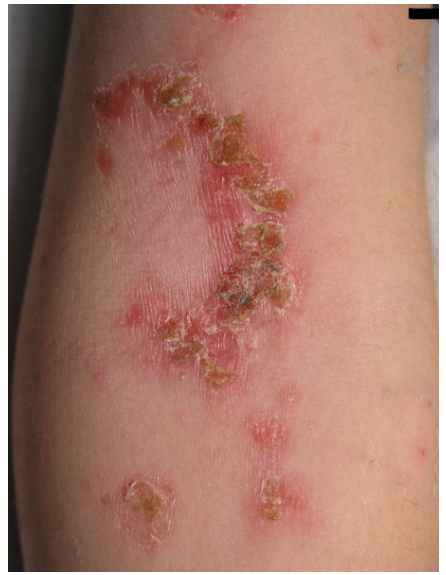
Impetigo

- Most common in age 2-5 years
- Spread through direct contact
- ↑ in warm humid environments
- Often in sites of minor trauma or eczema
  - Bug bites, abrasion from rubbing nose with a cold
- Classic: honey-crusted yellow & red lesions
- Bullous: flaccid bullae with clear fluid, may rupture, leaving a thin red-brown crust
- Staph Aureus > Group A Strep
- Localized lesions: treat topically
  - Mupirocin TID or retapamulin BID x 5 days
- Extensive lesions: oral anti-Staph antibiotics x 7 days
  - MRSA not common



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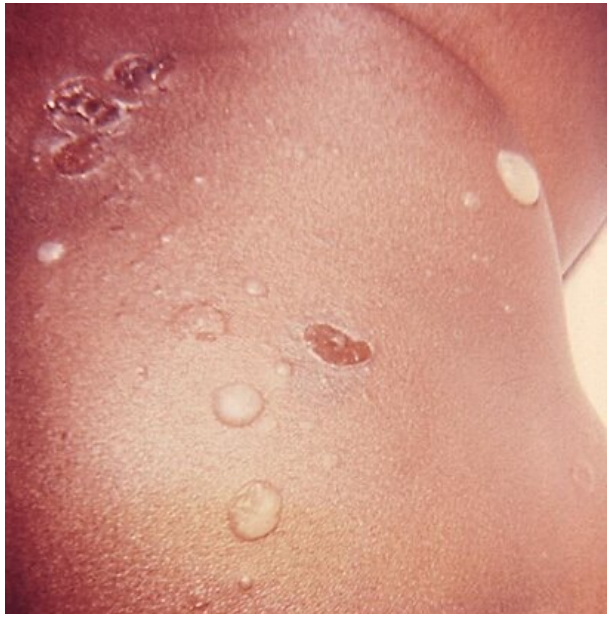

https://commons.wikimedia.org/wiki/File:Impetigo.jpg

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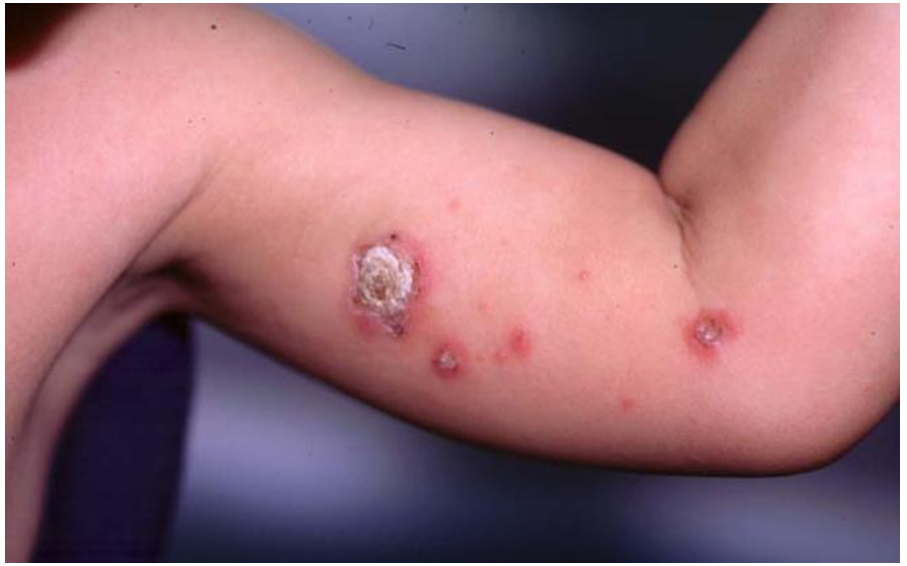
Ecthyma

- Deep form of impetigo
  - May progress from untreated impetigo
- Punched out ulcerative lesions with crust and elevated red-purple margins
- Risk factors: poor hygiene, crowded living conditions, heat and humidity, minor skin trauma
- ↑ in immunosuppressed
- Treat with oral antibiotics that cover both Staph and Strep
  - Usually not MRSA



http://cai.md.chula.ac.th/lesson/skin/pic/page5.htm

More Photos

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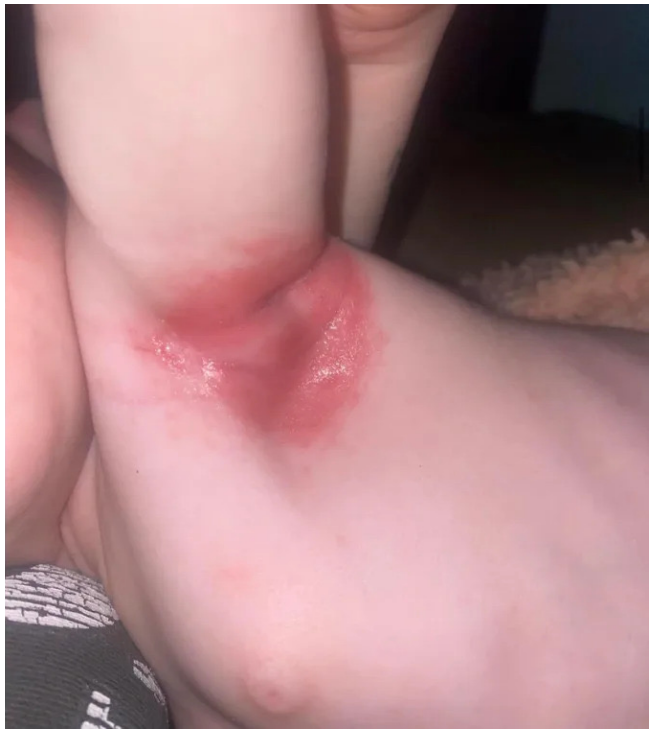
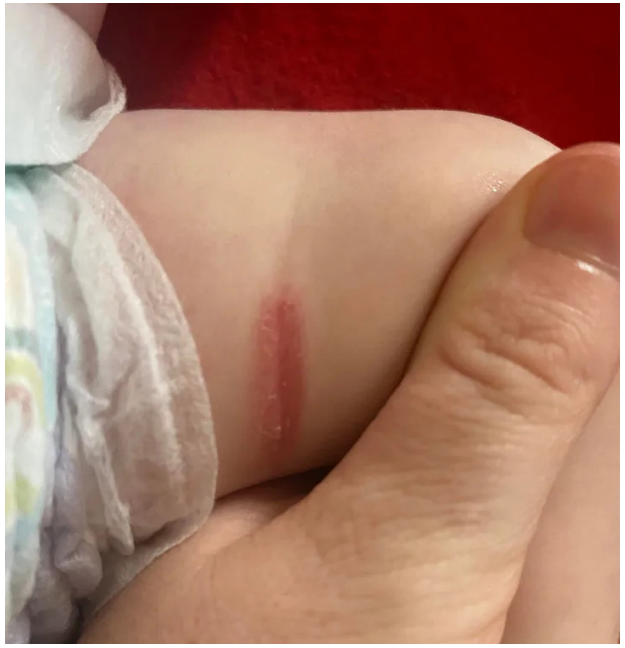
Intertrigo



- Weepy moist erythema in folds: neck fold, axillae, antecubital or popliteal fossae, groin
  - Common in neonates' necks
- Friction + moisture → inflammation, becomes infected
- ↑ in humid environment, obesity, diabetes
- Candida common cause, may have satellite lesions
  - Treat with topical clotrimazole
- Can be caused by Group A strep, may be more malodorous than Candida, not responding to clotrimazole
  - Treat with topical mupirocin or oral antibiotics



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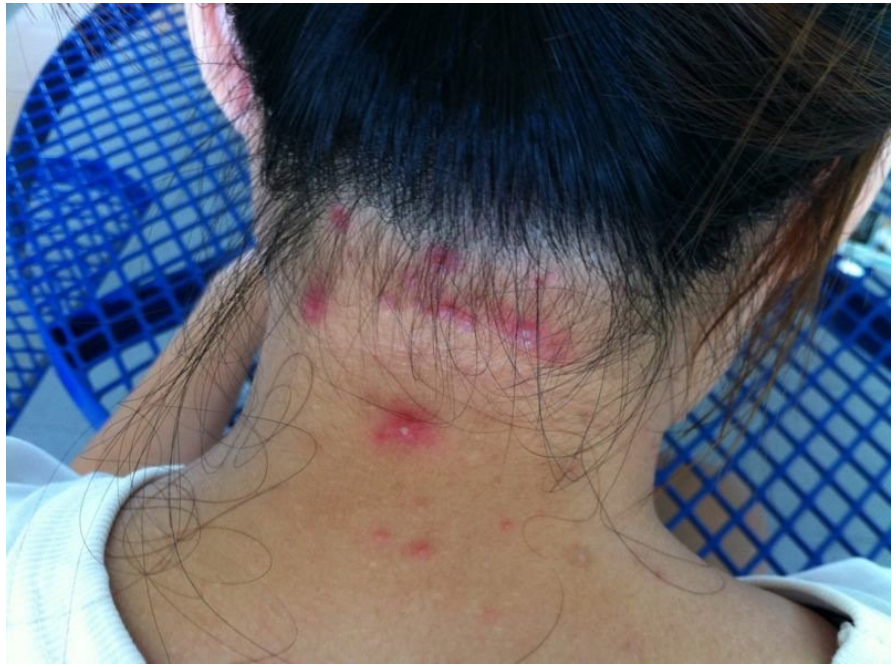
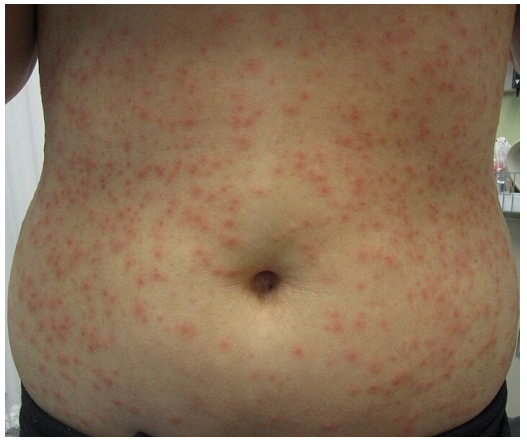
Folliculitis

- Inflammation or infection of the hair follicle
- Staph aureus common cause (MSSA & MRSA)
  - Inflamed papules and pustules at hair follicles
  - Scalp, face, upper torso, buttocks, legs, axillae
  - Treat: anti-bacterial cleanser, topical or oral anti-staph antibiotics (cover MRSA if + contacts, personal hx, high local prevalence, purulence)
- "Hot tub folliculitis" = Pseudomonas
  - Itchy inflamed macules, papules, pustules
  - Distribution of wet bathing suit
  - 8-48 hours after hot tub exposure
  - Self-limited in 7-10 days: stay out of hot tub, good skin hygiene, treat itch symptomatically
  - Rarely requires oral fluoroquinolone
- Other more rare causes: fungal, viral, mites



Source: Wikimedia Commons

Hot Tub Folliculitis



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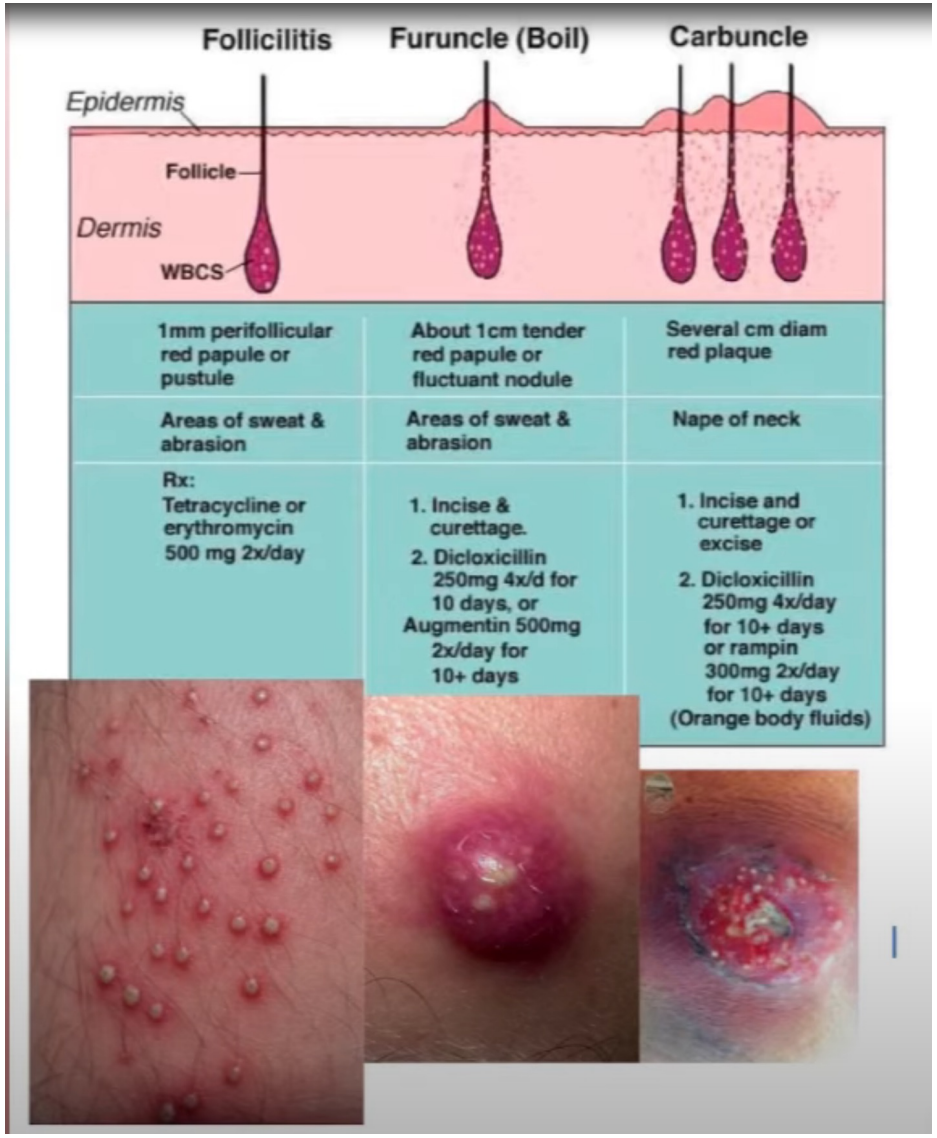
Furuncles & Carbuncles

- Furuncle: deeper infection of the hair follicle that then forms a pocket of pus
  - AKA a boil or small abscess
- Carbuncle: multiple furuncles coalesced subcutaneously
  - Larger and deeper than a furuncle
  - Smaller and more superficial than an abscess
- Both are tender, firm
- Treatment: warm compresses if small, I&D if larger collection of pus, oral anti-staph (including MRSA) antibiotics if larger / not resolved with I&D alone



Screenshot from MedEXP Youtube Video

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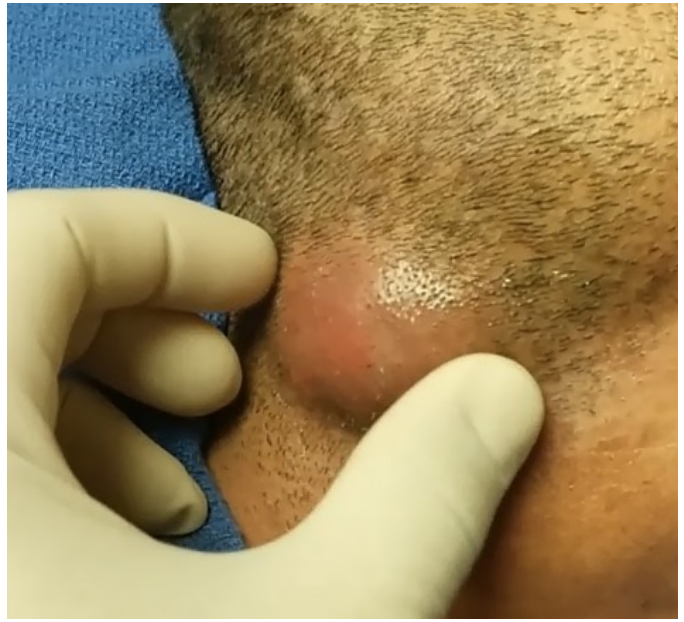
Abscess

- Collection of pus in dermis (deeper than furuncles and carbuncles)
- Tender, erythematous, warm, fluctuant, indurated
- May have had spontaneous purulent drainage
  - May have sealed over afterwards and still require I&D
- Bedside ultrasound can help determine if there is a collection of pus that requires I&D
- Treatment: Incision & Drainage
  - Packing is no longer thought necessary
  - Loop drainage technique is an alternative, using a Penrose drain, vessiloop, or even a glove cuff
- I&D may be sufficient; if antibiotics indicated (e.g. associated cellulitis) cover Staph including MRSA



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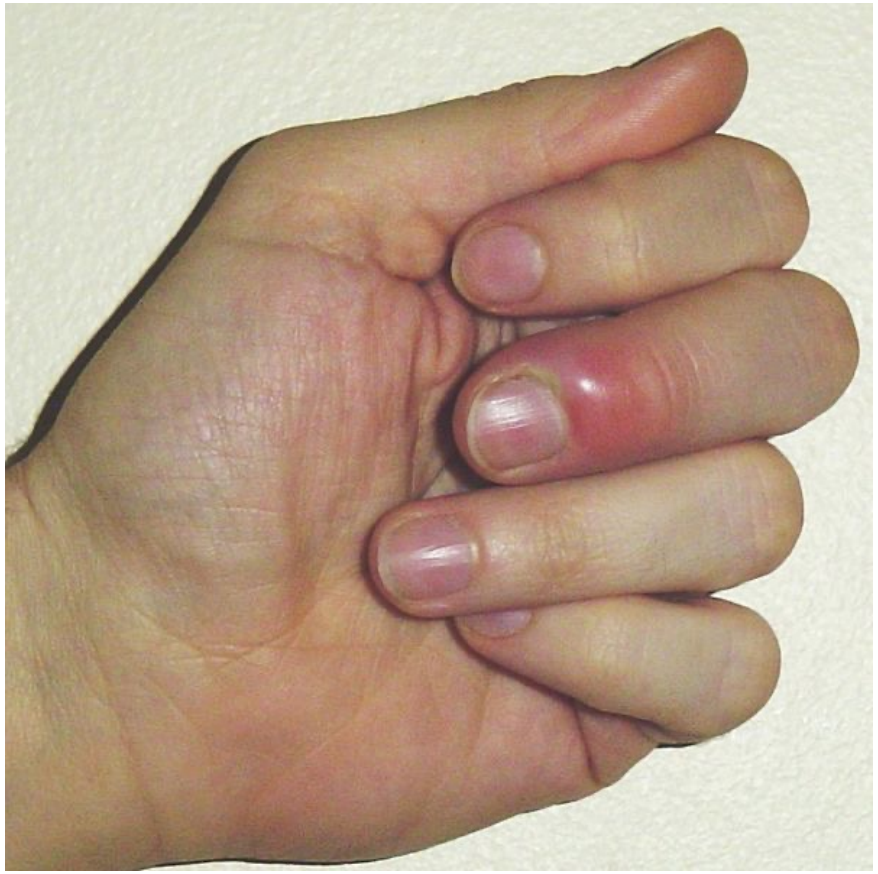
Paronychia

- Infection of lateral and proximal nail folds
- Risk factors: thumb-sucking, nail-biting, picking at hangnail, hands in water often
- Tender, red, fluctuant swelling to side of or proximal to nail, or both
- Usually only one finger involved
- Treatment: I&D video
  - If not enough of a pus collection to warrant I&D, may treat with warm water soaks
  - After drainage, warm water soaks TID-QID
  - Oral antibiotics (anti-staph, including MRSA) x 5-7 days if associated significant cellulitis



https://commons.wikimedia.org/wiki/File:Paronychia.jpg

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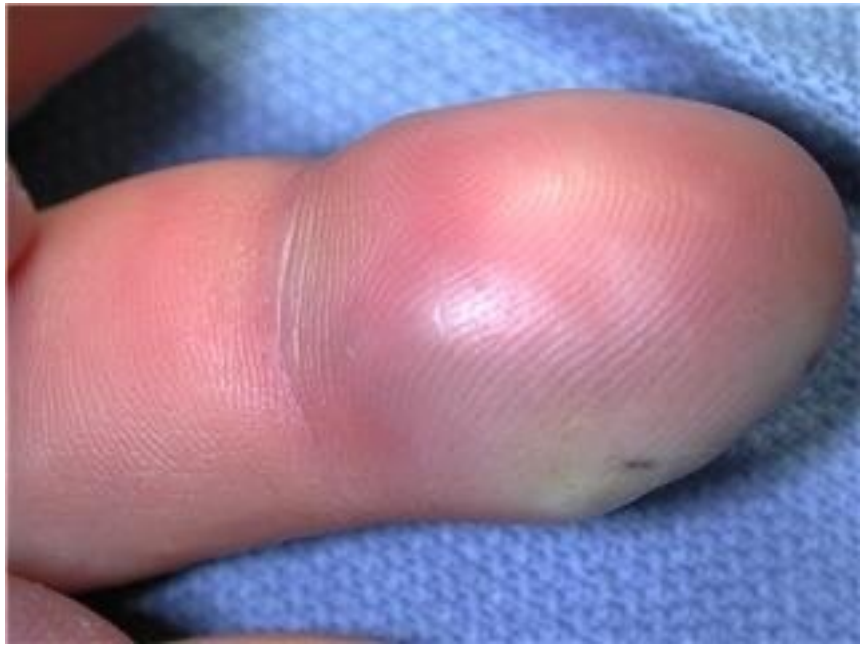
Felon

- Purulent infection of the pulp space of the volar fingertip
- Very tender, tense, erythematous, swollen, may have visible subcutaneous purulence
  - Ddx from herpetic whitlow: no vesicles, felon is more tense and very painful
  - If untreated, can lead to ischemia and necrosis
- Drainage of the pus collection
  - Septae in the pulp create several smaller compartments
    - Because of this, a simple I&D may not suffice
  - Avoidance of tendon sheath and neurovascular structures also important
  - Consult with orthopedist – may require O.R.
- Prescribe anti-staph oral antibiotics x 7-10 days



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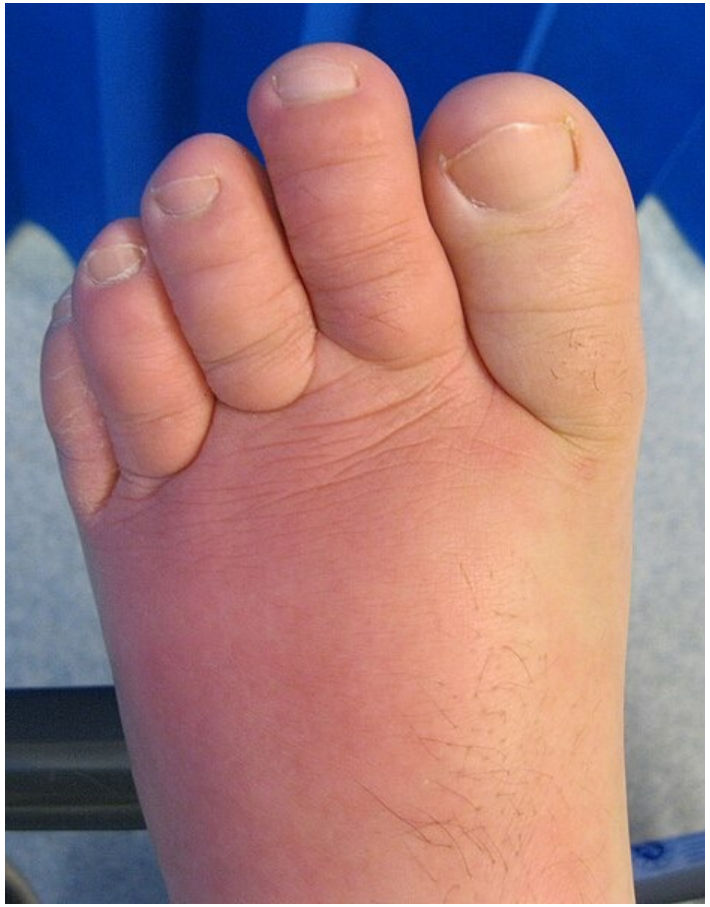
Cellulitis

- Infection of the deep dermis and subcutaneous fat
- Skin barrier breach (minor trauma, bug bite) leads to infection
- Erythema, warmth, mild tenderness, mild edema, indistinct borders, may have fever
- Treatment: outline the area of erythema in pen to monitor for improvement, oral antibiotics
  - Unless risk factors for MRSA or purulence, can begin with coverage for Strep and MSSA
- Indications for admission for IV antibiotics: failed outpatient management, significant systemic symptoms, rapid progression, immunocompromise, indwelling catheter or other device
  - Consider CBC, ESR/CRP, Blood culture, wound culture



https://commons.wikimedia.org/wiki/File:Cellulitis_toes_(44699139982).jpg

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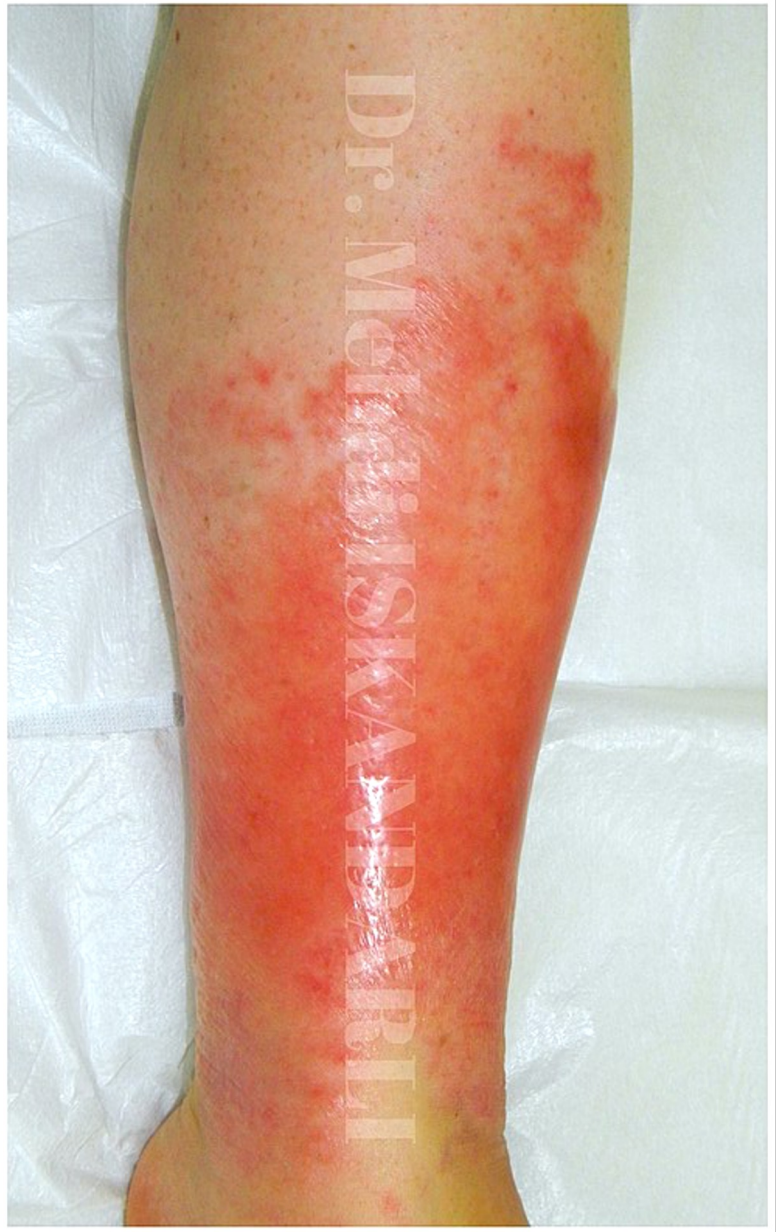
Erysipelas

- Infection of dermis and superficial layers
  - May involve superficial lymphatics
- May have skin barrier breach (minor trauma) or preceding pharyngitis
  - Usually caused by Group A Strep
- Fever, chills, malaise prodrome common for 48 hours prior
- Well demarcated bright red, slightly raised, tender / burning
- Treat with anti-Strep antibiotics
  - Trial of outpatient therapy with oral antibiotics if minimal systemic symptoms, well-appearing, not immunocompromised or infant, good follow-up possible



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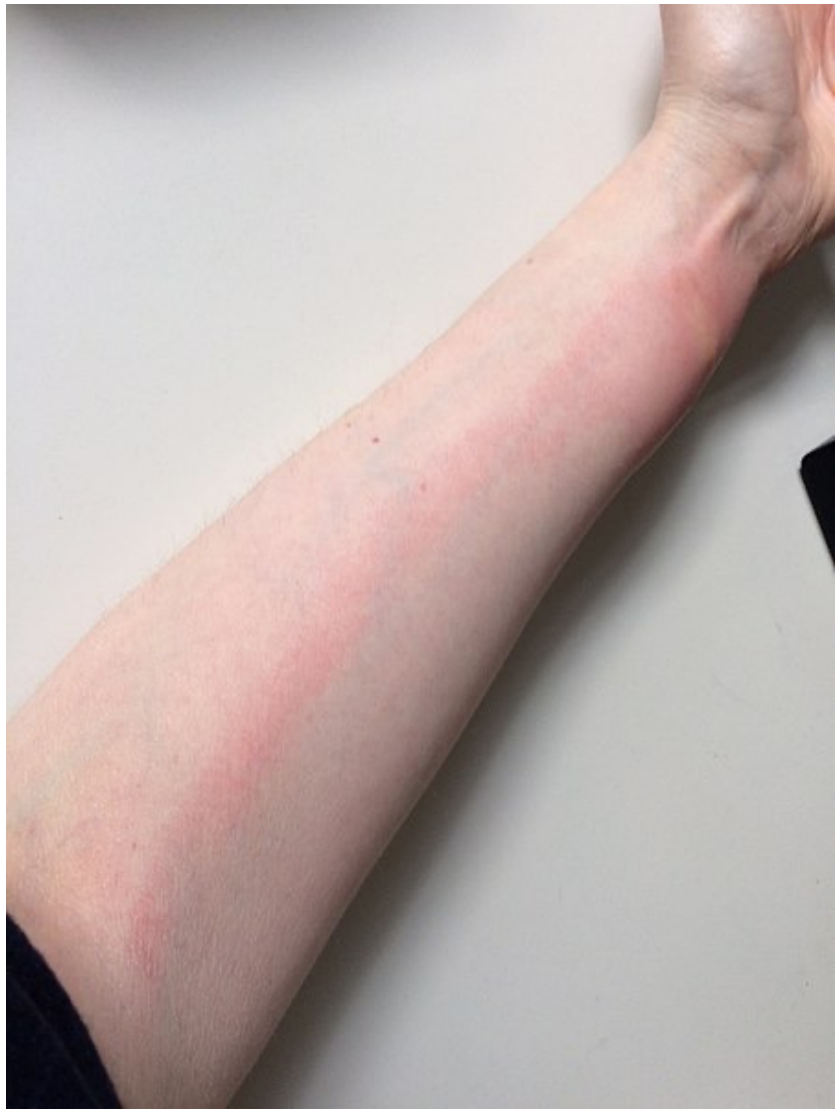
Lymphangitis

- Infection of the lymphatics
- Often spreads from an initial cellulitis
- Systemic symptoms e.g. fever common
- Tender erythematous linear streak, commonly on an extremity
  - Progresses rapidly
  - May have tender lymphadenopathy
- Most common Group A Strep; also Staph, Pasteurella, gram-negatives in immunocompromised
- Low threshold to admit for parenteral antibiotics – cover Strep and Staph



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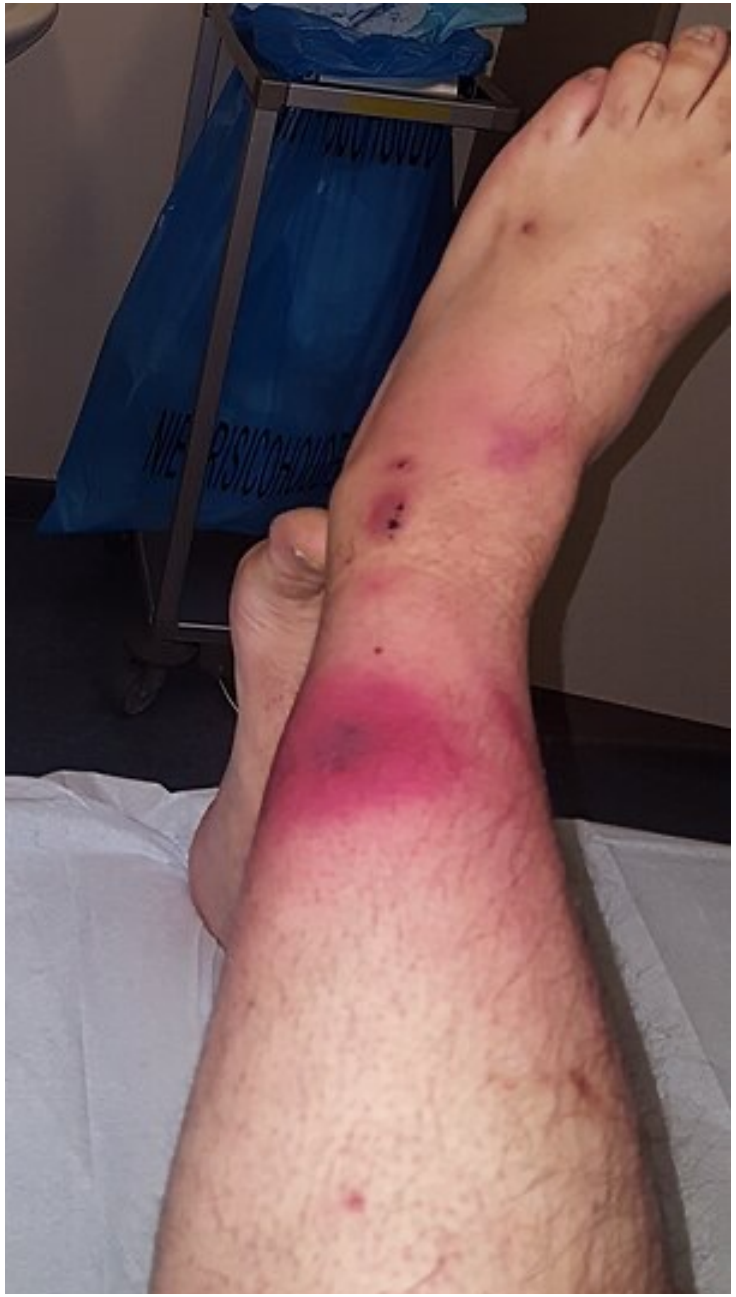
Necrotizing Fasciitis

- Primarily caused by Group A Strep, Staph, may be polymicrobial
- Risk factors: untreated superficial infection, trauma, varicella, immunocompromise, diabetes
- Deep, aggressive, necrotizing infection of the subcutaneous tissue, fascia, and muscle
  - Fever common
  - Rapid spread
  - Clues: early pain out of proportion to exam, bullae, skip lesions (normal skin between affected areas), crepitance, violaceous hue, gas in soft tissues visible on x-rays
  - Involvement of the perineum = Fournier's gangrene
  - Omphalitis in newborn is a form of necrotizing fasciitis
- Treatment: surgical emergency- consult surgeon, obtain vascular access, resuscitate if septic shock, broad-spectrum antibiotics: vancomycin + clindamycin + carbapenem or piperacillin-tazobactam



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Antibiotics

Antibiotic	Route	Coverage	Dose
Mupirocin 2%	Topical	Strep, MSSA, MRSA	Apply BID-TID x 5 days
Retapamulin 1%	Topical	Strep, MSSA	Apply BID x 5 days
Cephalexin	Oral	Strep, MSSA	25-50 mg/kg/day div TID-QID (max 500mg/dose)
Amox-clavulanate	Oral	Strep, MSSA	45 mg/kg/day div BID (max 875mg/dose)
TMP-SMX	Oral	+/-Strep, MSSA, MRSA*	8-10 mg/kg/day TMP div BID (max 160mg/dose)
Dicloxacillin	Oral	Strep, MSSA	50 mg/kg/day div QID (max 500mg/dose)
Clindamycin	Oral	Strep, MSSA, MRSA*	30-40 mg/kg/day div TID (max 450mg/dose)
Doxycycline	Oral	+/-Strep, MSSA, MRSA*	For children ≥ 8 years only 4 mg/kg/day div BID (max 100mg/dose)

Parenteral antibiotics (page 4)

* Local MRSA resistance patterns should be taken into account