
Tropical Dermatology

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Thanks to:

Boris D. Lushniak, MD, MPH
RADM USPHS, Deputy Surgeon General Adjunct
Professor Dermatology, USUHS

Without his expertise, leadership, and instruction,
this slide set would not be in existence.



Disclaimer

The views expressed in this presentation are those of the speaker and do not reflect the official policy of the Department of Army, Department of Defense, or U.S. Government

....Oh, and no, I'm **NOT** a dermatologist.



Overview

- The Derm Evaluation and Lexicon
- Common Conditions in Global Dermatology
- Fungus Among Us
- That's Just Nasty
- Infestations and Ectoparasites
- A Potpourri of Interesting Diseases



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Military Perspective

Historically, diseases of the skin have not been accorded the concern they deserve. This fact may result from the low mortality...The high morbidity rates and the non-effectiveness rates, however, demand critical attention to the skin...

Brig Gen (ret) Andre J. Ognibene
Medical Corps, US Army 1977

Skin diseases such as infections, infestations, and immersion foot may devastate the fighting strength of a unit by incapacitating its soldiers...It is important to keep in mind that incapacity due to skin disease is usually preventable.

LT GEN Alcide M. LaNoue
The Surgeon General, US Army 1994



Dermatologic Evaluation

- History
- Subjective symptoms
- Clinical signs
 - Physical examination of the skin
- Laboratory examinations
 - Scrapings
 - Culture
 - Biopsy



Examination

Well lit room or in natural sunlight

Magnification

Palpation (ahem...wear gloves)

Wide angle to close up approach

- Issues of undressing (i.e. chaperone)

Teledermatology

- A derm consult is just a click away if you have a camera
- 23.4% of teleconsults in FY13 were to dermatology
- 40.2% of teleconsultations in general have been to derm
- 46 unnecessary evacuations prevented



The Lexicon Dermatological Terms



Cutaneous Signs

- Primary lesions – original lesions
- Secondary lesions – modified by regression, trauma (scratching), extraneous factors



Primary Lesions

- Macules
- Papules/Plaques
- Nodules
- Tumors
- Wheals/hives
- Vesicles/bullae
- Pustules



Configuration

- Linear
- Annular (complete circle)
- Arcuate (portion of circle)
- Polycyclic (intersecting circles)
- Serpiginous (snaking)
- Guttate (small drops)
- Nummular (coin-shaped)



Cutaneous Symptoms

- Pruritus / pruritic – itching
- Burning
- Tingling
- Pain
- Numbness

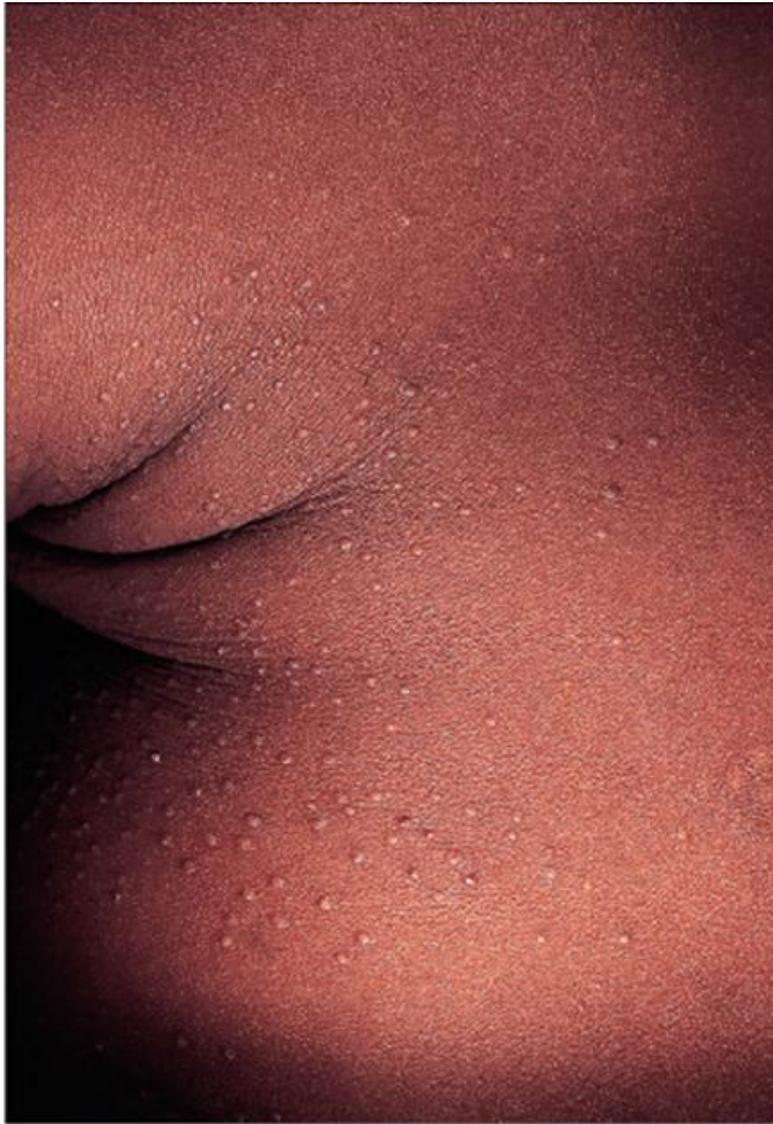


Macules / Macular



- Non-palpable changes in skin color
- Circular, oval, irregular
- Discrete or confluent.
- Patch > 1 cm

Papules / Plaques



Discrete elevations
without visible fluid.

Rounded, conical, flat-topped, umbilicated, capped by scales (squamous papules)

Plaque = Broad papule or confluence > 1 cm



Wheals / Hives

- Evanescent, edematous, plateau-like elevations



Nodules

- Morphologically similar to papule > 1 cm, deep



Tumors

- Soft or firm, freely movable or fixed masses of various sizes and shapes (usually > 2 cm)

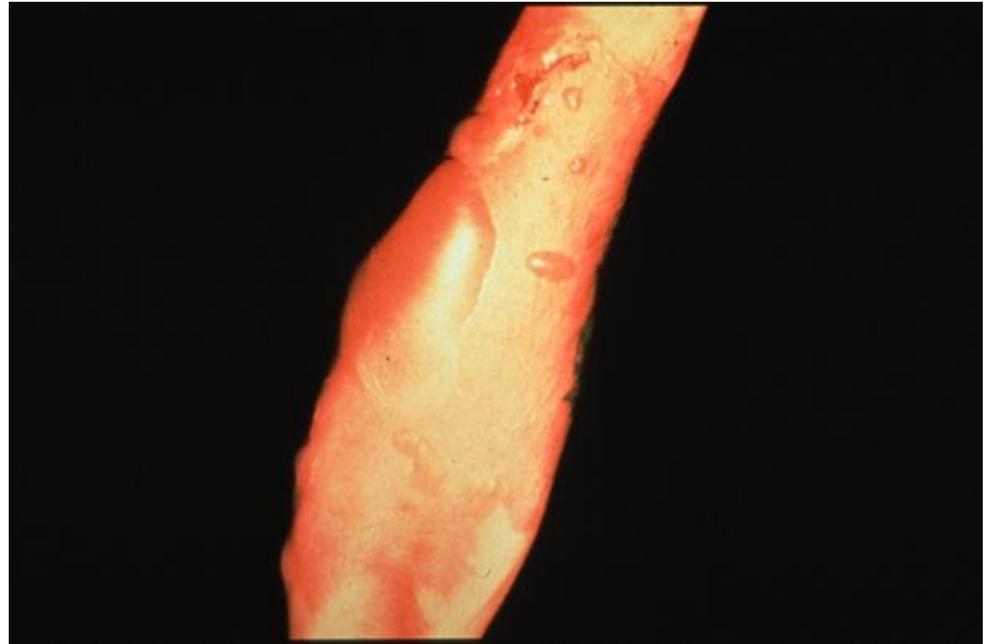


Vesicles / Bullae

- Circumscribed, fluid-containing epidermal elevations
- Bullae > 1 cm



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Pustules

- Small elevations containing purulent material



Secondary Lesions

- Scales (exfoliation)
- Crusts (scabs)
- Excoriations and abrasions (scratch marks)
- Fissures (cracks, clefts)
- Erosions (loss of epidermis)
- Scars
- Ulcers (excavations)



Ulcers



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Some Common Conditions in Global Dermatology

- Dermatitis and eczema
- Pyoderma (bacterial infections)
- Pigmentary disorders
- Other common disorders (psoriasis, warts, miliaria, insect bites)



Dermatitis

- Inflammation of the skin
- Contact is most common type
 - Poison ivy is most common



Vesicles usually indicate an acute process



Photosensitivity and Photodermatoses

- Phototoxic --furocoumarins (limes), coal tars, drugs (antimicrobials, anitmalarials)
- Photoallergic -- fragrances, sunscreens, plants



Eczema (atopic dermatitis)

9yo Afghan girl with itchy red skin



Pyoderma



- Most common -- impetigo, furunculosis
- *Staph aureus* and Group A (Beta-hemolytic) strep

Staphylococcal SSTI





Uptodate.com





Uptodate.com



Staphylococcal SSTI

- Treatment
 - Warm compresses
 - Incision and Drainage (send culture if you can)
 - Antibiotics if:
 - Large abscess
 - Surrounding cellulitis
 - Immunocompromised
 - Systemic signs or symptoms



Staphylococcal SSTI

- Antibiotics
 - Need to consider MRSA
 - Oral options
 - Trimethoprim-sulfamethoxazole 1-2 DS tabs BID
 - Clindamycin 300-450 mg TID
 - Linezolid 600 mg BID
 - Doxycycline 100 mg BID
 - Minocycline 200 mg X1, then 100 mg BID
 - Tedizolid 200 mg once daily
 - 5 to 7 days of therapy is generally sufficient



Staphylococcal SSTI

- Antibiotics
 - IV options for severe disease
 - Vancomycin 15 – 20 mg/kg/dose every 8-12 hours
 - Daptomycin 4 mg/kg once daily
 - Linezolid 600 mg BID
 - Telavancin 10 mg/kg once daily
 - Dalbavancin 1g on day 1, then 500 mg on day 8
 - Ceftaroline 600 mg every 12 hours
 - Tedizolid 200 mg BID



Ecthyma gangrenosum

(p. aeruginosa)



Folliculitis



Pigmentary Disorders -- Vitiligo



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Psoriasis

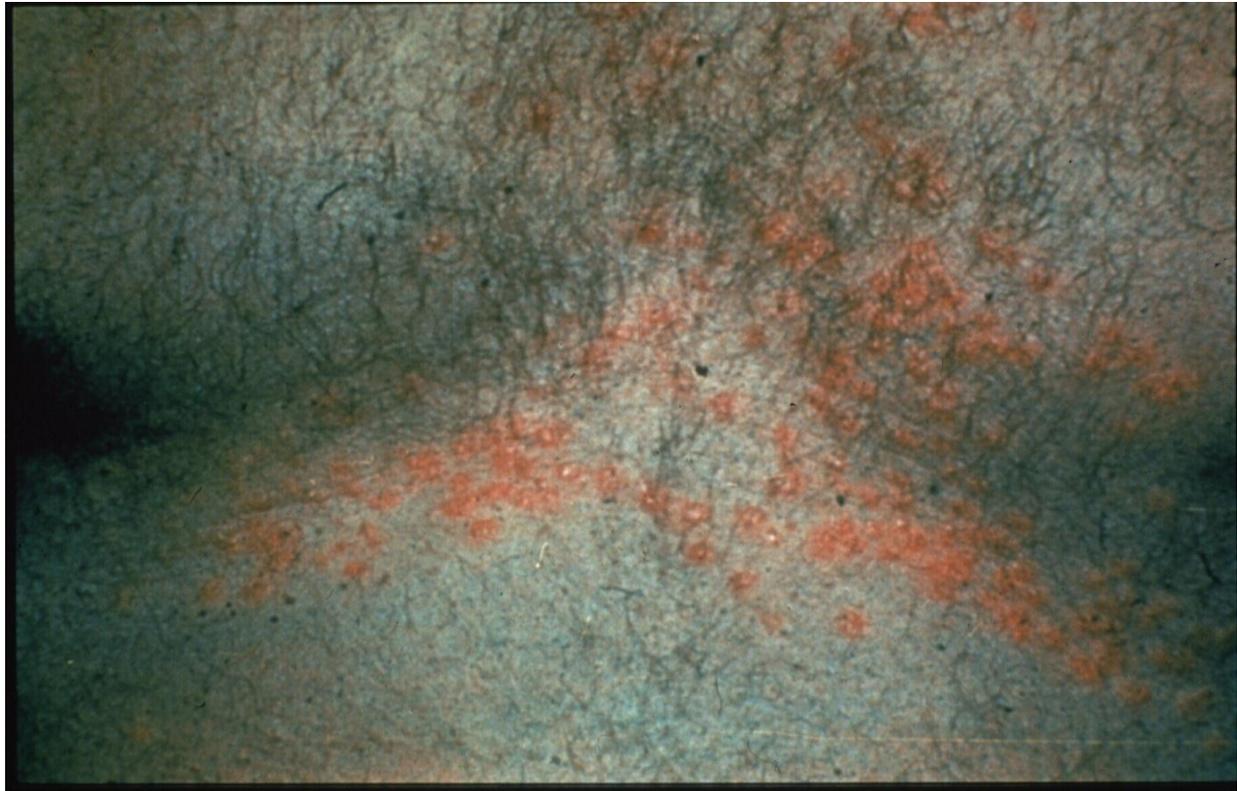


Verruca (Warts)



Miliaria (prickly heat, heat rash)

- Blockage of sweat ducts
- Hot, humid environments



Insect bites



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Bedbugs



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Superficial mycoses (surface to surface)

Tinea (Pityriasis) versicolor

Candidiasis

Dermatophytosis (true tinea/ringworm)

Subcutaneous mycoses (penetration)

Sporotrichosis, Phaeohyphomycosis,

Chromoblastomycosis

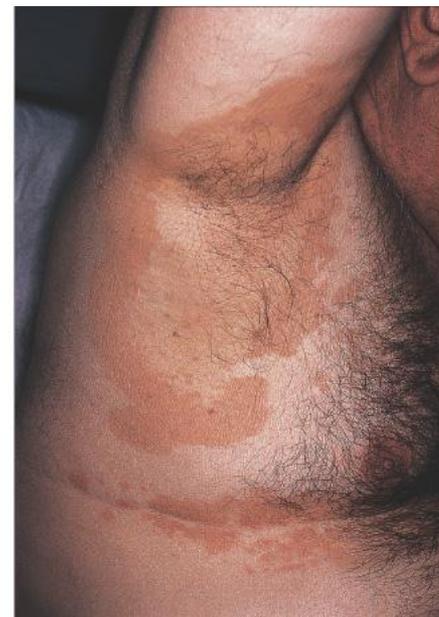
Systemic mycoses (inhalation)

Histoplasmosis, coccidioidomycosis, and others

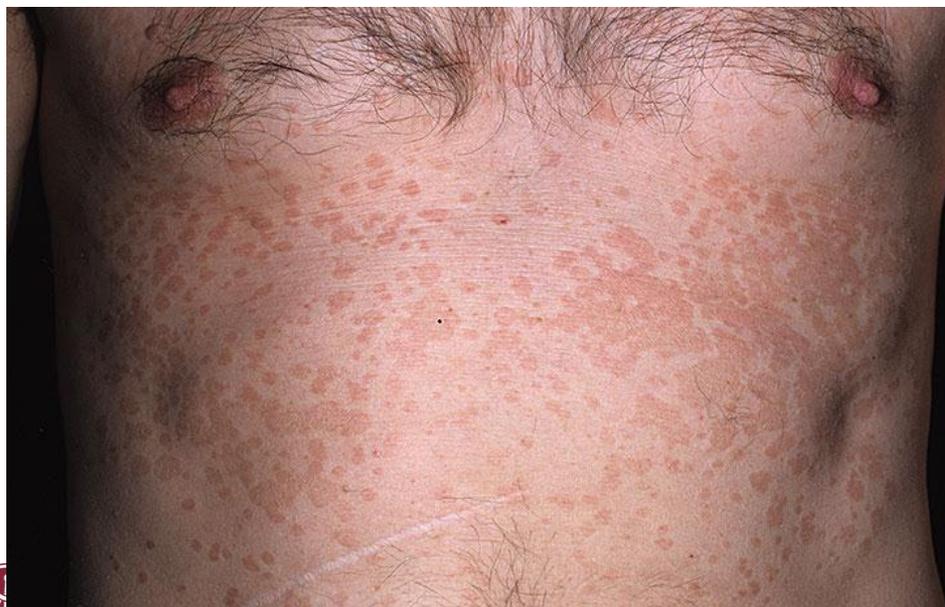


Tinea versicolor

- Asymptomatic hypo- or hyperpigmented slightly scaly patches



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- Chest, neck, back
- Malassezia furfur (or Pityrosporum ovale) is not truly “tinea”



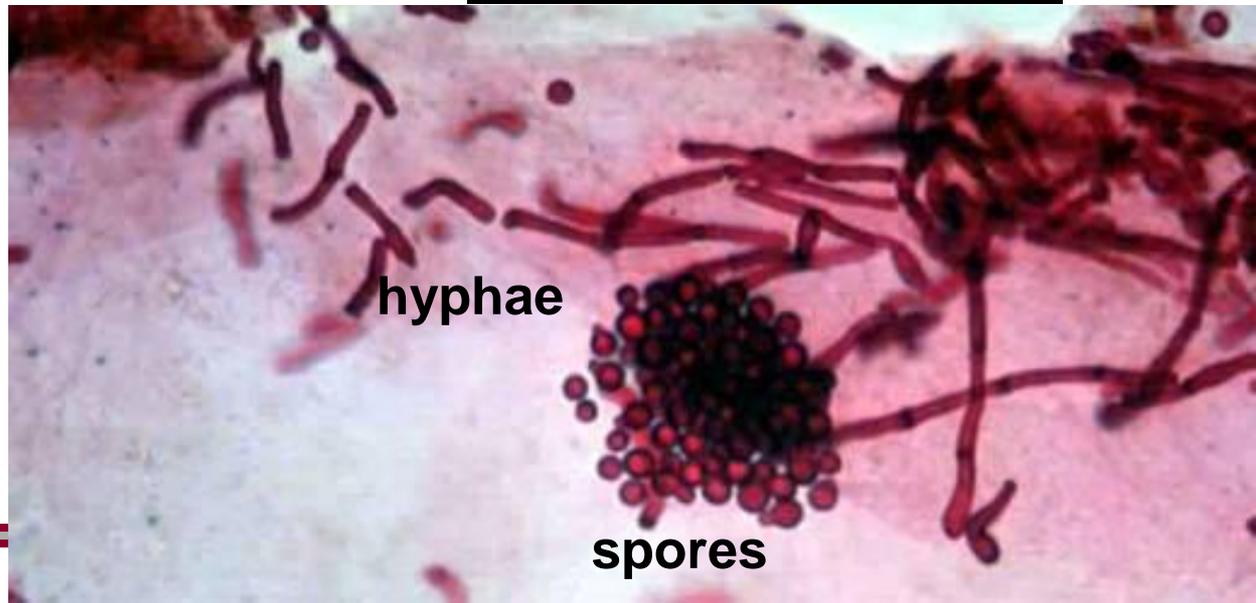
Can you appreciate the scale?



Tinea (Pityriasis) versicolor

- Treatment-
 - Topical azole
 - Oral ketoconazole (take 1 pill, sweat, then wait to shower)
- Most recur

“spaghetti & meatballs”



Candidiasis



Dermatophytes

- Three closely related genera subsist on keratin in stratum corneum

- Microsporum
- Trichophyton
- Epidermophyton

Source Anthropophilic

Geophilic

Zoophilic

Tinea “X”

- Tinea corporis
- Tinea capitis
- Tinea cruris
- Tinea manuum
- Tinea pedis
- Tinea unguium
- Tinea faciei
- Tinea barbae



Tinea (dermatophyte) infections

Clinically:

- Central clearing
- Elevated borders
- Any part of body
- Round, red, scaling
- Central clearing
- Can be polycyclic

Treat with topical antifungals



Tinea corporis (Common ringworm)

- Annular scaly itchy plaques
- Varying degrees of redness
- Scale at margin

Trichophyton rubrum

Microsporum canis



Tinea Cruris: Clues to diagnosis



Symmetric half-rings on medial inner thighs

Spares scrotum (less keratin)

Scale at margin

KOH and culture cinch the diagnosis

Prevention: “Hang loose”

Treatment: topical antifungal

Tinea pedis (Inflammatory)

Inflammatory in the web-spaces

Burning, itching

Sometimes polymicrobial

Exacerbated in humid tropics

Uncommon in barefoot populations



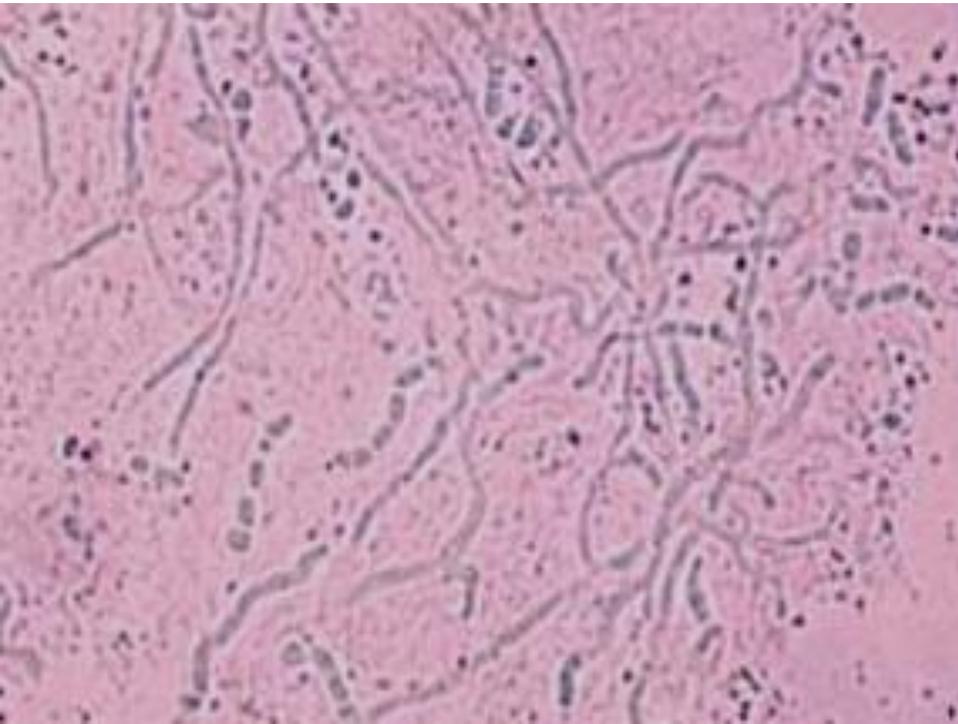
Tinea pedis

- Scaling +/- erythema
- Occasionally blisters
- Treat with Lamisil (Terbinafine) or Clotrimazole for 4-6 weeks
- Antifungal powders (Zeasorb AF or Tolnaftate)

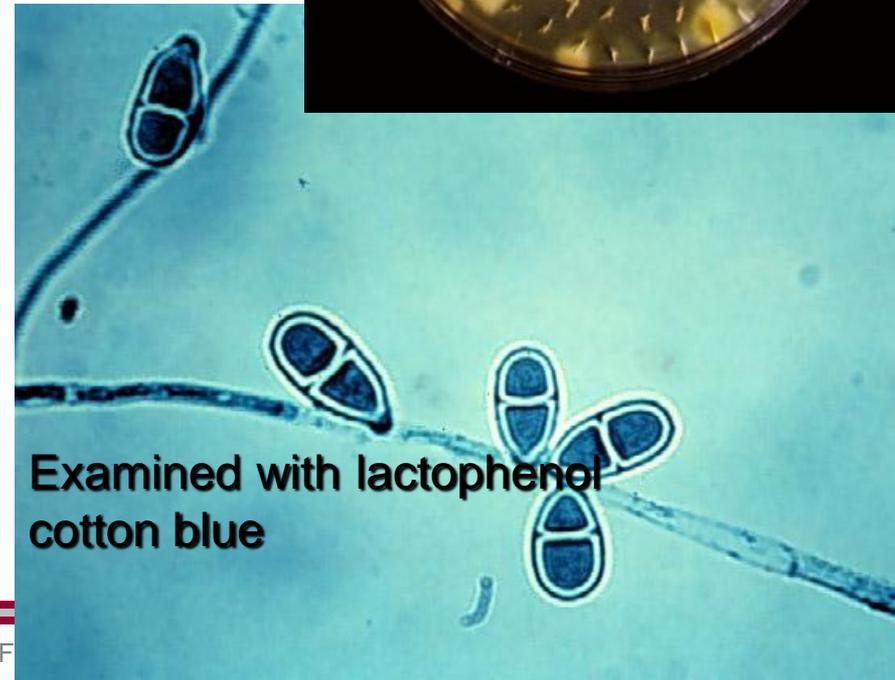
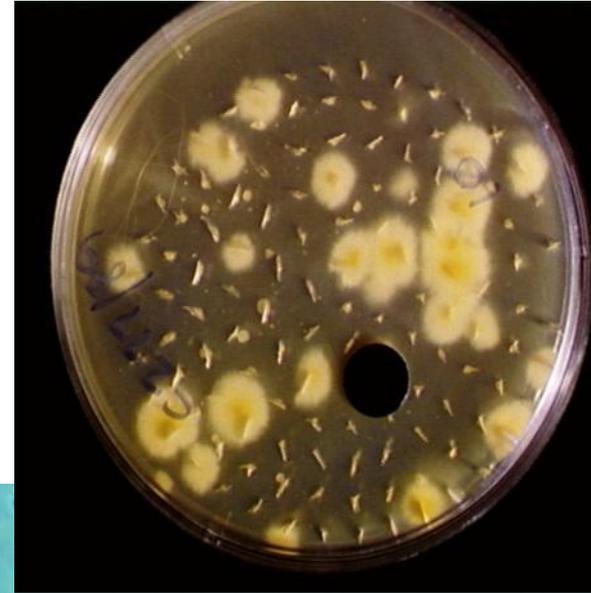


Diagnosis: KOH, culture

Skin scraping with potassium hydroxide (KOH) shows fungal hyphae



Culture with Sabouraud's agar

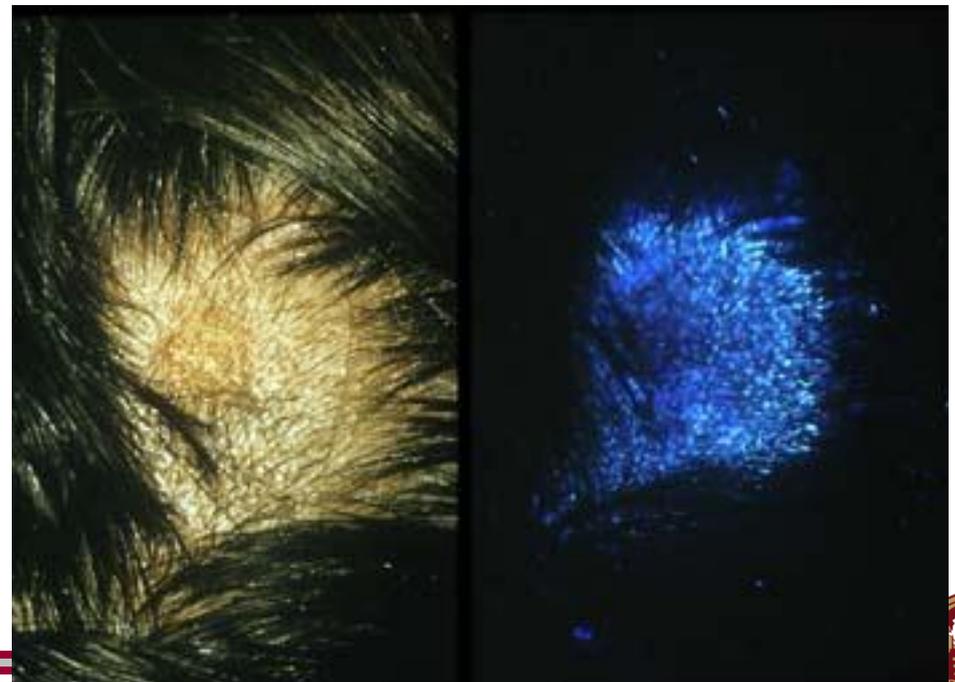


Examined with lactophenol cotton blue

Diagnosis: DTM, fluorescence

Dermatophytes will turn DTM (Dermatophyte Test Medium) from orange to red

Several fungi will fluoresce under ultraviolet light (Wood's lamp)



Allylamines

Terbinafine, naftifine, etc.

Fungicidal (inhibit fungal cell wall formation)

Best coverage for dermatophytes

- Marginal coverage for yeast (i.e. *Candida*)

Come in cream, spray, and powder

Usually cream BID continued until one week after clinical clearance

Powder can be excellent prevention measure for patients with recurrent tinea pedis or cruris (usually related to underlying hyperhidrosis)



Azoles

- Clotrimazole, miconazole, etc.
- Fungistatic (inhibit fungal cell membrane formation)
- Cover both dermatophyte and yeast decently



Polyenes

Nystatin

Fungicidal (binds candida cell membranes)

Excellent coverage for candida, does not kill dermatophytes

Cream for drier, irritated skin such as diaper dermatitis

Powder for macerated skin such as intertrigo between skin folds



Gentian Violet

- Very messy; stains
- Traditional “anti-infective” treatment, rarely used in USA
- Gentian violet can be painted onto bacterial or fungal infections and left to dry



Onychomycosis

- Several different clinical presentations based on fungal entry point into the nail unit
- Proximal subungual pattern should prompt HIV test



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Treatment of Onychomycosis

Terbinafine (Lamisil): 250mg po qd x 90 days

Itraconazole (Sporonox) 200mg bid for 1 week q month x 4 months

Treatment is largely cosmetic and optional

Non-dermatophyte

Scytalidium, Scopulariopsis, Fusarium



Fungus-free nails are a bare necessity.

Urgent feet have gorgeous nails. Healthy. Clear Perfect.

But if you've noticed your nails are turning colors (like white or yellow or brown) and they're getting thick or brittle or flaky, you've probably got what millions of people have: fungus-hidden nails.

So go for effective help from the inside out with oral Lamisil Tablets. Oral Lamisil works by attacking the fungus right where it lives: deep inside, under the nail at the base.

After taking oral Lamisil for 12 weeks, clearer, healthier toenails often grow in for many people. Because nails naturally grow slowly, it takes about 10 months for you to see totally new nails.

Prescription Lamisil may have some side effects for some people. In clinical studies, the most commonly reported were headache and gastrointestinal upset. In rare instances, adverse effects on the liver and serious skin reactions were reported, and therapy was discontinued. However, Lamisil is well tolerated by most people.

Call now to get your free, informative video, "Uncovering the Inside Story on Nail Fungus," plus a brochure on nail care and treatments.

1-800-959-1721

Lamisil[®] Tablets
(terbinafine HCl tablets) 250mg

The ultimate pedicure happens from the inside out.



Tinea capitis: dandruff-like

Posterior cervical adenopathy

Scaly scalp

Patchy hair loss

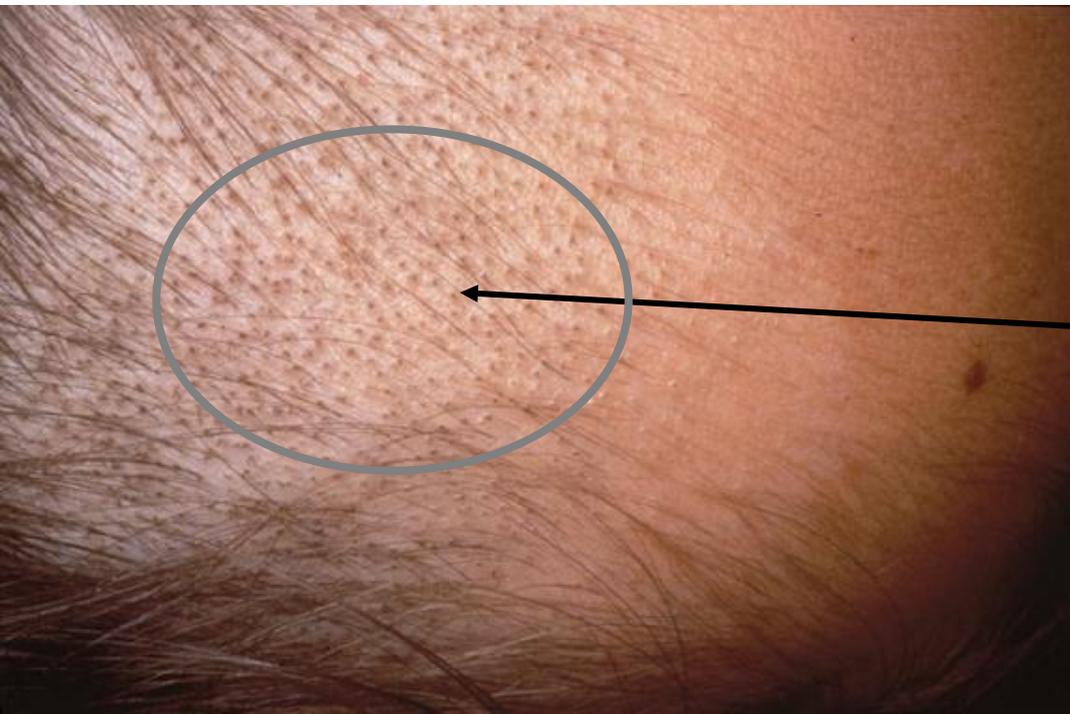


Tinea capitis: black-dot ringworm

Non-inflammatory. Hairs break off at skin surface.

Commonly due to *Trichophyton tonsurans*

Sometimes fluorescing *Microsporum audouinii*



Hairs broken off at surface produce black dots.

No erythema

Tinea capitis: Kerion



Intensely inflamed boggy nodule
A robust immunologic response,
often to few organisms.

May resemble bacterial abscess
and be colonized.

Kerions often cause scarring
(irreversible) alopecia.

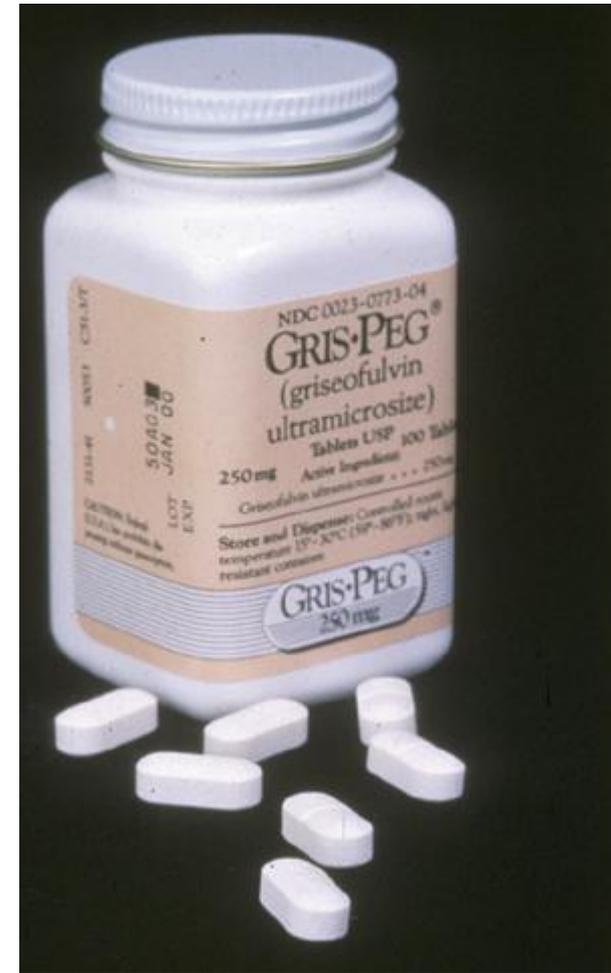
Kerion

- *Microsporum canis*
- Oral antifungals and systemic steroids



T. capitis Treatment

- Oral antifungal agents
 - griseofulvin
 - newer azoles (eg, fluconazole)
 - terbinafine (Lamisil)
- Topicals alone are ineffective
 - Nystatin has no effect
 - Selsun or Nizoral shampoo may help



Many deep fungal infections can present as leg ulcers

- Sporotrichosis
- Blastomycosis
- Coccidioidomycosis
- Cryptococcosis
- Histoplasmosis
- Protothecosis
- Chromoblastomycosis



Protothecosis



Chromoblastomycosis

Usually one lower extremity

Male Farmers

Fonsecaea pedrosoi



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Chromoblastomycosis

- Treatment is difficult
- Small lesions: surgical excision or LN2
- Itraconazole or Terbinafine



Below: fungal elements found in smear taken from ulcer



Lobomycosis (*Lacazia loboi*)

- Acquired from soil, water, vegetation in forested areas
- Recurrence common
- Amazonian wetlands
- Small lesions- surgical excision
- Itraconazole & Clofazimine



Sporotrichosis



- Nodules with lymphatic spread and ulceration
- *Sporothrix schenckii*
- Worldwide
- Itraconazole
- Potassium Iodide



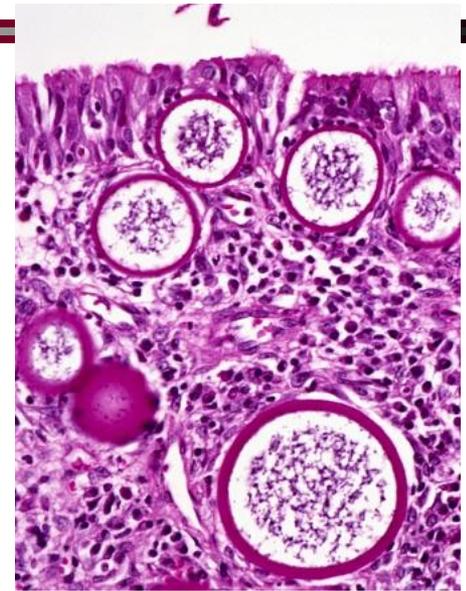
Differential for sporotrichoid spread aka Lymphocutaneous syndrome

- Sporotrichosis
- Nocardiosis
- Leishmaniasis
- Tularemia
- Atypical mycobacteria (esp *M. marinum*)



Rhinosporidiosis

- *Rhinosporidium seeberi*
- India, East Asia, Latin America
- Mucosal polypoid lesions
- Bleed easily



Rhinosporidiosis Treatment

- Destruction of involved area by excision or electrocautery
- Antifungals are of little value



Humanitarian mission in Darfur

- Several men have similar appearing painless, swollen feet



Mycetoma (“fungal tumor”)

Madura foot (maduramycosis)

- Sites of minor trauma and exposure to decaying wood
- Foot/leg (75%), upper back
- Clinical triad of :
 - Tumefaction
 - Draining sinuses
 - Extruded grains
- Etiology and treatment (True fungal vs bacterial)



Mycetoma

Actinomycetoma: antibiotics targeting causative organism

Eumycetoma: Combo surgery and Antifungal therapy



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Genital Ulcer Disease (GUD)

- Causes: Syphilis, herpes, chancroid, lymphgranuloma verereum, granuloma inguinale
- USA: Genital Herpes > Syphilis
- Africa, Asia: Chancroid



Syphilis

- *Treponema pallidum*
- “The Great Pox” to distinguish from smallpox
- Clinically develops through several stages
 - Primary – chancre
 - Secondary – rash
 - Latent
 - Tertiary
 - Cardiovascular
 - Neurosyphilis
 - Gummas



Syphilis - Primary



Primary syphilitic chancre

- **Single** painless lesion + bilateral inguinal adenopathy
- Heals spontaneously without treatment
- RPR usually becomes positive several weeks after chancre arises...check the RPR, but may need to biopsy or treat preemptively

Treating primary syphilis:

- Benzathine penicillin is drug of choice
- Tetracycline or doxycycline in PCN allergic patients
- **Test for HIV and other STD's**



24yo woman with asymptomatic scaly brown circles on face



© Maithily A. Nandedkar

- Malaise, sore throat, adenopathy, low grade fevers



Secondary Syphilis

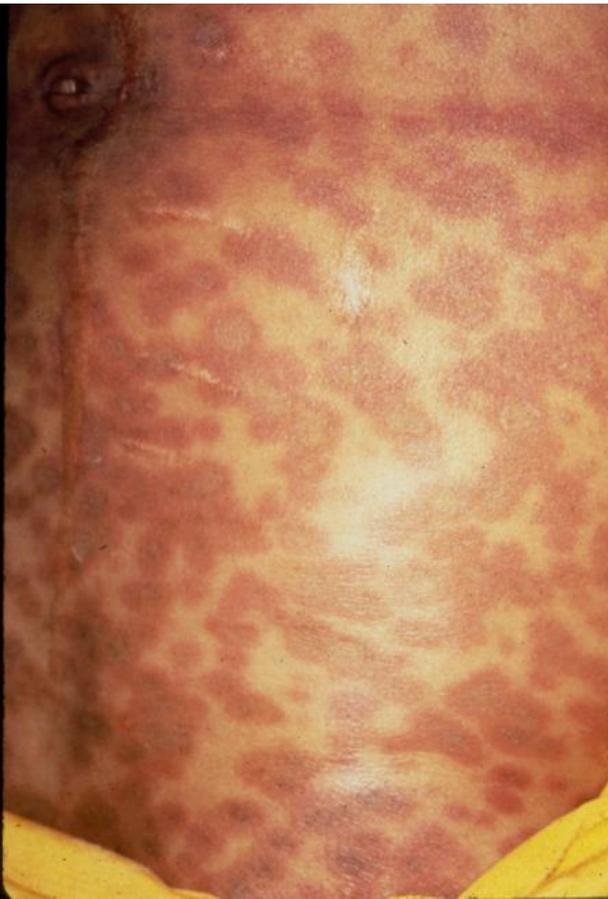


Secondary Syphilis

- Syphilids within 6-8 weeks of chancre
- Pink, erythematous, brown, coppery macules, papules...

with or without
scale...

“great imitator”



Secondary Syphilis

- Face, trunk, & extremities, palms, soles, mucosa



Secondary Syphilis

- Condyloma lata: broad, flat papules with grey, moist, weeping surface in intertriginous areas
- Mucous patches: 5 mm flat, greyish, round erosions covered by a delicate membrane on oral/genital mucosa



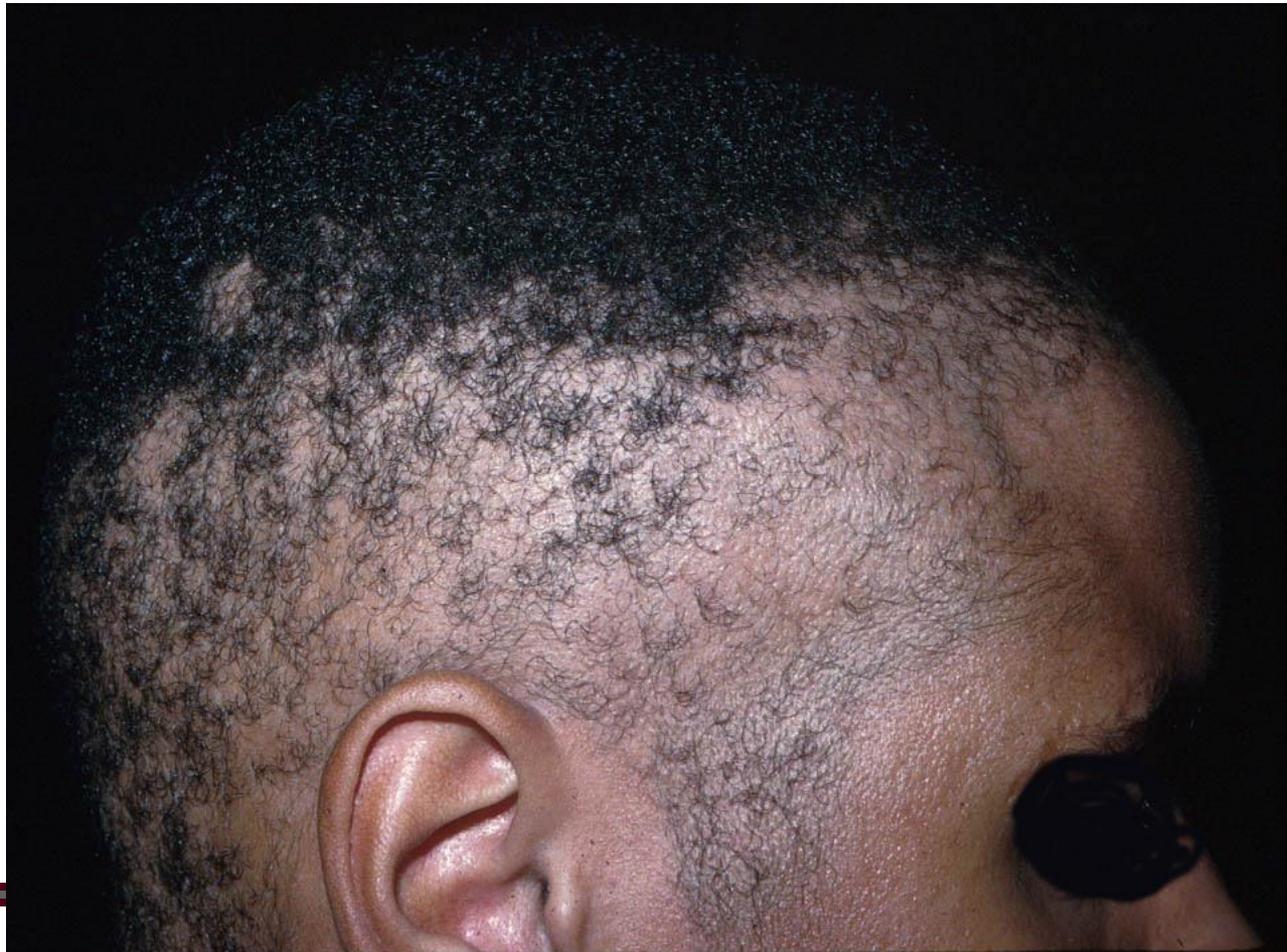
CONDYLOMA LATA



MUCOUS PATCHES

Secondary Syphilis

Patchy “moth eaten” or diffuse alopecia

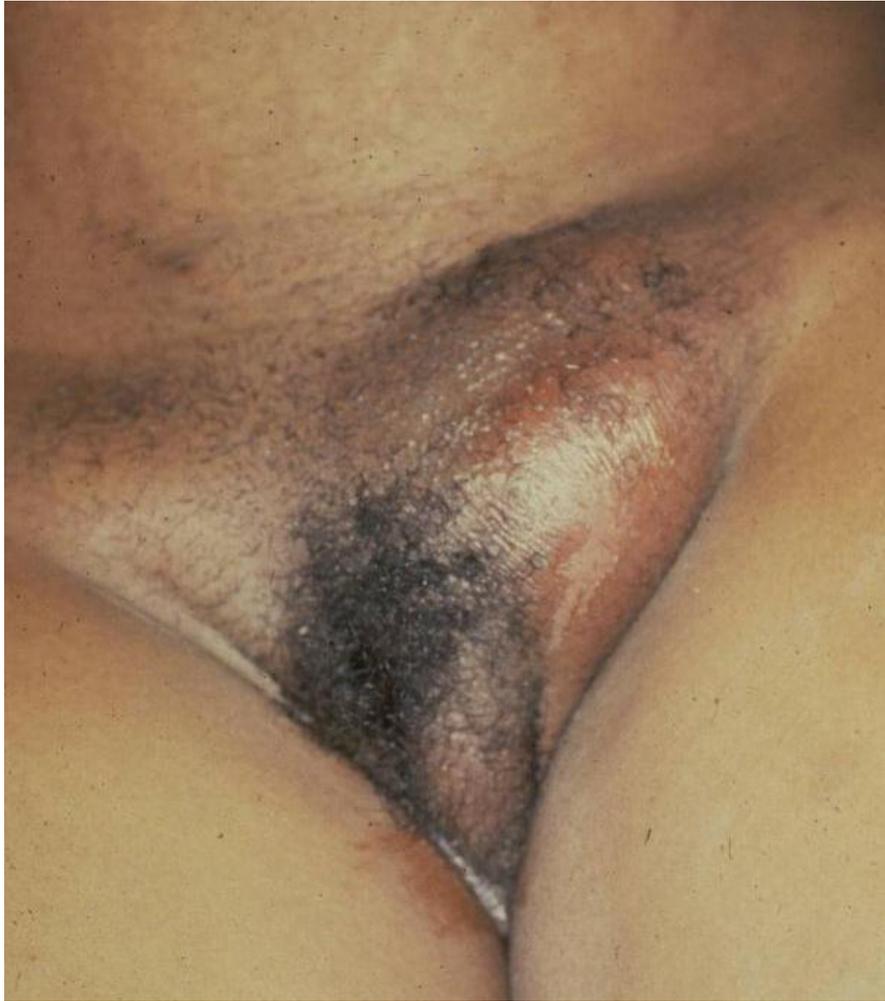


Chancroid



- *Hemophilus ducreyi*
- Multiple, inflamed, **painful**, soft ulcers within a week after sexual encounter

Chancroid



- Suppurative buboes
- Culture ulcer and treat with azithromycin

Chancroid

Azithromycin 1 g orally, single dose

Ceftriaxone 250 mg IM, single dose

Erythromycin base 500 mg po TID x 7 d

Ciprofloxacin 500 mg po BID x 3 d*

*Contraindicated in pregnancy and lactation



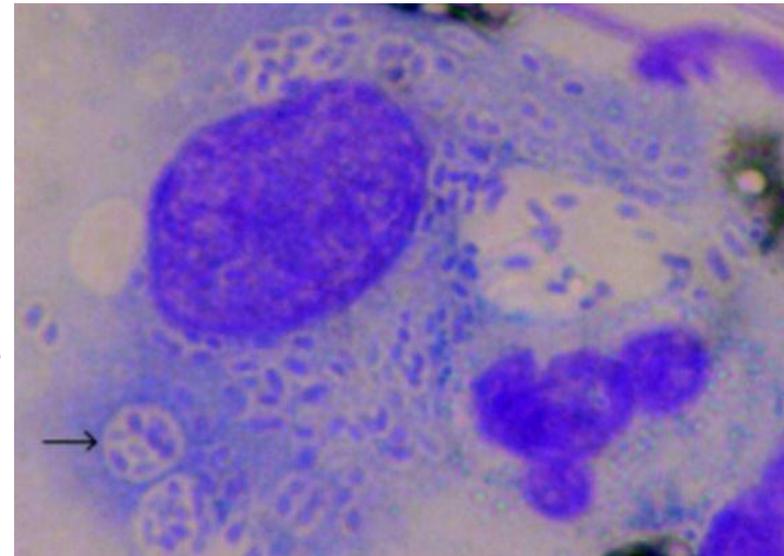
Granuloma Inguinale (Donovanosis)

- *Klebsiella granulomatis*
- Chronic, granulomatous, **painless** nodules
- Beefy-red



Granuloma Inguinale: Manifestations

- Incubation: 50 days
- Firm papule or nodule → ulcer
 - Ulcerogranulomatous: red, non-tender, bleeds readily
 - Verrucous, necrotic, cicatricial
- Genital: 90%; inguinal: 10%
- Diagnosis:
 - Donovan bodies in monocytes of Giemsa stained tissue smear



Granuloma inguinale



- Treatment

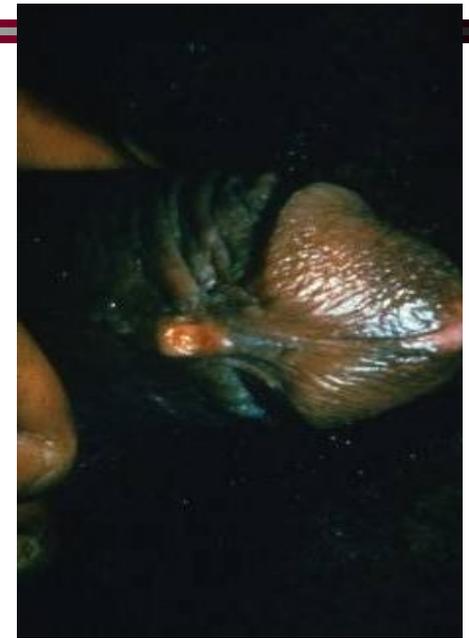
- Doxycycline 100 mg PO BID for at least 3 weeks
- TMP-SMX one double-strength tablet (800mg/160 mg) PO BID for at least 3 weeks

- Alternates:

- Azithromycin 1 g PO Qweek for at least 3 weeks
- Ciprofloxacin 750 mg PO BID for at least 3 weeks
- Erythromycin base 500 mg PO QID for at least 3 weeks



Lymphogranuloma Venereum



Chlamydia trachomatis

Self-limited, **painless**, genital ulcer

Tender inguinal and/or femoral lymphadenopathy (usually unilateral)

- Groove sign, suppuration, scarring
- PID

Proctocolitis (fistulas & strictures)

Non-gonococcal urethritis



Lymphogranuloma Venereum

- Diagnosis:
 - Serology
 - DNA tests
 - Urethral swab



Lymphogranuloma Venereum

- **RECOMMENDED:**
 - Doxycycline 100 mg PO BID for 21 days
- **ALTERNATIVE:**
 - Erythromycin base 500 mg PO QID for 21 days
- Aspiration of suppurative buboes may be needed

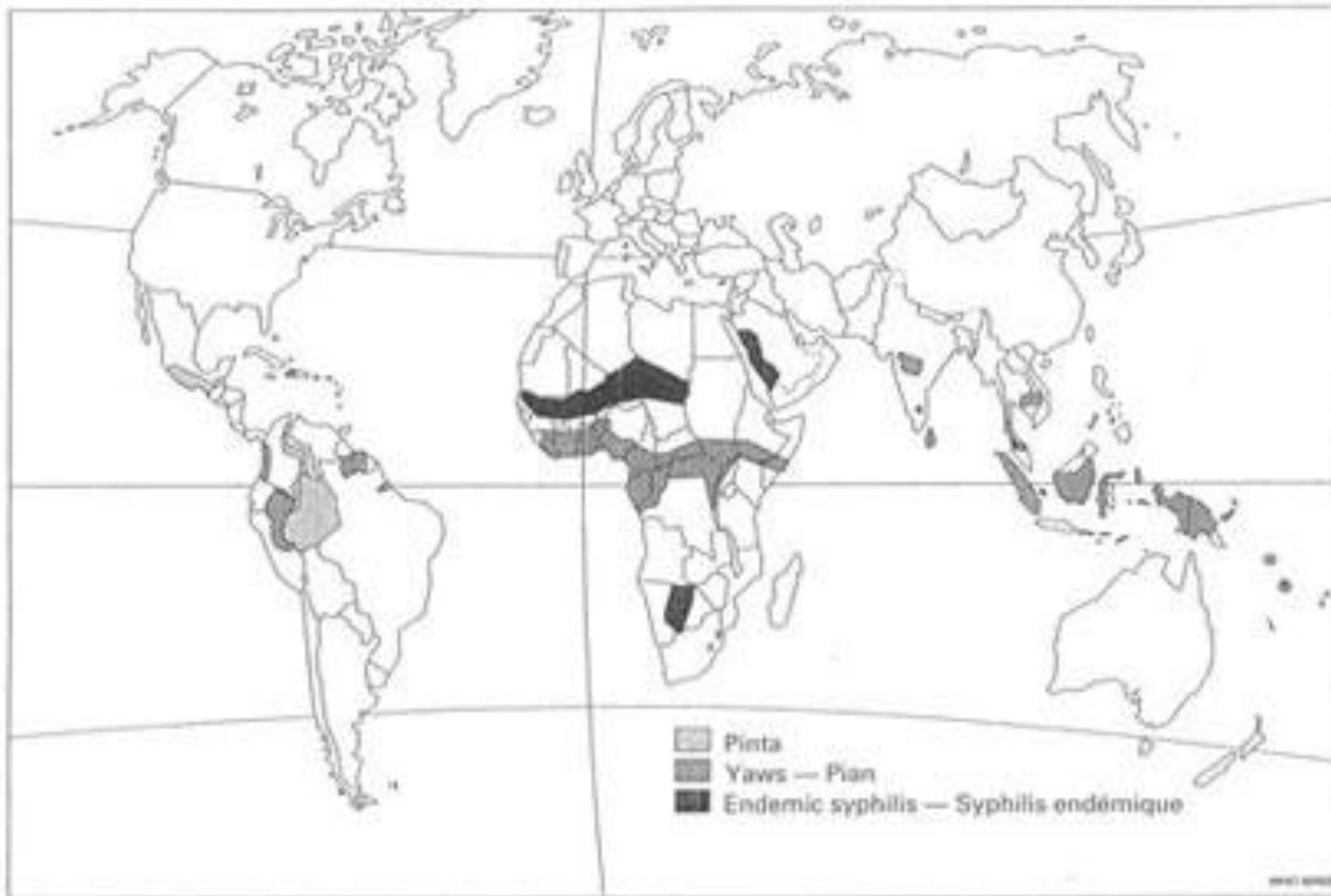


Nonvenereal Treponemes

- Children
- Related to poverty and lack of health services
- Person to person contact or sharing drinking vessel
- Diagnosis: clinical, dark-field microscopy and serologic testing
- Treatment:
 - Benzathine penicillin intramuscularly
 - If PCN allergic:
 - Tetracycline 500 mg QID x 15 days
 - Children Erythromycin 8 to 10 mg/kg QID x 15 days



MAP 1. GEOGRAPHICAL DISTRIBUTION OF THE ENDEMIC TREPONEMATOSES IN THE EARLY 1990s
CARTE 1. RÉPARTITION GÉOGRAPHIQUE DES TRÉPONÉMATOSES ENDÉMIQUES AU DÉBUT DES ANNÉES 90



Yaws

- *T. pallidum pertenue*
- Disabling course
- Skin, bone, joints
- Hot, humid coastal plains



Early & Late Yaws

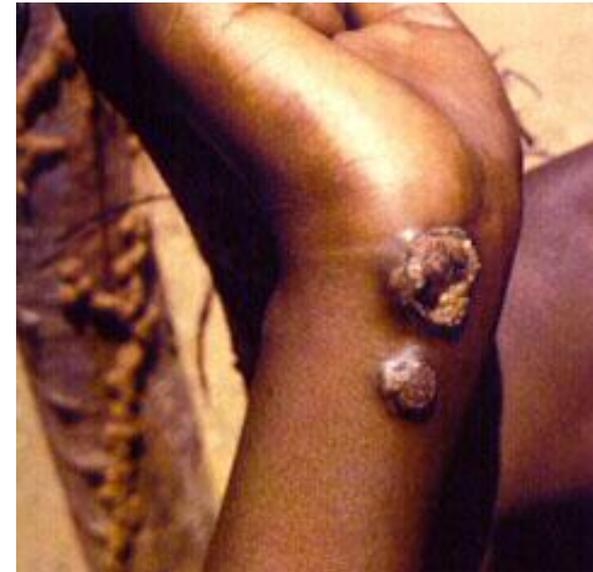
Mother yaw- primary crusted papule

- Secondary yaws- smaller lesions, clear centrally, coalesce peripherally

Painful osteoperiostitis/polydactylitis
(saber shin deformity of tibia)

Late yaws- indolent ulcers with
clean cut borders, only 10%

Gangosa- destruction of palate and
nasal bone



Bejel (Endemic Syphilis)

- *T. pallidum endemicum*
- Dry, arid areas of Middle East and Africa
- Mouth sore initial presentation, then oral patches, laryngitis, angular cheilitis
- Cutaneous lesions uncommon
- Destructive lesions in long bones (especially legs)



Pinta (Carate)

- Central & South America
- *T. carateum*
- Only skin lesions
- Primary- red papule on legs, face, arms
 - Secondary- smaller, scaling papules initially red turning dark slate blue
- Late Dyschromic Stage- white mottled appearance



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Infestations and Cutaneous Ectoparasites

- Lice
- Scabies
- Tungiasis
- Cutaneous larva migrans
- Myiasis
- Cercarial Dermatitis



Head lice



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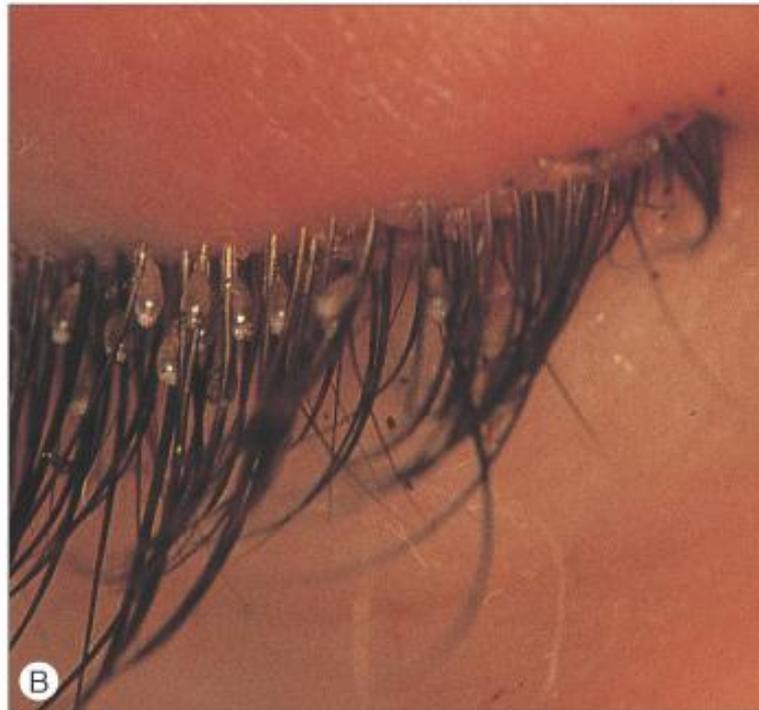
Pediculosis pubis (crab lice)

- Louse grabs hairs, bites skin, cements nits to hairs
 - Can be on any body hair, including eyelashes
- Look for other STD's



Pediculosis pubis

- Permethrin cream
- Coat eyelashes with vaseline twice dailiy



Scabies

- Itching often worse at night
- Close contacts also itchy
- Papules and burrows:
 - **W**eba, **W**rista, **W**aista and **W**illie

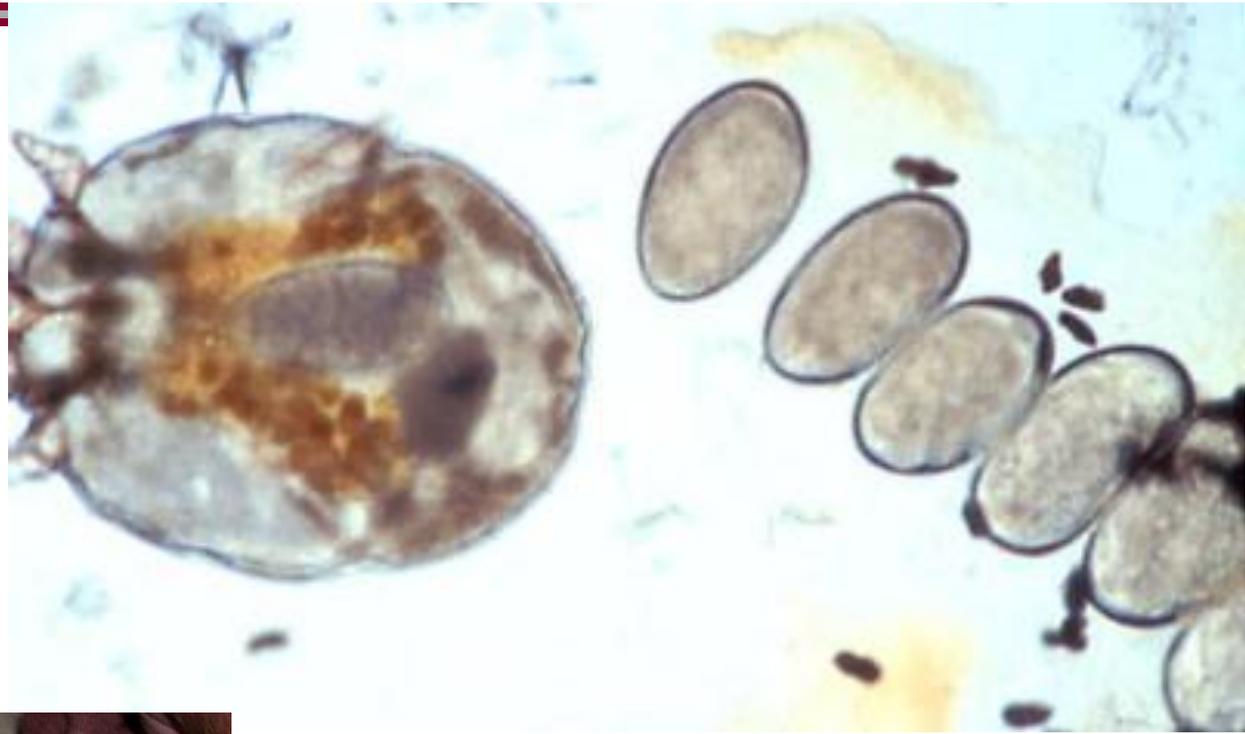


Scabies



Scabies

- Scrape to see:
 - Mite
 - Eggs
 - Poop



Sarcoptes scabiei

Treatments – permethrin, lindane, benzyl benzoate, crotamiton, malathion, topical sulfur, ivermectin



Crusted scabies

- Wear gloves!



21yo soldier returns from military exercise in Guyana

Painful lesions on foot

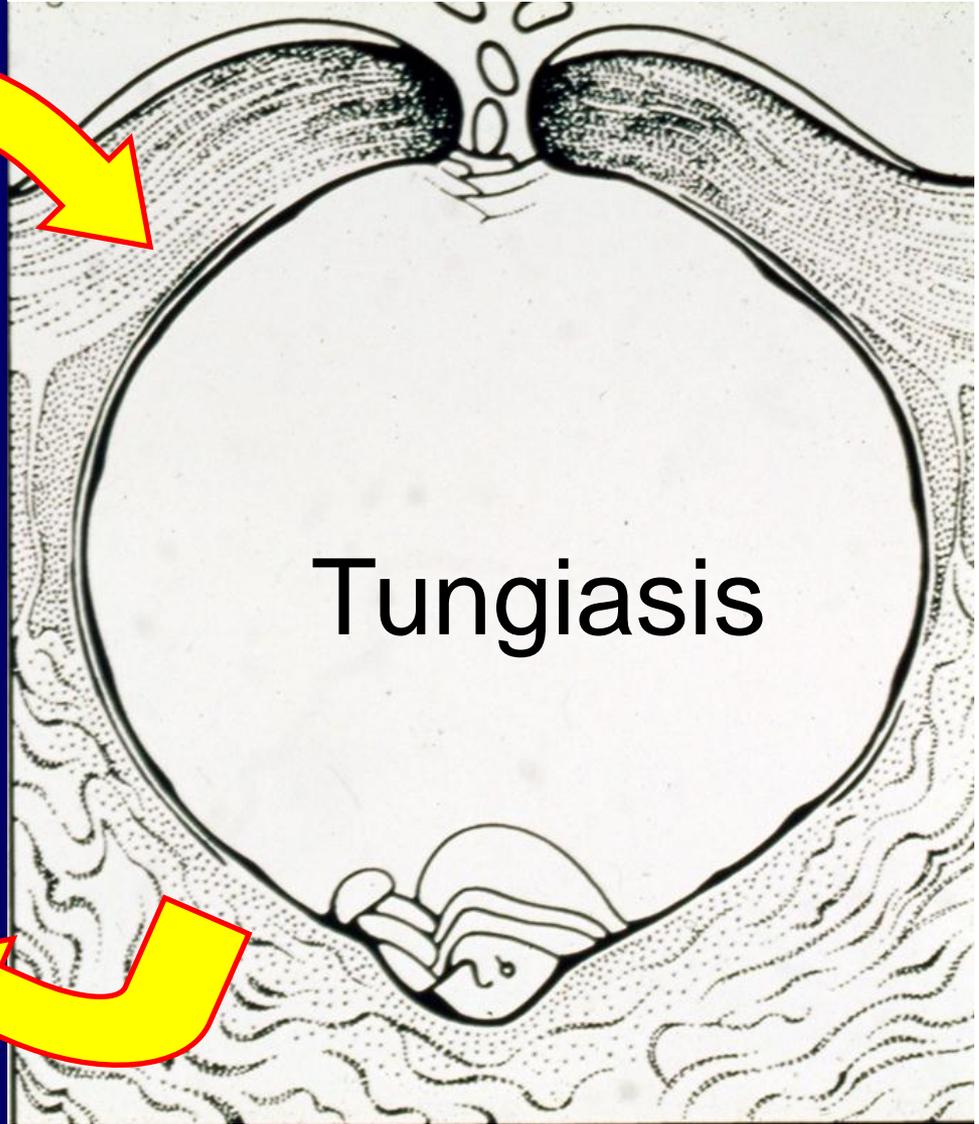
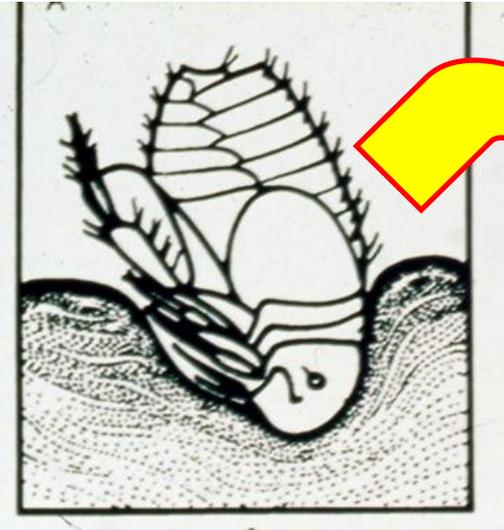


Tungiasis (Sand Flea)

- *Tunga penetrans*
- Female burrows into skin (usually foot)
- Progression of painful red spot to papule to nodule with black dot (anal/genital area of flea) to pearl-like papule (with eggs) to black keratotic crust



Gravid female burrows into flesh, leaving uterine pore open



Tungiasis (Sand Flea)

Life cycle of 2-4 mm flea is 5-6 weeks

Infestation self-limited if not reinfected

Rare osteomyelitis/ gangrene

Sub-Saharan, Caribbean, Central and South America

Surgical removal of fleas

- Topical ivermectin or thiabendazole
- Treat with antibiotics if secondarily infected



28yo Navy physician – at Flight Surgeon Course in Pensacola



Cutaneous Larva Migrans

- Pruritic, serpiginous lesion migrates 2-4 cm /day on feet or buttocks



Cutaneous Larva Migrans

- Dog or cat hookworm larvae
 - Cannot penetrate fully and usually die within 2 months
- Beach; sandboxes
- Course: self-limited 1-6 mos
- Treatment:
 - Topical thiabendazole
 - Single dose of oral ivermectin



Differential of “migrating” lesions

- Cutaneous larva migrans
- Gnathostomiasis
- Loiasis
- Strongyloidiasis (larva currens)



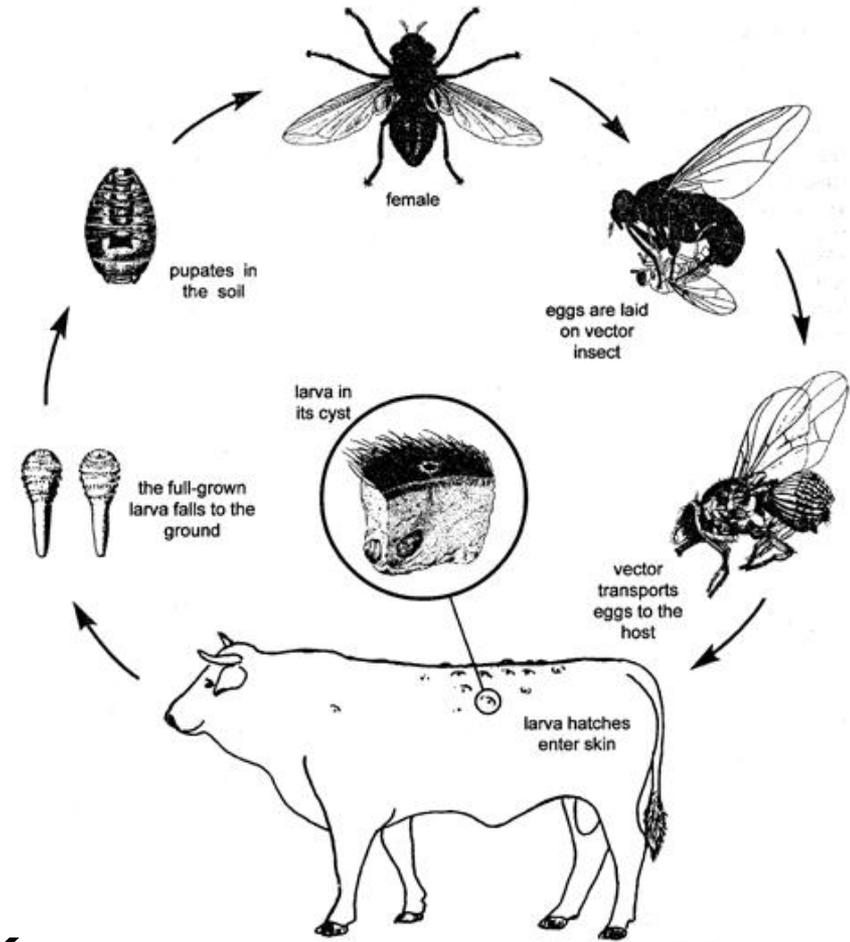
Myiasis



- Infestation of human tissue by fly larva
- Painful, boil-like lesion with central punctum (respiratory pore)
- Exposed skin



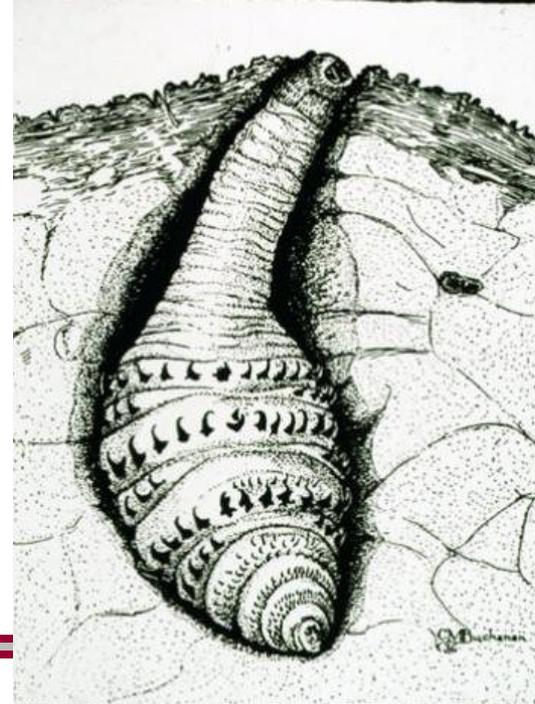
New World Myiasis



Dermatobia hominis

- Human Botfly
- Female glues eggs to mosquito, stablefly, or tick





Old World Myiasis

- Tumbu fly (*Cordylobia anthropaga*)
- Fly deposits eggs on ground or clothing
- Young maggots penetrate skin



Cercarial Dermatitis (Swimmer's itch)



- Transient pruritic papular or urticarial eruption on exposed skin
- Resolves in 7-10 days after fresh water snail exposures (schistosomal larvae penetrate the skin)

Seabather's eruption

Pruritic, papular eruption (can last 1-2 weeks)

Occurs in tropics (begins a few hours after exposure)

- Seasonal, typically May to August

Caused by hypersensitivity to the larval forms of thimble jellyfish and certain sea anemone

- Larvae get caught in water permeable clothing
- Rash typically in bathing suit pattern

Treatment is symptomatic



Overview

- The Derm Evaluation and Lexicon
- Common Conditions in Global Dermatology
- Fungus Among Us
- That's Just Nasty
- Infestations and Ectoparasites
- **A Potpourri of Interesting Diseases**



A potpourri of interesting diseases (as time allows)...



Leprosy (Hansen's Disease)

Chronic disease caused by *Mycobacterium leprae*

Peripheral nerve (sensory loss), skin, and upper airway mucosal involvement

Asia, Oceania, Caribbean, the Americas, S. Europe, Australia, Africa

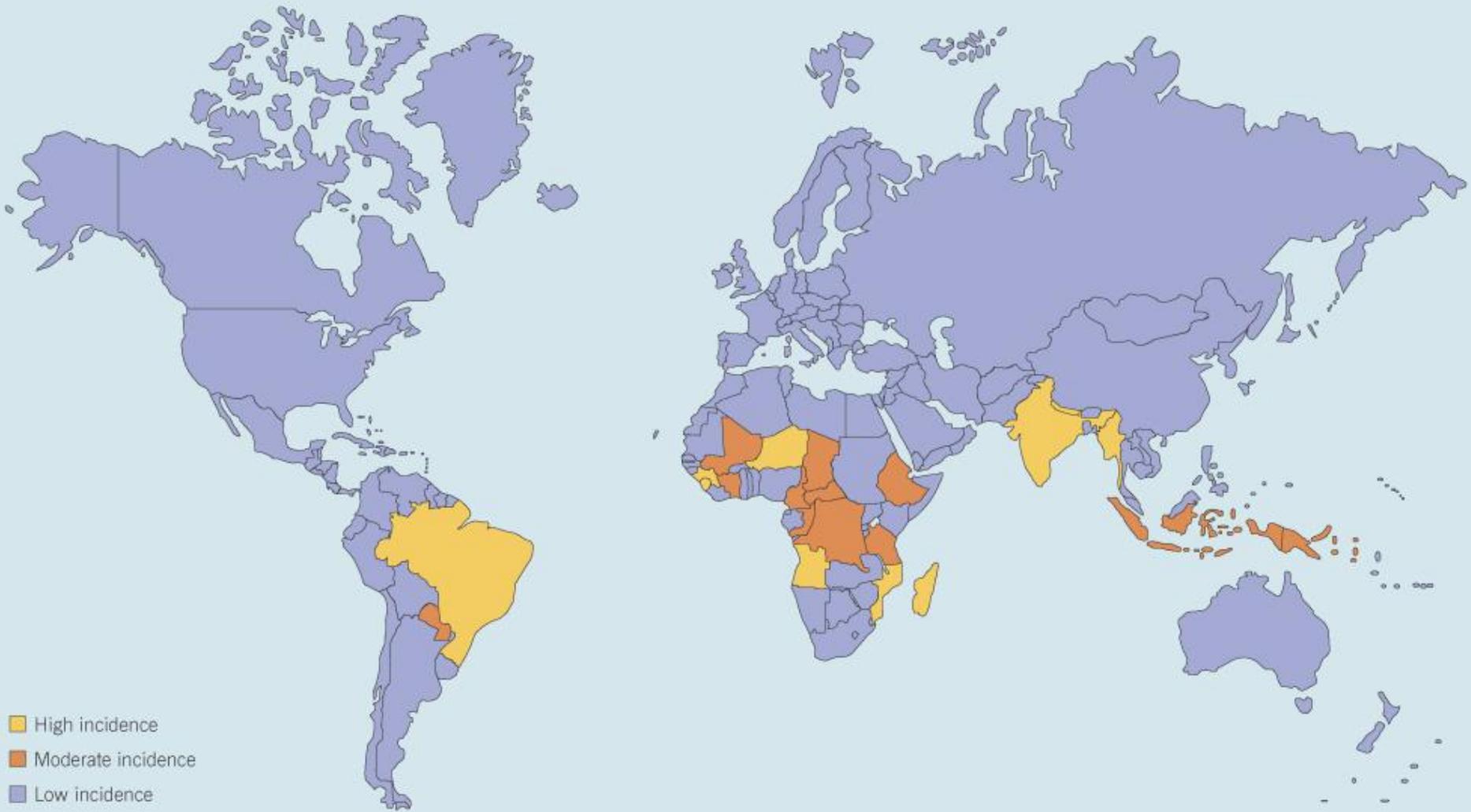
Incubation period 3 mos to 40 years

- 95% of population is NOT susceptible
- Need prolonged contact with an untreated patient

Treatment: Rifampin + Dapsone + Clofazimine



LEPROSY SITUATION IN 2000



© 2003 Elsevier - Bologna, Jorizzo and Rapini: Dermatology - www.dermtext.com



Sensory



Motor



Auto-amputation



Leprosy

Mycobacterium leprae



Lepromatous leprosy



Lepromatous Leprosy

- Nodular infiltrations can destroy underlying structures saddle nose deformity, leonine facies
- Sensory loss over distal limbs



Borderline Leprosy

- Numerous lesions, annular
- Symmetrical nerve involvement appears later



Tuberculoid leprosy

- Hypopigmented saucer shaped single lesion (max 2-3)
- Numbness, pain, tingling, muscle weakness



38 yo Thai female with fever, retro-orbital eye pain, diffuse severe myalgias



DENGUE FEVER



Assay Report by the Analyze

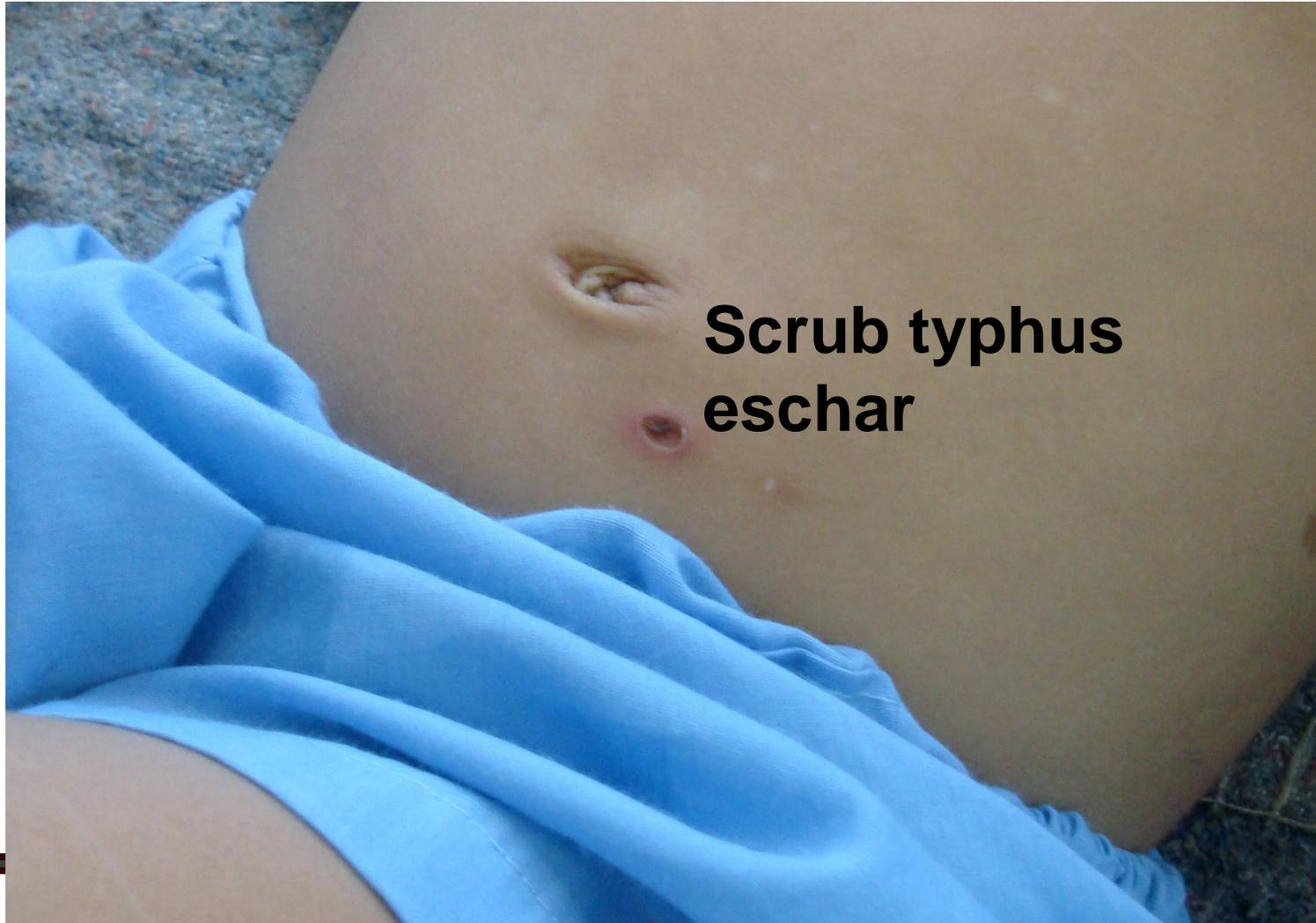
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Time: 05-23-2011 09:40

WBC	2.4	$\times 10^3/\mu\text{L}$	L
Lymph#	1.6	$\times 10^3/\mu\text{L}$	
Mid#	0.2	$\times 10^3/\mu\text{L}$	
Gran#	0.6	$\times 10^3/\mu\text{L}$	L
Lymph%	67.0	%	H
Mid%	7.5	%	
Gran%	25.2	%	L
HGB	11.8	g/dL	
RBC	5.20	$\times 10^6/\mu\text{L}$	
HCT	36.3	%	L
MCV	69.9	fL	L
MCH	22.6	pg	L
MCHC	32.5	g/dL	
RDW-CV	16.4	%	H
RDW-SD	39.3	fL	
PLT	47	$\times 10^9/\text{L}$	L
MPV	6.6	fL	L
PDW	14.8		L
PCT	0.031	%	L



3 yo Thai female with high fevers and severe falciparum malaria, improved on IV artesunate but still spiking fevers to 103°F on day 2



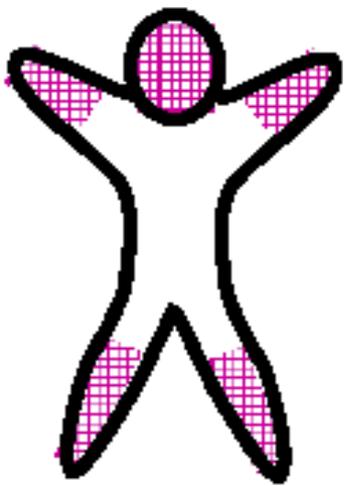
Varicella



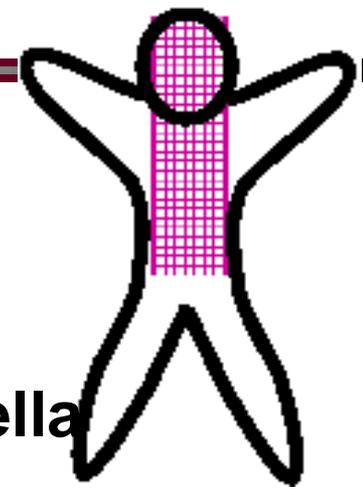


Variola (Smallpox)





Variola vs. Varicella



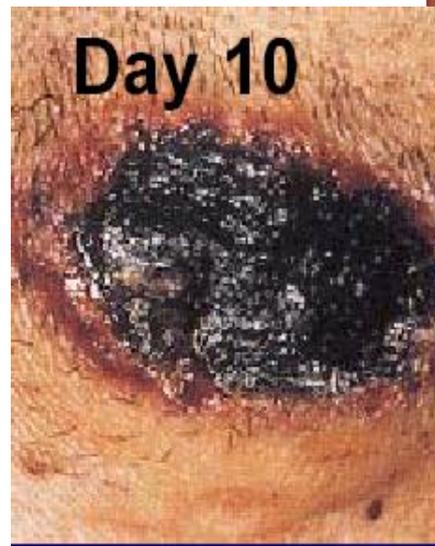
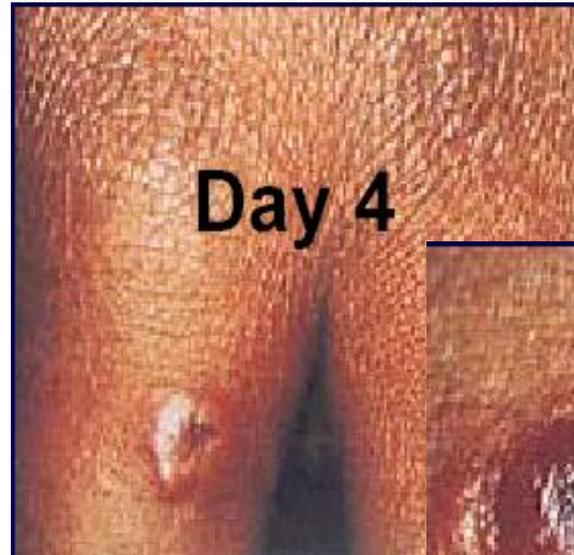
	Variola	Varicella
Incubation	10-14 days	14-21 days
Prodrome	Severe	Minimal
Distribution	Centrifugal, Convex	Centripetal, Concave
Evolution	Synchronous	Asynchronous
Crust forms	10-14 days	4-7 days
Crust detaches	14-28 days	<14 days
Infective until	Eschars detach	Lesions crust



Cutaneous Anthrax

Clinical Progression

- Painless, pruritic papule
- Juicy papule
- Bulla (48 hours)
- Bulla ruptures/early ulcer
- Eschar with raised border
- ‘Jet black’ eschar
- Minimal scarring



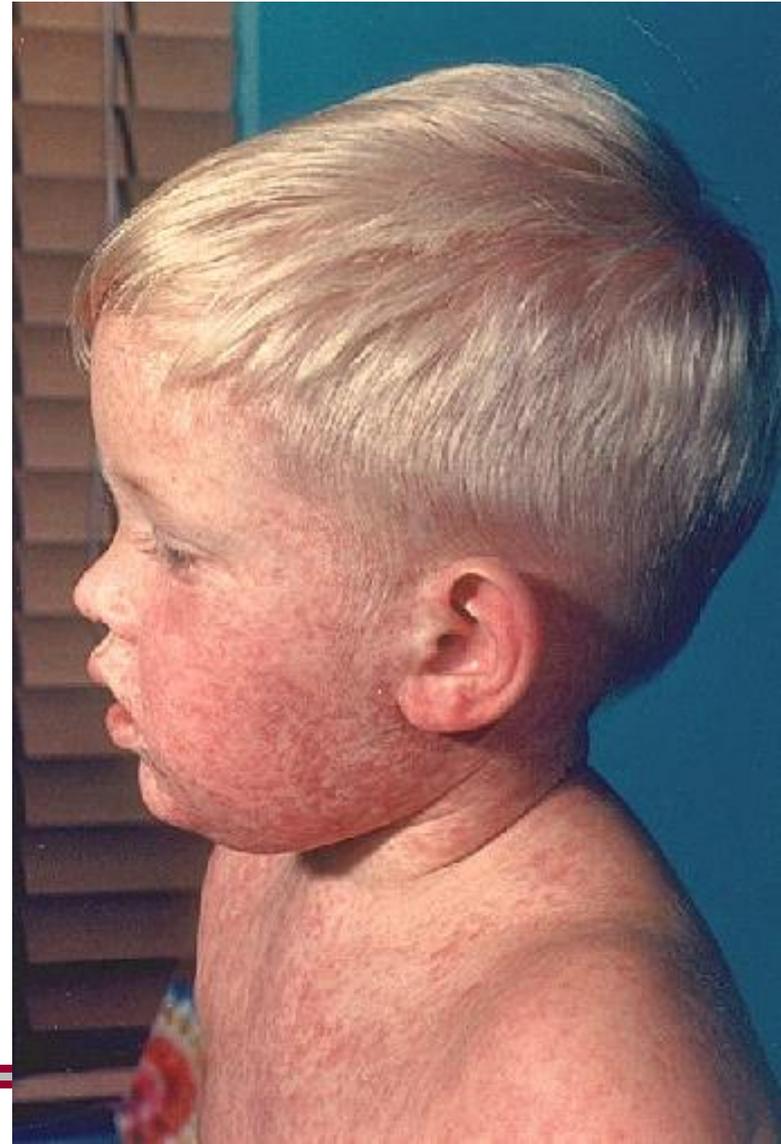
Orf



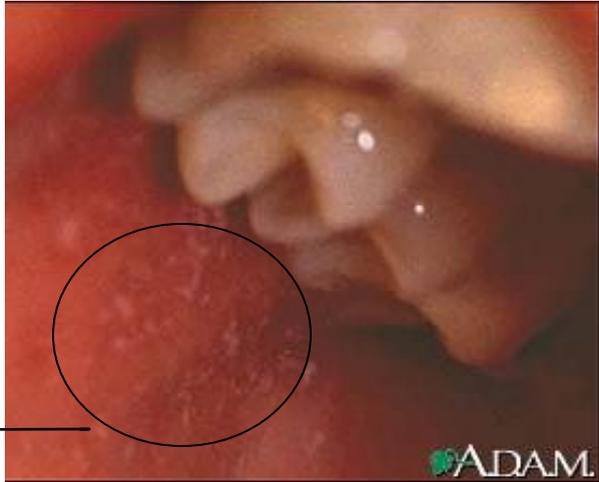
- Ecthyma contagiosum
- Acquired from direct contact with lambs, calves, or goats
- Spontaneous resolution

Measles (Rubeola)

- Rarely seen among vaccinated
- Major **killer** in developing world
- Spread by respiratory route
- Incubation 9-12 days
- Immunization highly effective



Measles (Rubeola)

- Prodrome: high fever, malaise, URI
 - Rash begins in hairline of neck/face, then moves down
 - Exudative conjunctivitis
 - Photophobia
 - Severe bark-like cough
 - Koplik's spots on buccal mucosa
- 
- Classic presentation: Cough, coryza, conjunctivitis, rash, & high fever
 - These children look sick

Supportive treatment



Skin lesions in returned travellers (n=4742)

- Cut. larva migrans 9.8%
- Insect bite 8.2%
- Skin abscess 7.7%
- Infected insect bite 6.8%
- Allergic rash 5.5%
- Rash, Unknown 5.5%
- Dog bite 4.3%
- Superficial fungal 4.0%
- Dengue 3.4%
- Leishmaniasis 3.3%
- Myiasis 2.7%
- Spotted fever 1.5%
- Scabies 1.5%



Questions?

