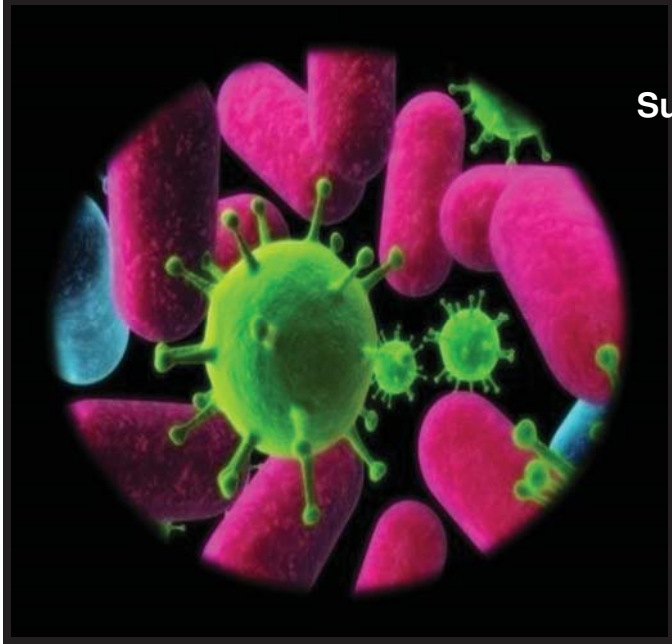
Treating Infectious diseases in practise



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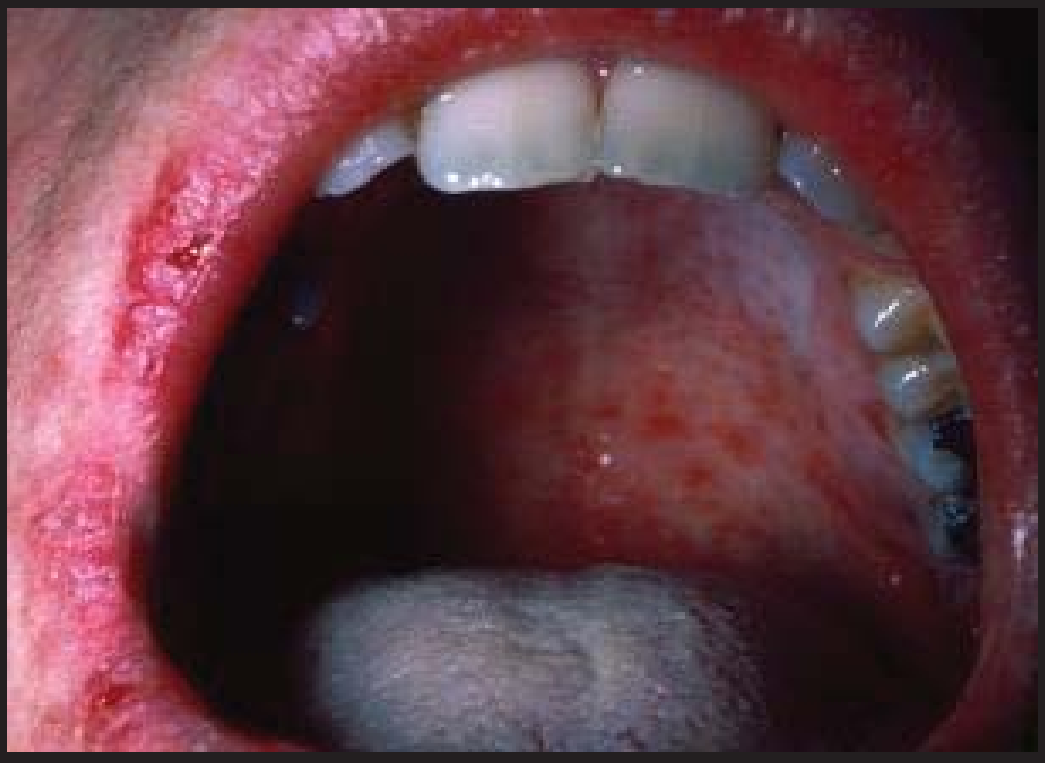
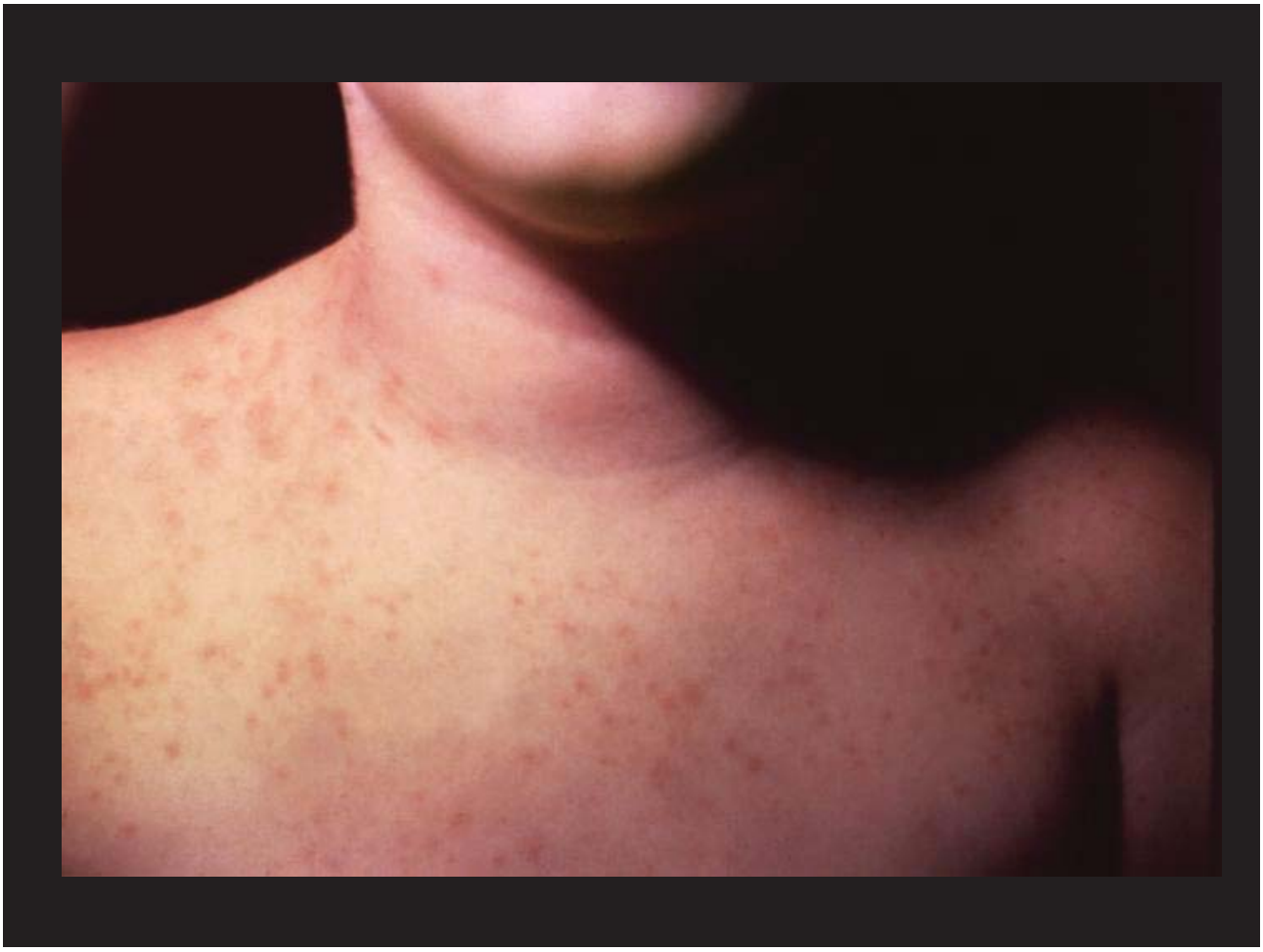
Mr S, 29 years old, Male Caucasian, School teacher - grade 11, Math's, Limpopo province

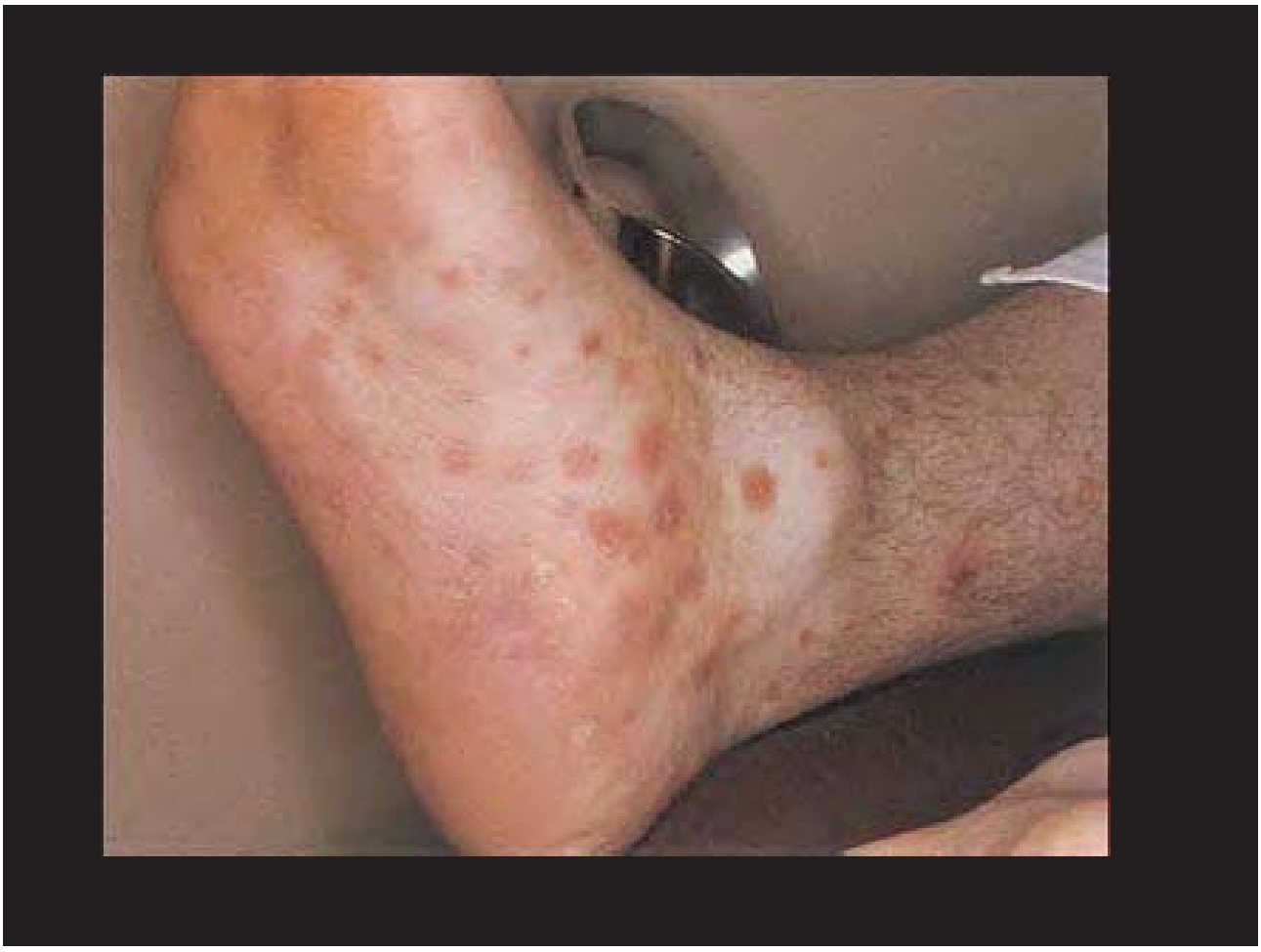
Admitted to hospital on 3 August 2011
Travel history: Botswana 3 weeks ago
Lives on small holding outside Polokane
No clear insect bites or contacts – have dogs and cattle
Took Brufen for headache, had 15 capsules of antibiotics left in the house do not know what??
Hobbies: Hiking, Fishing, Canoeing

Complaints started 5 days before

- Chills, Fever
- Arthralgias
- Dry cough
- Diarrhea
- Headache
- Skin rash Maculopapular whole body
  - Started on shoulders day before admission
  - Palm of hands affected bilateral
  - Dorsum of feet bilateral
  - Itching and increasing to cover the whole body







Examination

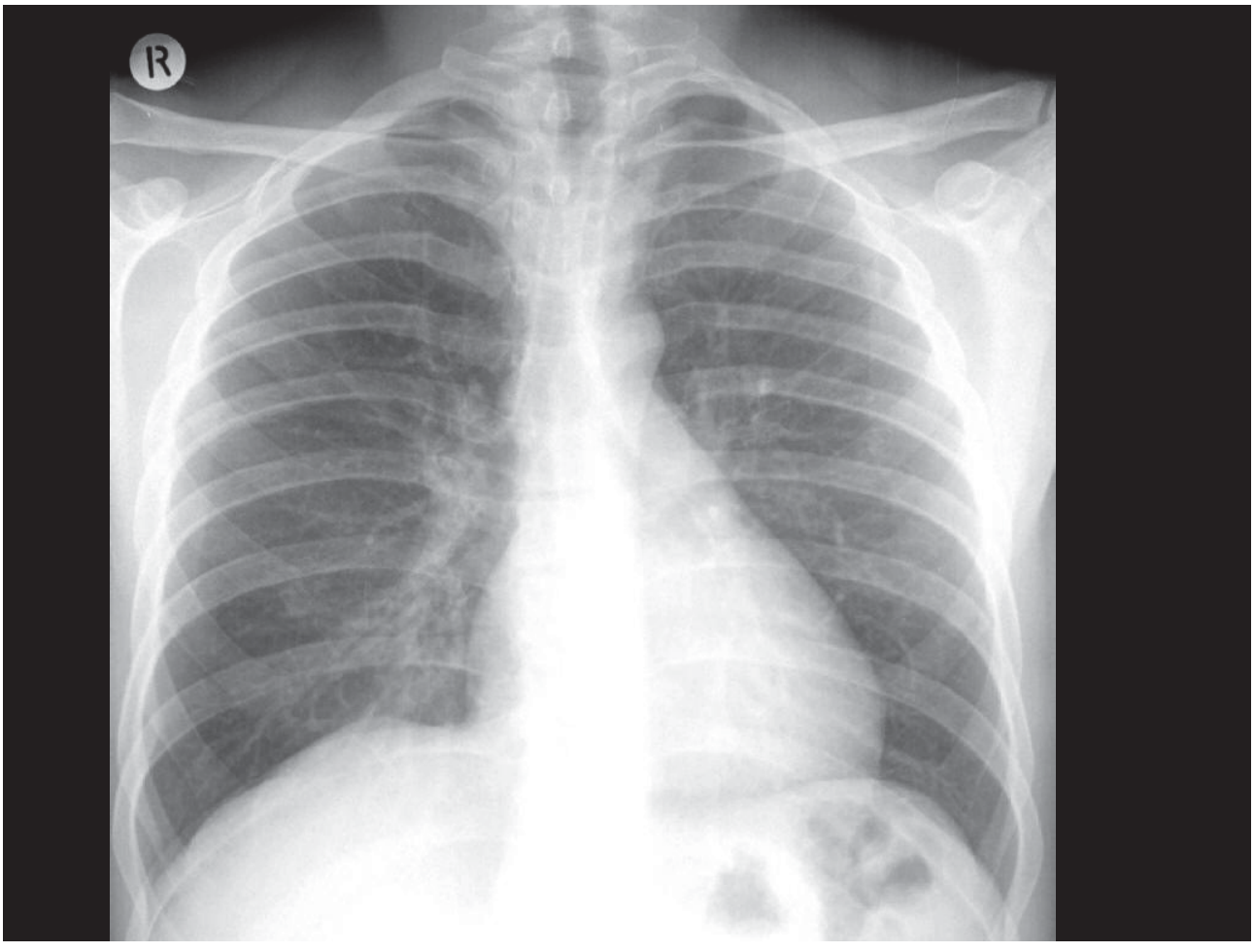
- BP - 100/60 mmHg
- Pulse - 138/min
- Temperature – 38.9 degrees Celsius
- General lymphadenopathy
- Urine examination clear

Examination

- Respiratory:
  - Diffuse – Crackles, No consolidation
- Cardiovascular:
  - No Para-sternal heave, Loud P2
- Abdomen:
  - Non Tender, no hepatospenomegaly
- Central nervous system:
  - Neck stiffness present
- Skin:
  - Itchy rash, present on hands
- Ear nose throat:
  - Several mouth ulcerations ,Tonsils enlarged no pus

Special investigations

- CXR: see attached
- FBC: Low platelets, Eosinophilia
- Blood cultures: Negative
- LP: Protein normal, Glucose Normal, No cells, Capsular Ag none, Cryptococcus negative (Indian ink and latex Ag test)
- HIV: negative (ELISA)



What is the most possible diagnosis?

Approach to fever and a rash

(Questions to keep in mind)

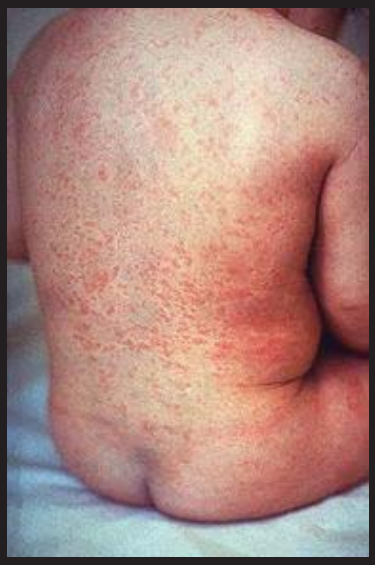
- Age of the patient
- Season of the year
- Travel history
- Geographic location
- Exposures including to insects, animals, and ill contacts
- Medications
- Immunizations and history of childhood illnesses
- The immune state of the host

Features of the rash:

- Characteristics of the lesions
- Distribution and progression of the rash
- Timing of the onset in relation to fever
- Progression, if any, of the lesions such as papules to vesicles or petechiae

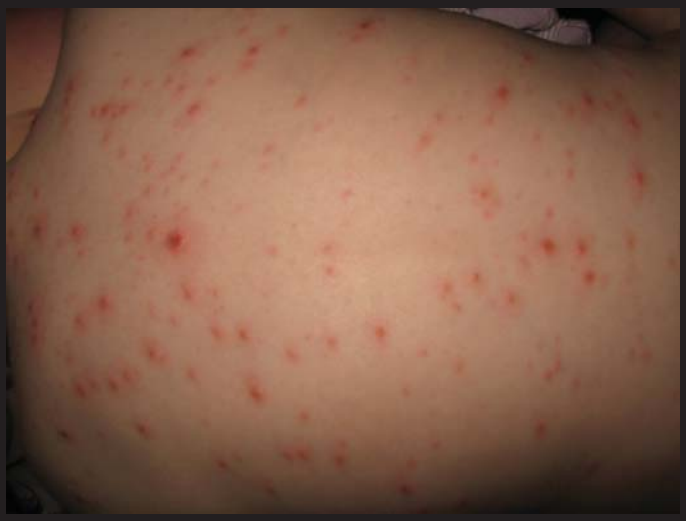
Macule

- — Nonpalpable, circumscribed lesion that is flat and less than 1 cm in diameter



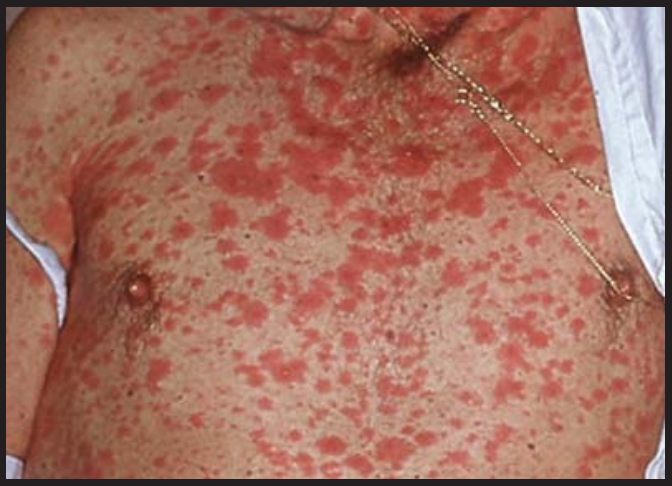
Papule

- — Palpable lesion that is solid, elevated, and less than 1 cm in diameter



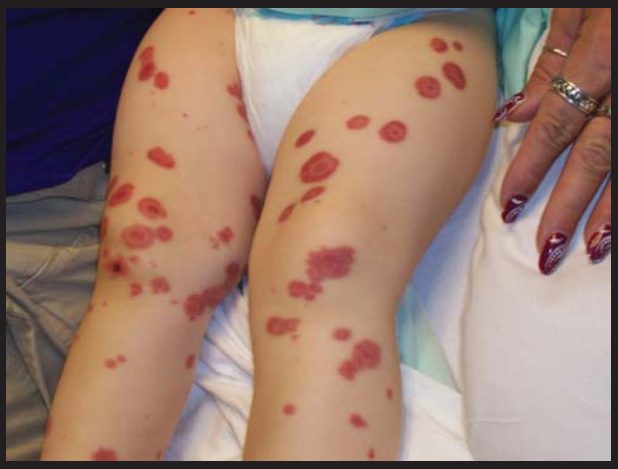
Maculopapular

- — Confluent, erythematous rash made up of both macular and papular lesions.



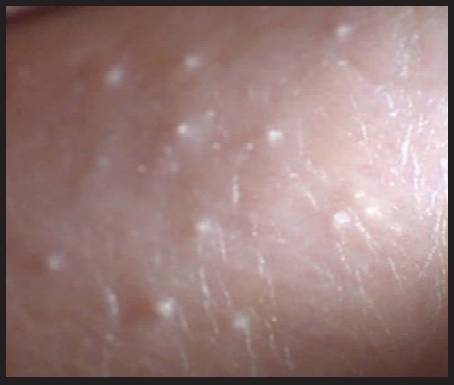
Purpura

- — Papular or macular nonblanching lesions that are due to extravasation of red blood cells



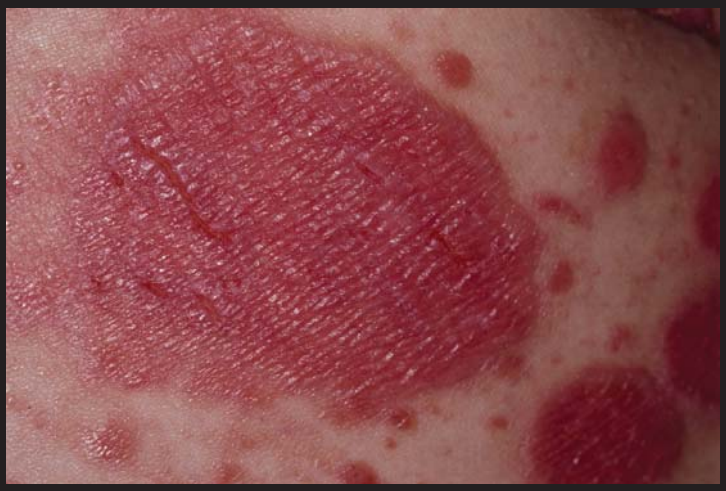
Nodule

- — Deep-seated, roundish lesion less than 1.5 cm in diameter that can involve the epidermal, dermal, and/or subcutaneous tissue



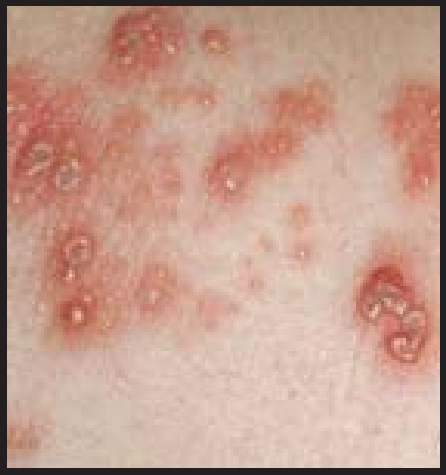
Plaque

- — A palpable elevated lesion greater than 1 cm in diameter



Vesicle

- — A distinct, elevated skin lesion that contains fluid and is less than 1 cm in diameter



What non infective causes will give you a rash?

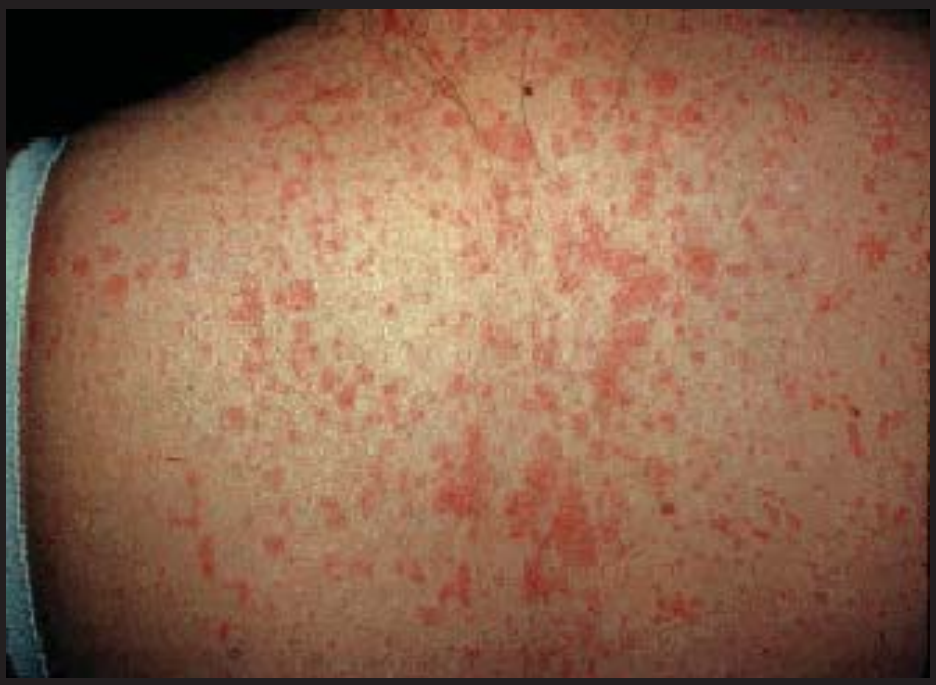
- Deep venous thrombosis
- Drug reactions
- Gouty arthritis
- Cutaneous lupus erythematosus
- Erythema nodosum

Selected diseases that present in adulthood

Selected diseases that present in adulthood

Measles

- Rubeola is associated with a blanching erythematous "brick-red" maculopapular rash
- Beginning in the head and neck area and spreading centrifugally to the trunk and extremities
- Patients also complain of fever, cough, coryza, and conjunctivitis.



Blanching erythematous rash with some confluent areas on the trunk in a patient with measles.

Infectious mononucleosis

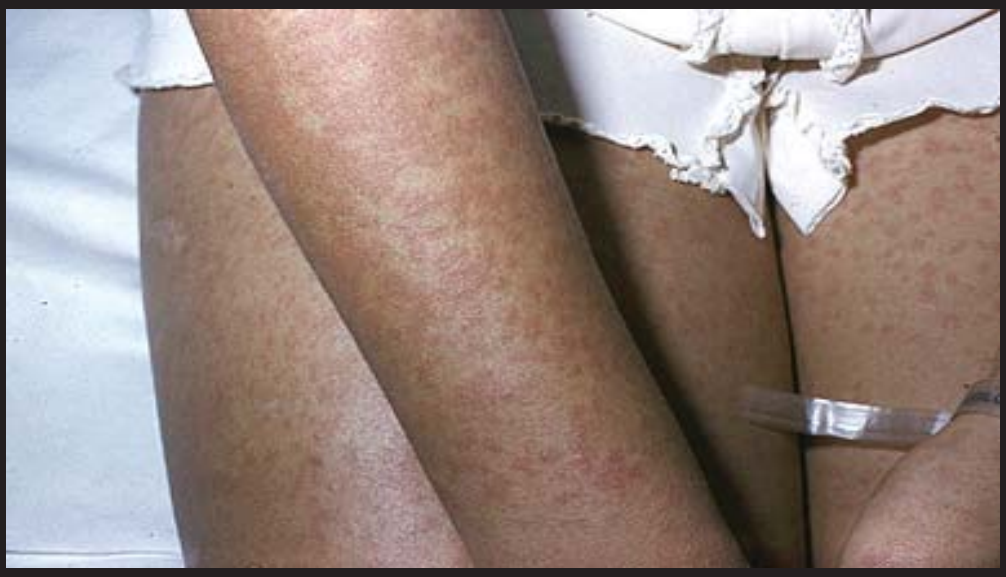
Adults presents with:

- fever, malaise, sweats, anorexia, nausea, chills, sore throat, posterior cervical lymphadenopathy, splenomegaly

Maculopapular rash, especially after the administration of ampicillin

Evaluation for Epstein-Barr virus (EBV)

The rash is usually over the trunk but can involve the extremities, including the hands and feet

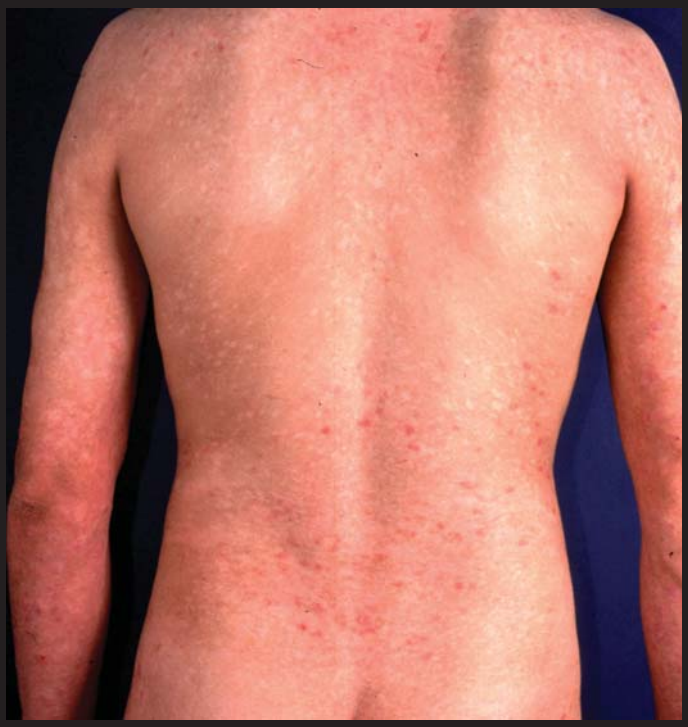


Generalized, erythematous, maculopapular eruption is often seen in patients with infectious mononucleosis after the administration of ampicillin

Cytomegalovirus

Cytomegalovirus should be considered in the heterophile antibody-negative patient with infectious mononucleosis

Lymphadenopathy and pharyngitis may not be prominent



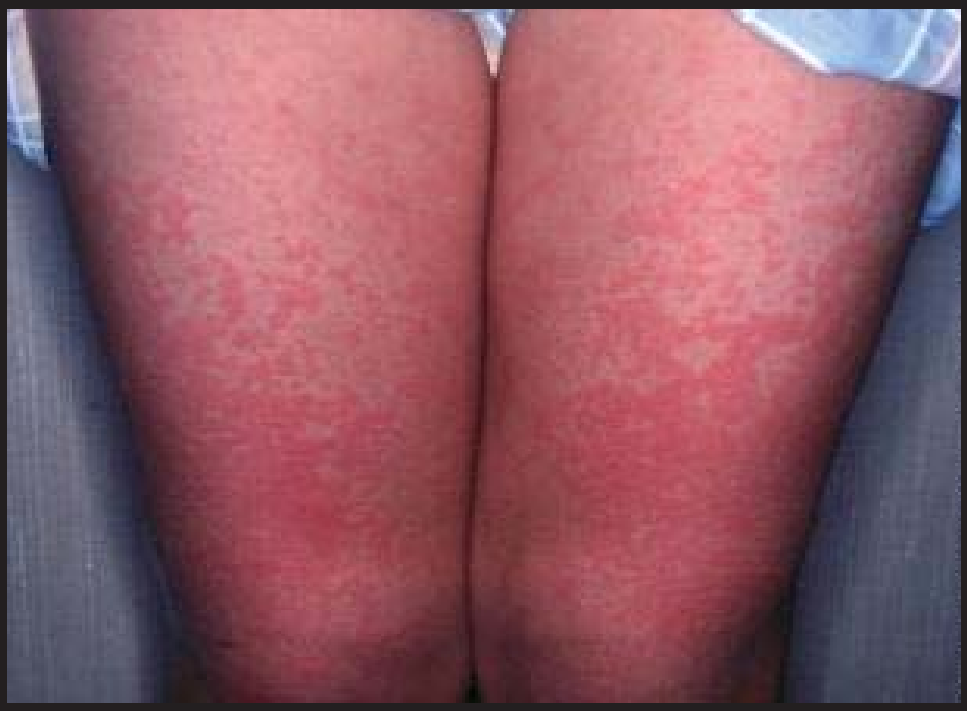
Generalized, erythematous, maculopapular eruption is often seen

Erythema infectiosium

Approximately 20 percent of cases of erythema infectiosium occur in adults

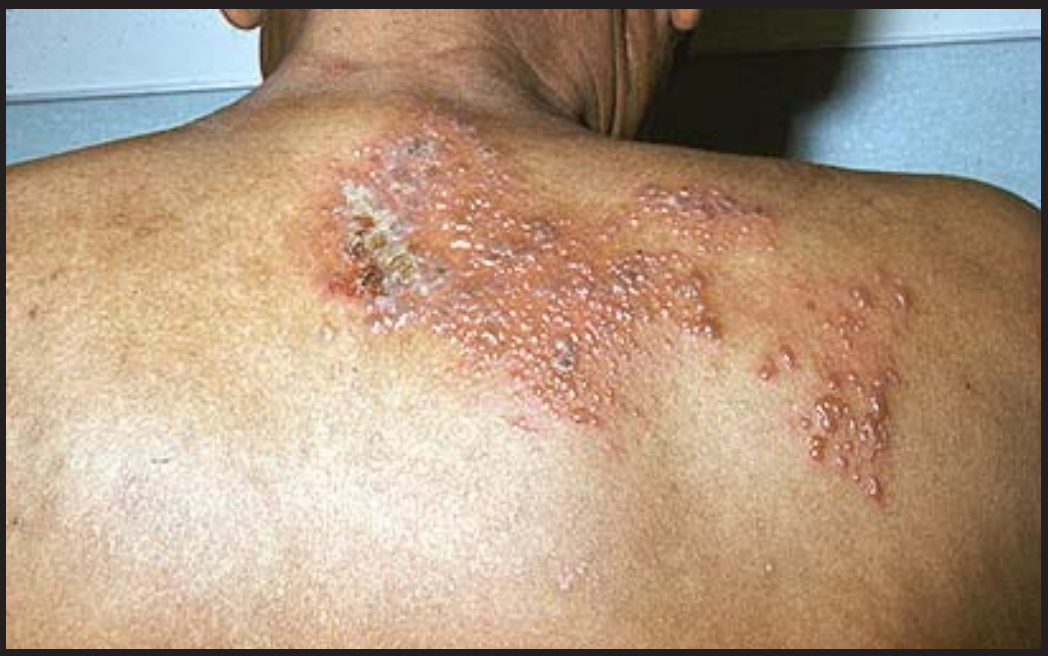
Constitutional symptoms are more pronounced in adults and typically include

- Lymphadenopathhy, arthritis, and fever

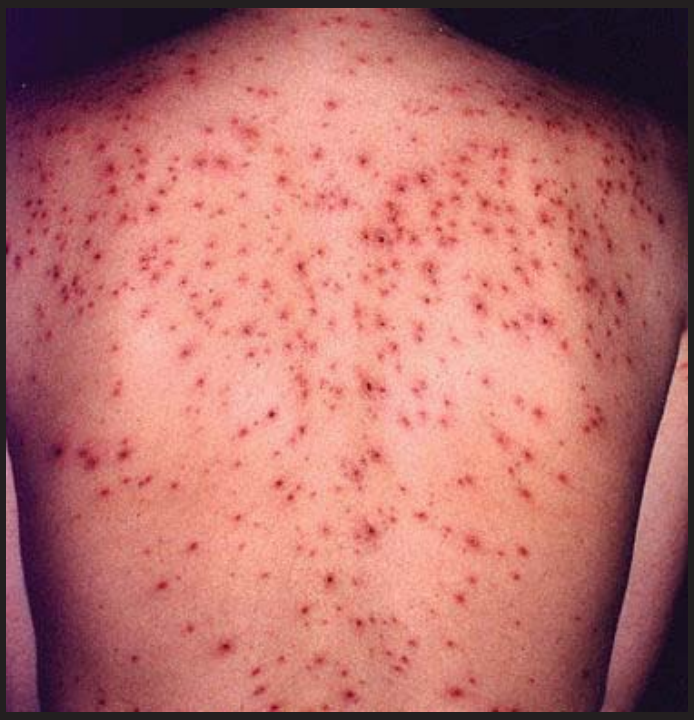


First macular and then lacy and reticulated, spreading initially from the limbs to the trunk and buttocks

Herpes Zoster(Shingles)
Variacella Zoster (chickenpox)



Grouped vesicles on an erythematous base present in a dermatomal distribution on the upper back due to Herpes zoster. The lesions stop abruptly at the midline

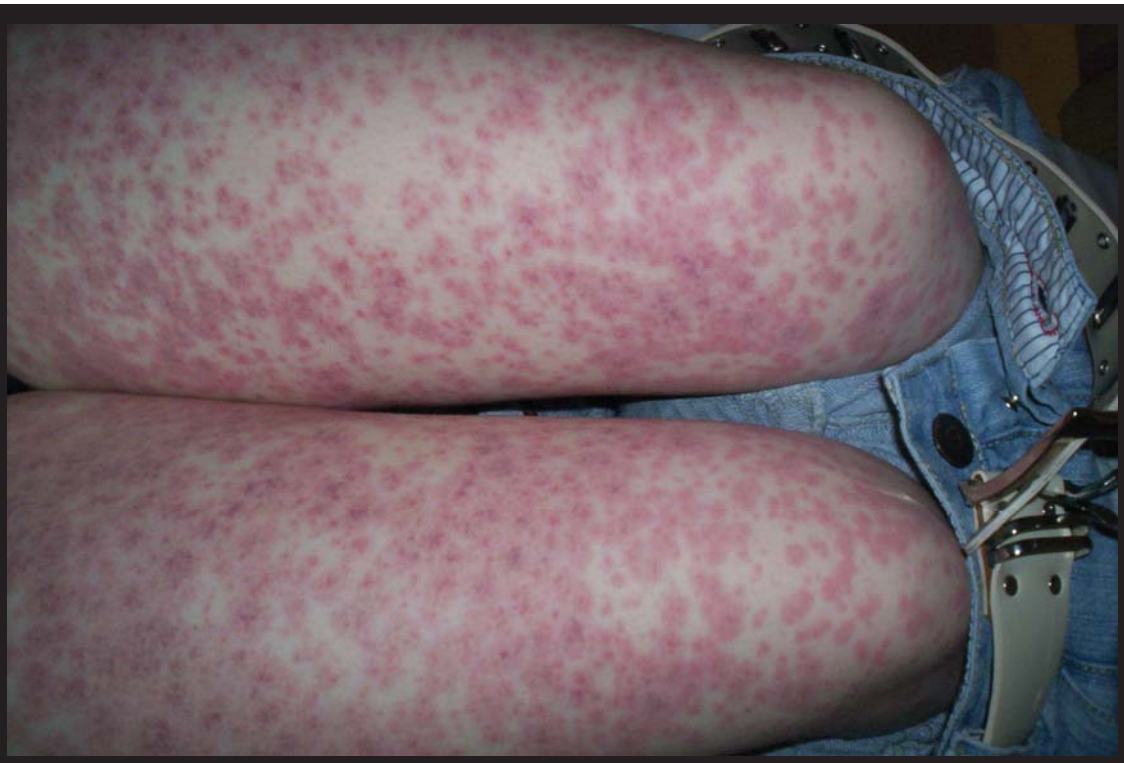


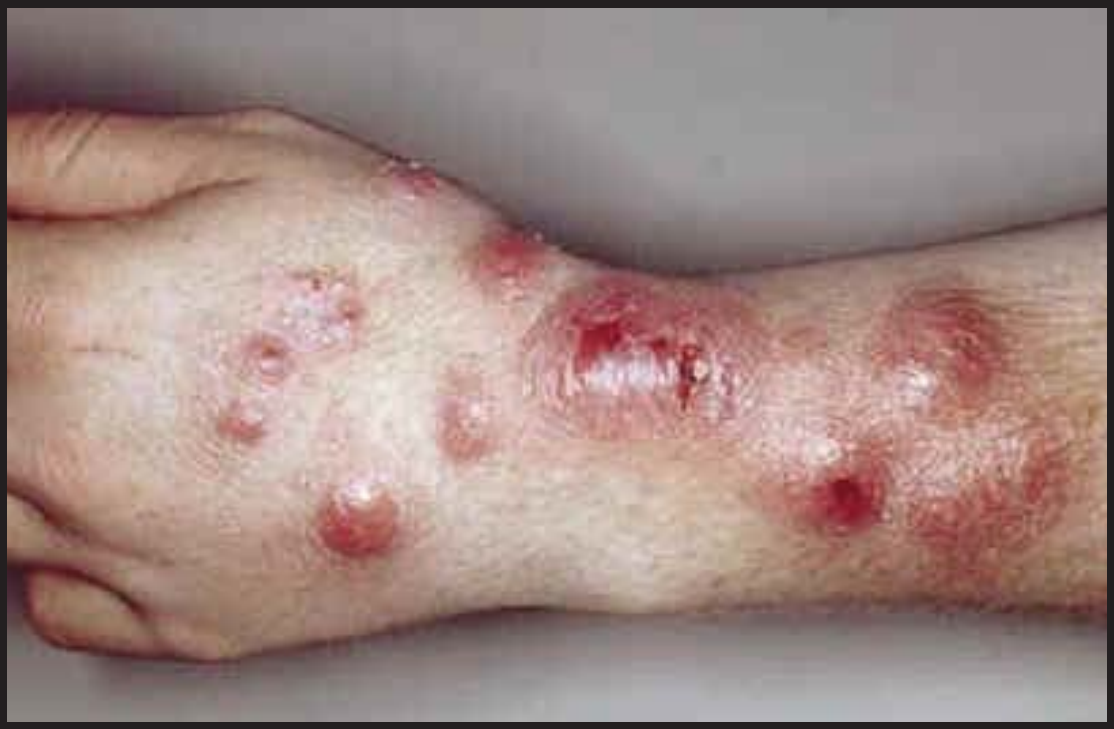
Mycoplasma pneumoniae

Dermatologic manifestations may range from a mild erythematous maculopapular or vesicular rash to Steven Johnson syndrome

- most commonly seen accompanying respiratory tract infections

16 percent of patients with Stevens-Johnson syndrome had evidence of mycoplasma infection





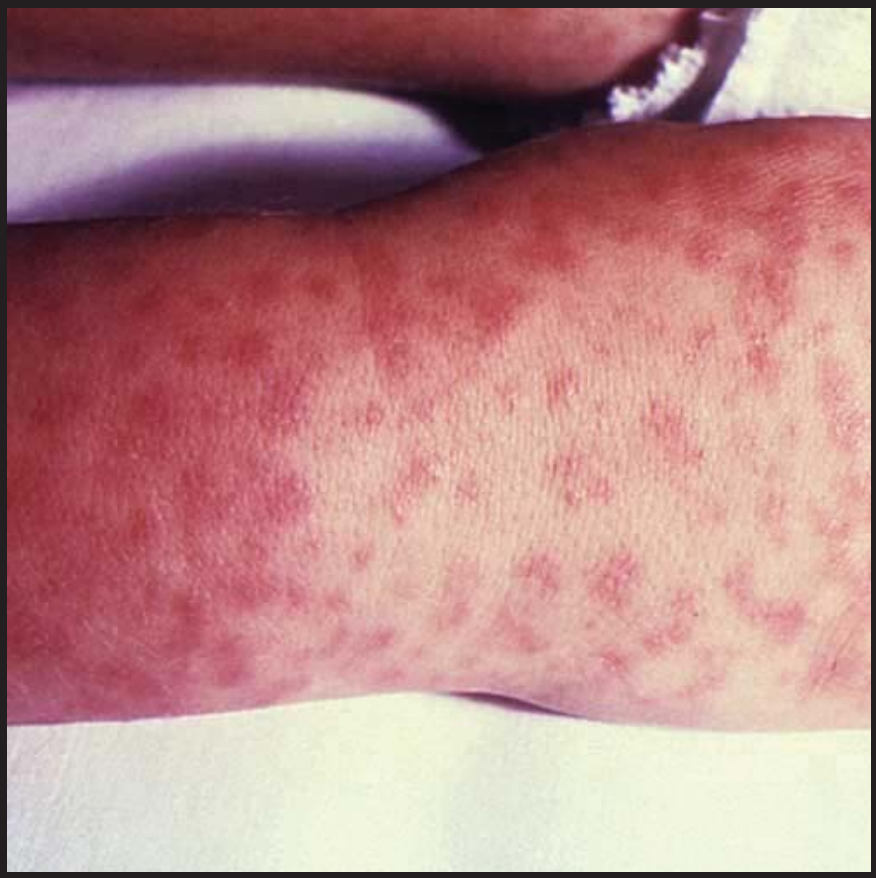
Rickettsia (Spotted Fever Group)

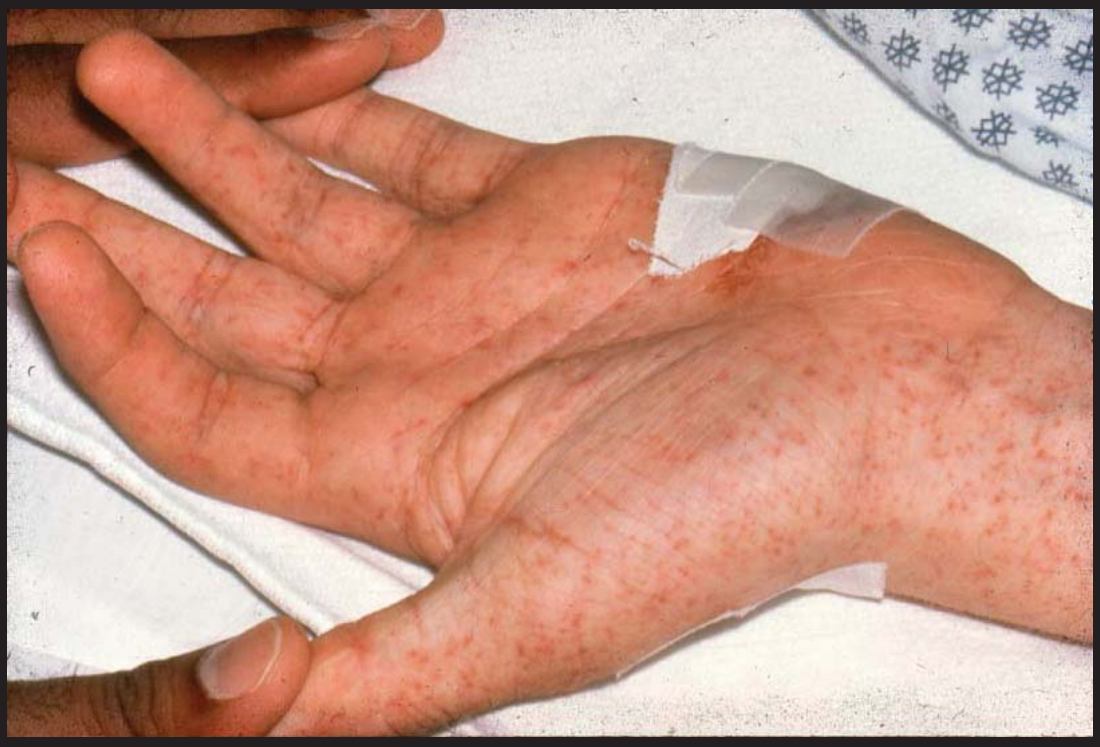
All SFG rickettsial infections cause fever, headache, and intense myalgias

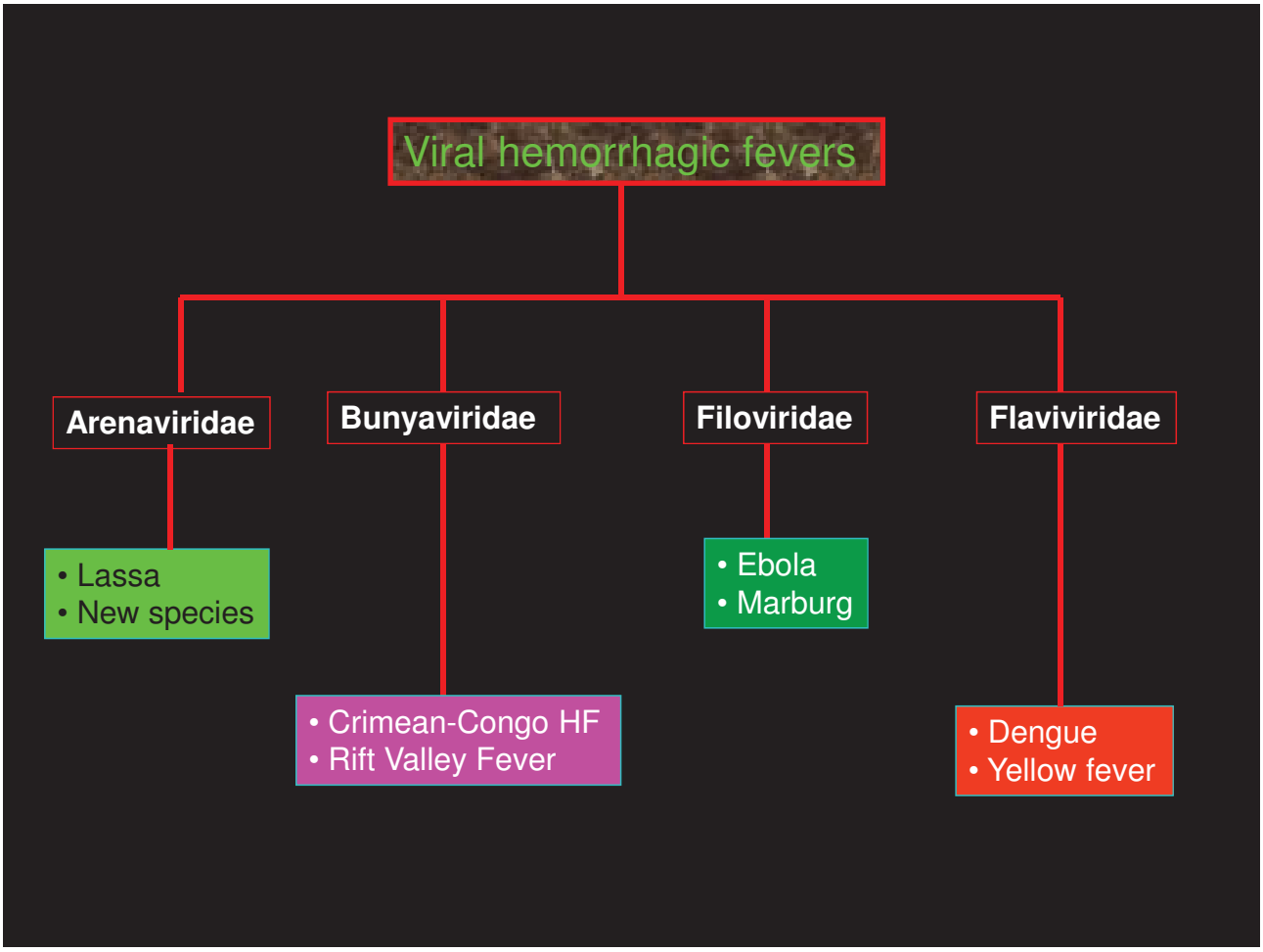
All SFG rickettsial infections are arthropod-borne

- known or potential exposure to ticks or mites is an important clue to their early diagnosis.

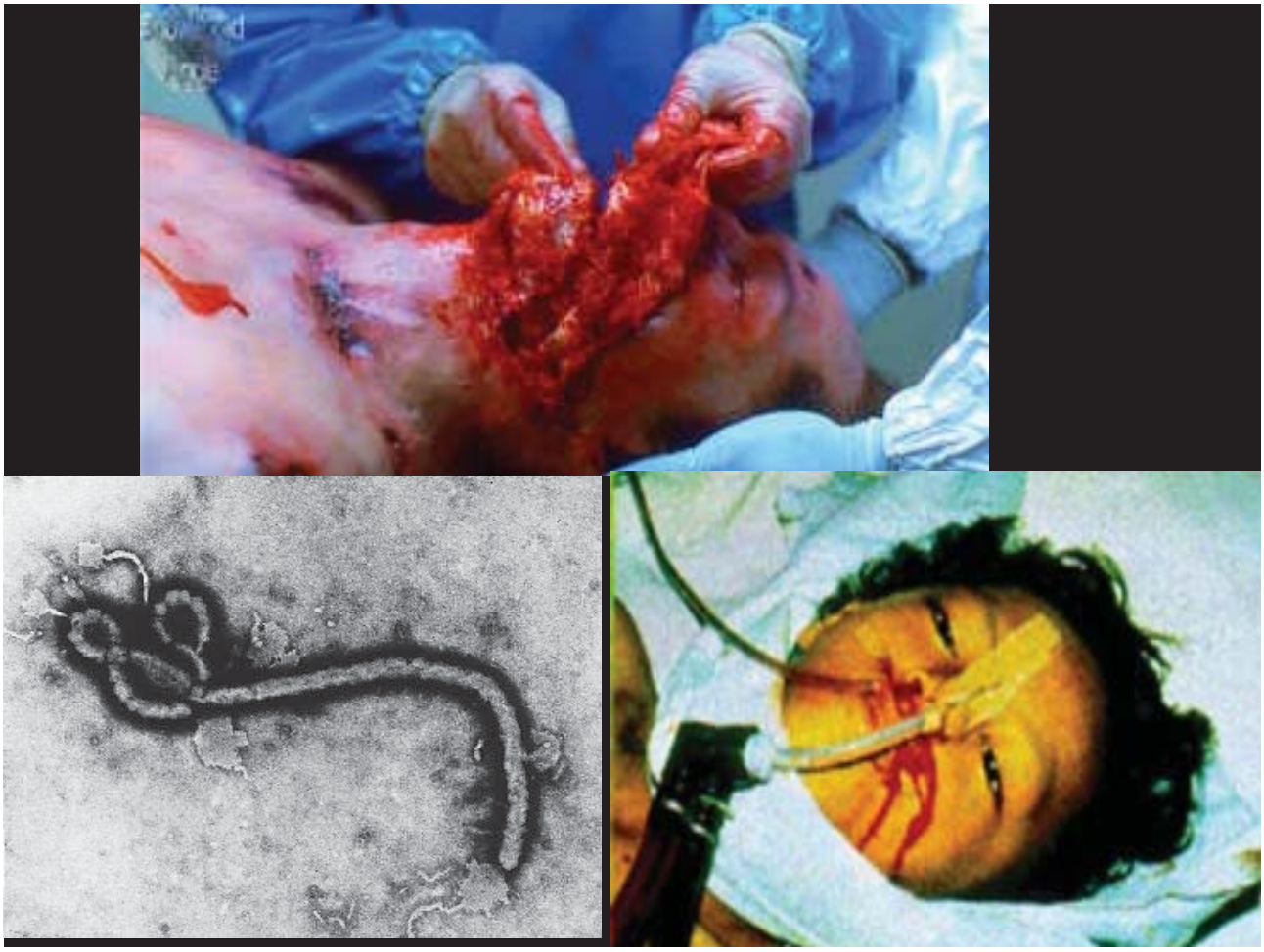
Rash and/or a localized eschar (tache noire) occur in most, but not every, patient infected with SFG rickettsiae.






Viral hemorrhagic fevers
Arenaviridae
Bunyaviridae
Filoviridae
Flaviviridae
• Lassa
• New species
• Crimean-Congo HF
• Rift Valley Fever
• Ebola
• Marburg
• Dengue
• Yellow fever


Ebola is still limited to parts of Africa
A hemorrhagic rash appears over entire body



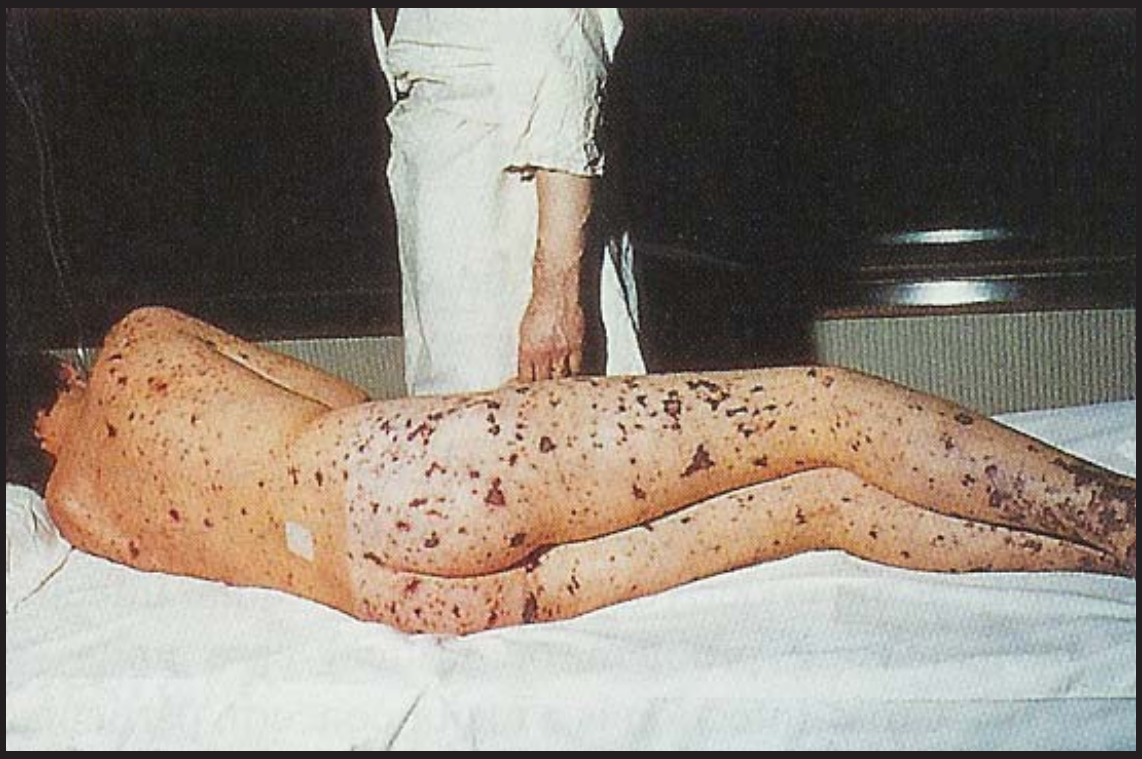
Meningococcal infection

It exists as normal flora in the nasopharynx of up to 40% of adults

Spread is through the exchange of

- saliva and other respiratory secretions during coughing, kissing, and chewing on toys

Petechiae or purpura occurs from the first to the third day of illness in 30 to 60% of patients with meningococcal disease



Season of the year

Seasonal diseases

Nonpolio enteroviral infections occur in the summer and fall months

Kawasaki syndrome, meningococcal infection, and parvoviral infections present most commonly in the winter or early spring months

Measles and rubella are more frequent in the spring

Seasonal diseases

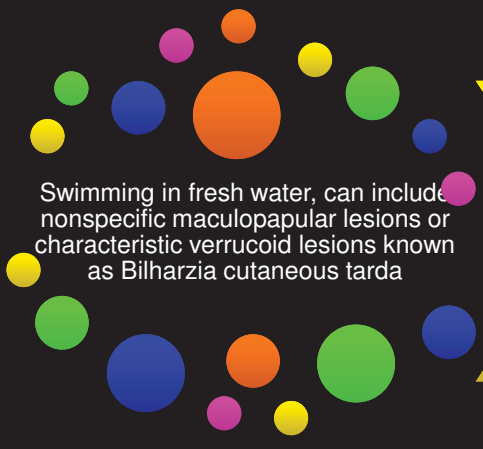
Tick-borne diseases such as Ricketsia primarily occur in the spring and summer;

Tularemia and plague are usually seen in the summer

Vibrio vulnificus-associated wound infections can occur after injury to skin in contaminated water (eg, after natural disasters)

Geography

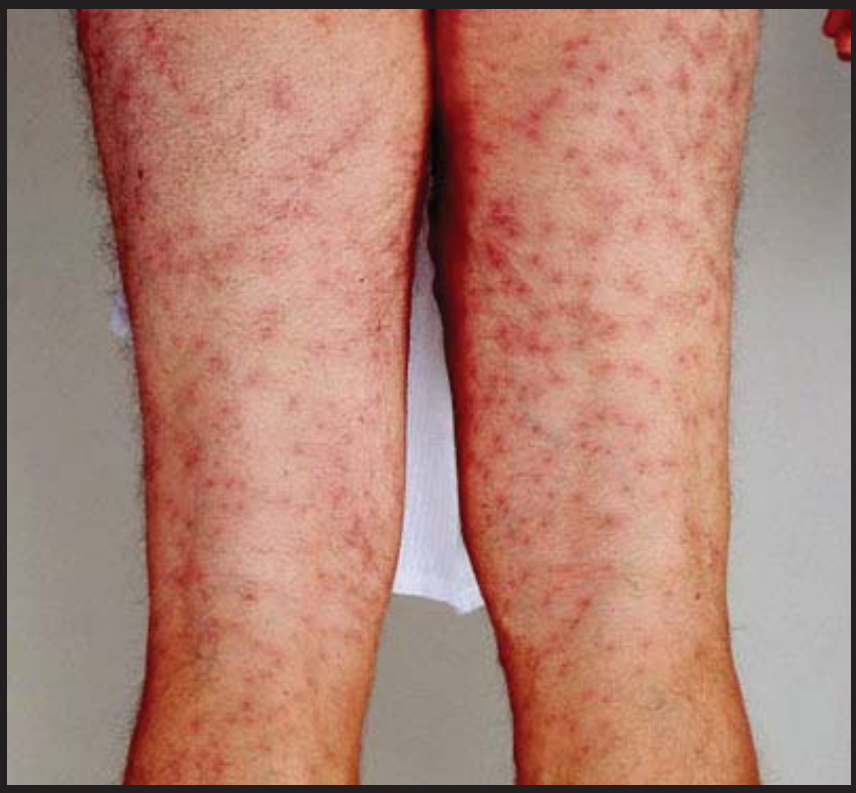
Schistosomiasis



Swimming in fresh water, can include nonspecific maculopapular lesions or characteristic verrucoid lesions known as Bilharzia cutaneous tarda

Species infecting humans include:

- *Schistosoma haematobium* (Africa, Middle East),
- *S. mansoni* (Africa, Middle East, South America)
- *S. japonicum* (eastern Asia)

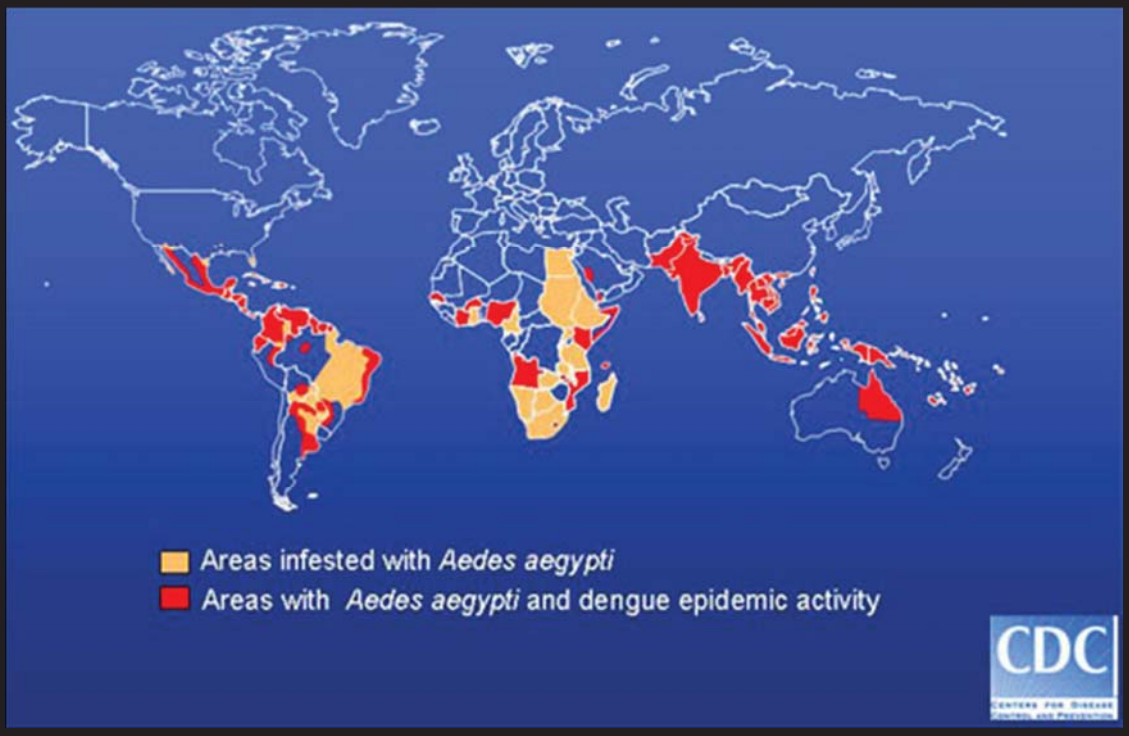


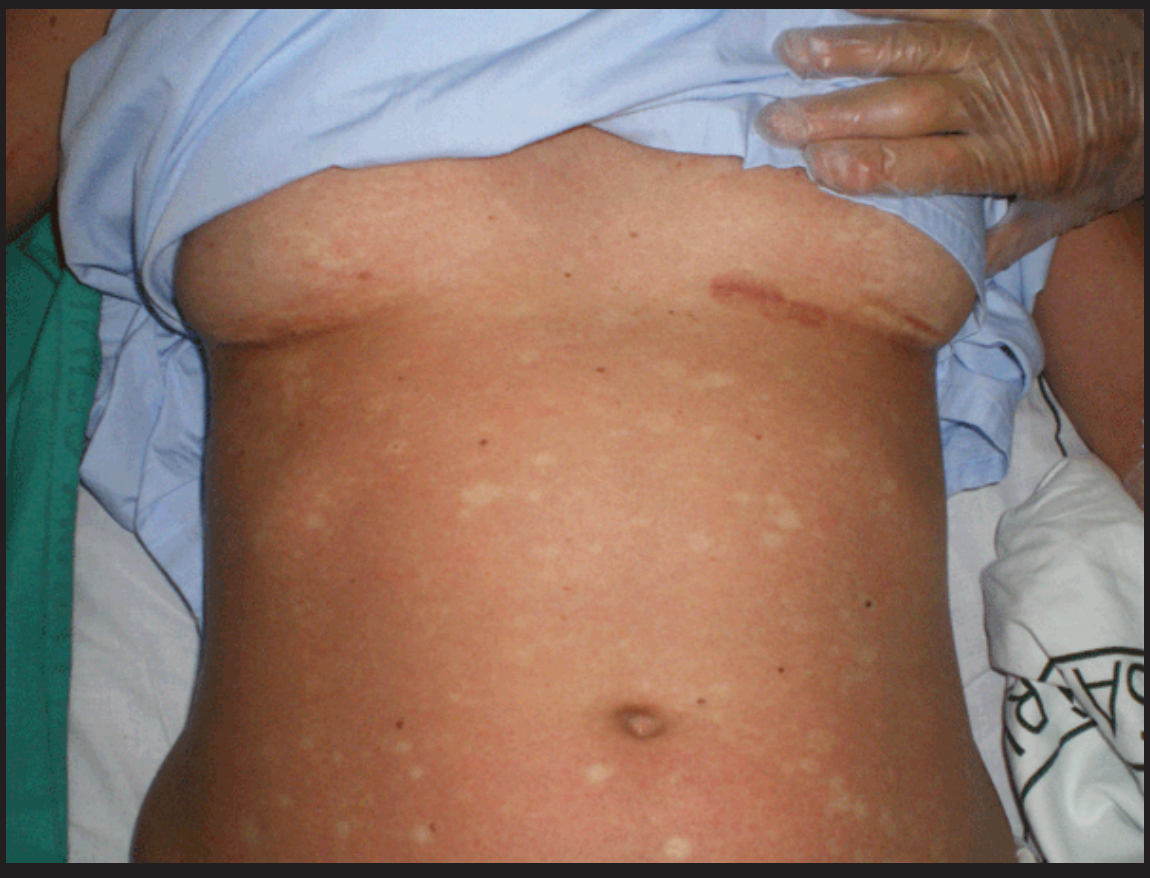
Dengue fever

Aedes aegypti mosquito, inhabits nearly all tropical latitudes

Skin manifestations can include:

- Transient macular rash early in the infection
- Generalized morbilliform-like rash sparing the palms and soles when fever resolves on approximately day five.
- Petechiae, purpura, and ecchymoses are more likely to be seen in dengue hemorrhagic fever


Areas infested with *Aedes aegypti*
Areas with *Aedes aegypti* and dengue epidemic activity
CDC

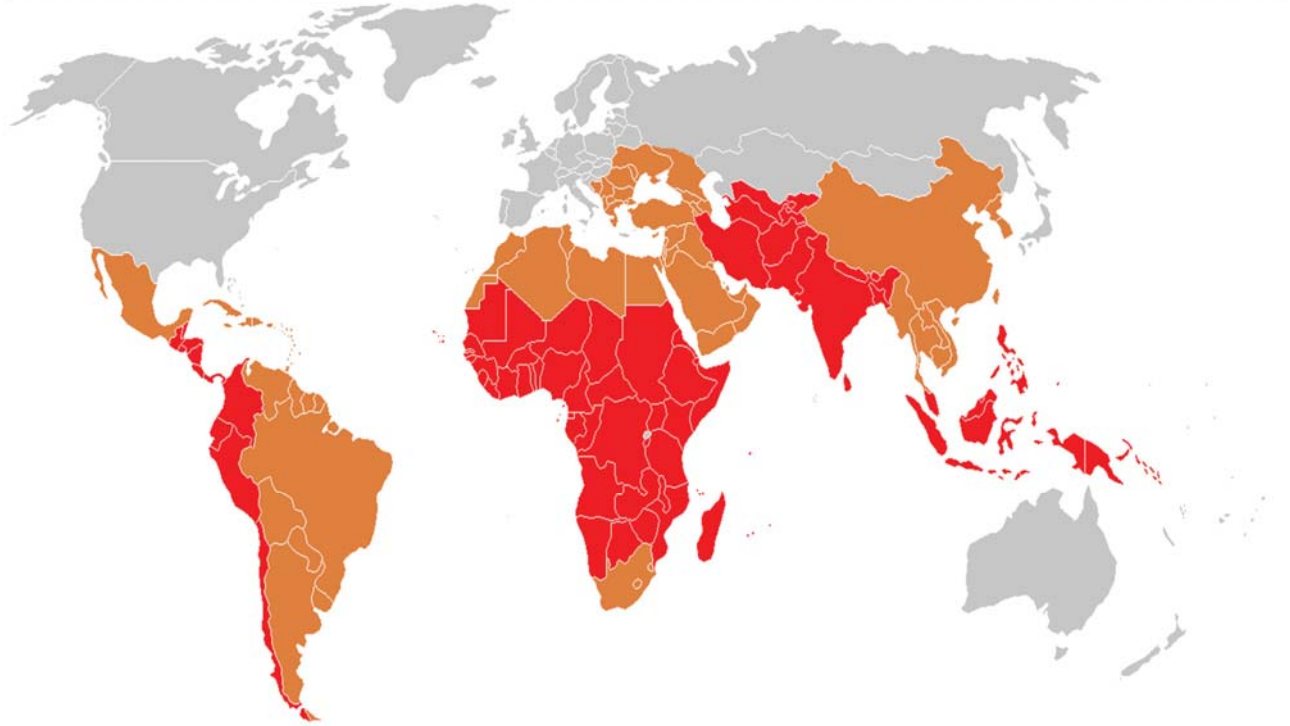


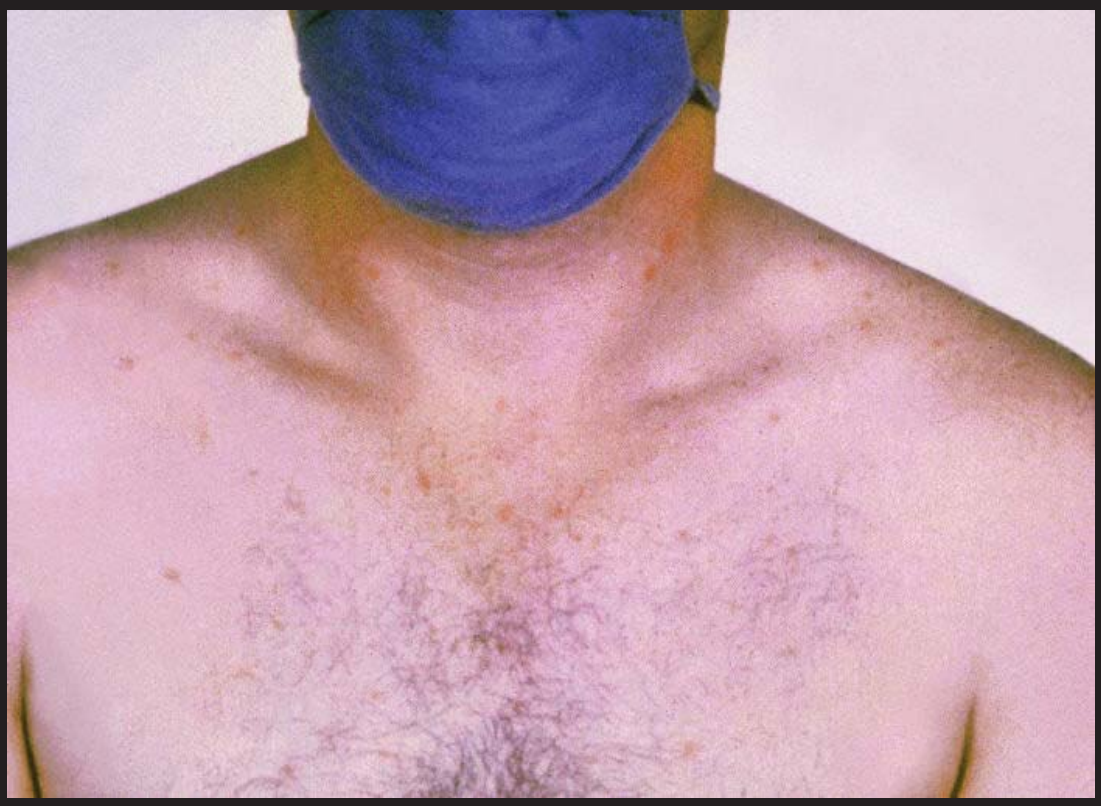
Typhoid fever

Typhoid fever can occur in travelers to endemic areas like Mexico, India and Africa who ingest food or water contaminated by fecal matter

The skin manifestations are:

- small, blanching papules called rose spots,
- usually found on the trunk,
- typically arise in the second week of infection and fade within several days





Incubation period

Incubation time

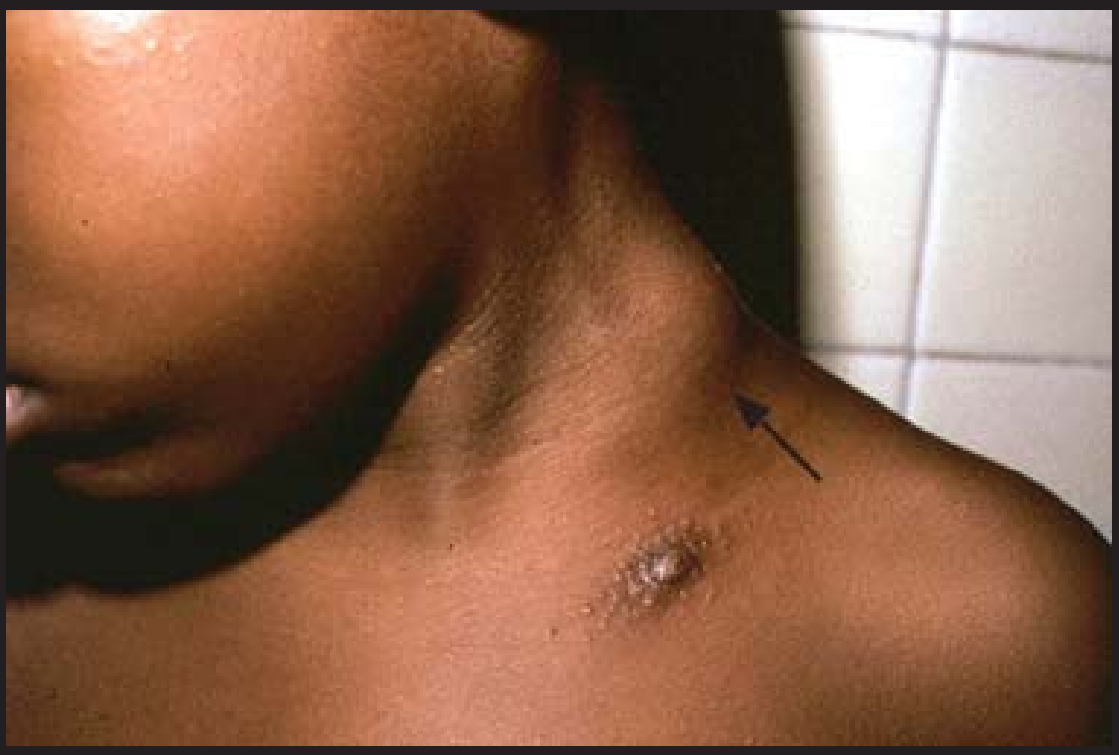
Blastomyces dermatitidis	30-45 days
Boutonneuse fever (Rickettsia conorii)	6-10 days
Cat scratch disease	7-14 days
Chancroid	1-35 days
Chickenpox	10-20 days
Chlamydia psittaci	5-21 days
Coccidioides immitis	7-21 days
Coxsackie/echovirus	2-9 days
Cutaneous larva migrans	2-4 days
Dengue	3-14 days
Disseminated gonococcal infection	5 days - several months
Ehrlichiosis	7-21 days
Escherichia coli 0157:H7	3-8 days
Epstein-Barr virus (mononucleosis)	30-50 days
Gnathostomiasis	3-12 months
Granuloma inguinale	8-80 days
Hepatitis B	45-160 days
Hepatitis C	14-180 days
Herpes simplex (genital)	2-7 days
Human immunodeficiency virus (HIV)	28-180 days
Kawasaki syndrome	Unknown
Leishmaniasis	14-56 days
Loiasis	6-12 months
Lyme disease	3-30 days
Lymphogranuloma venerum (LGV)	3-21 days
Mycobacterium leprae	>1 year
Mycobacterium marinum	14-56 days

Incubation time

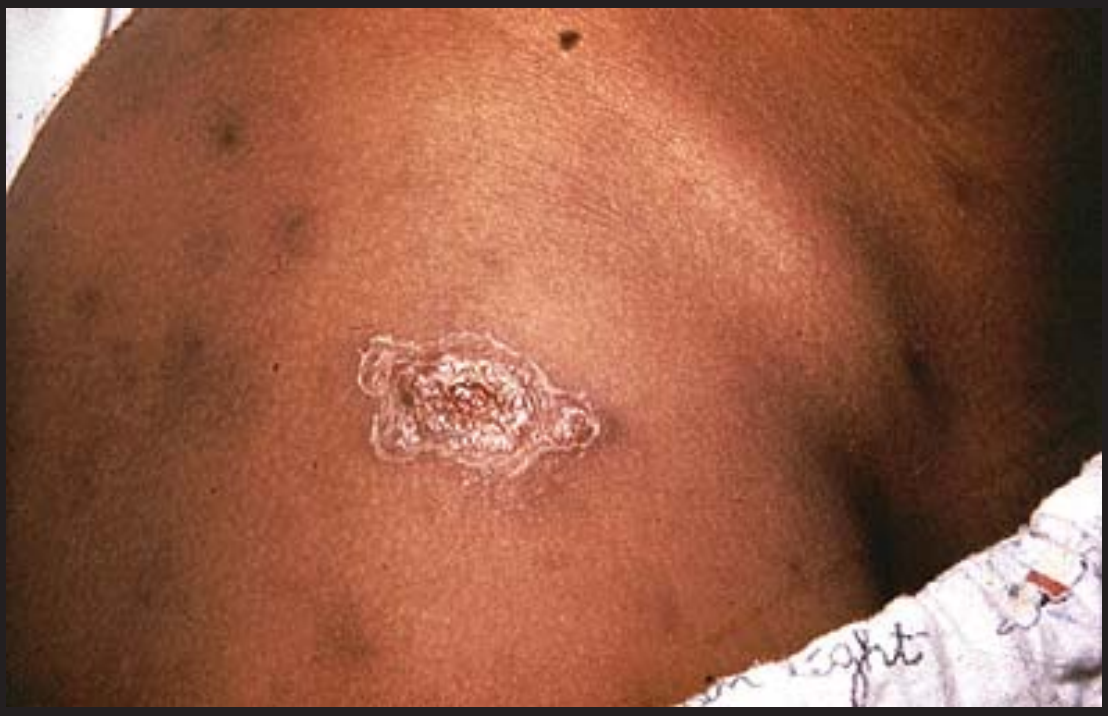
Neisseria meningitidis	1-10 days
Onchocerciasis	6-12 months
Parvovirus B19	7-21 days
Reiter's syndrome	7-14 days
Relapsing fever	4-18 days
Rheumatic fever	7-35 days
Rickettsialpox, Rickettsia akari	10-14 days
Rocky Mountain spotted fever, Rickettsia rickettsii	2-14 days
Roseola infantum	5-15 days
Rubella	5-21 days
Rubeola	10-14 days
Salmonella typhi (enteric fever)	3-60 days
Spirillum minus	7-24 days
Sporothrix schenckii	7-30 days
Staphylococcal toxic shock syndrome	2 days
Streptobacillus moniliformis	3-22 days
Syphilis	9-90 days
Toxoplasma gondii	4-21 days
Trypanosoma cruzi	5-14 days
Tularemia	1-21 days

Exposure history

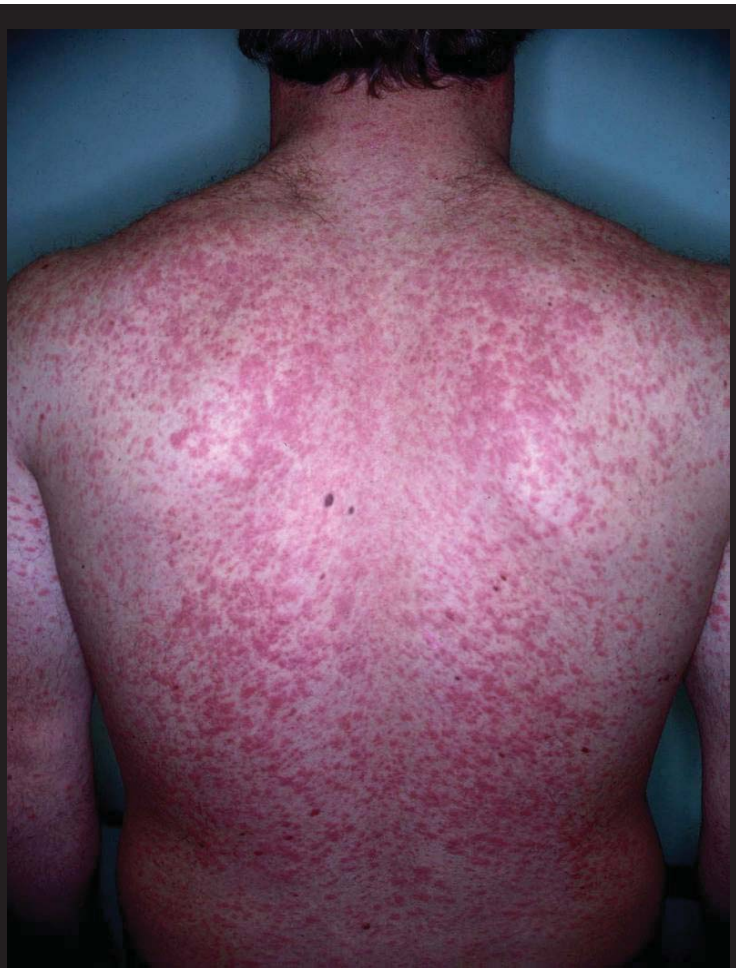
Toxoplasmosis and cat scratch disease from cats and kittens



Tularemia in sheep handlers, wild game cooks, pelt dealers, and veterinarians



Medication history



Sexual history

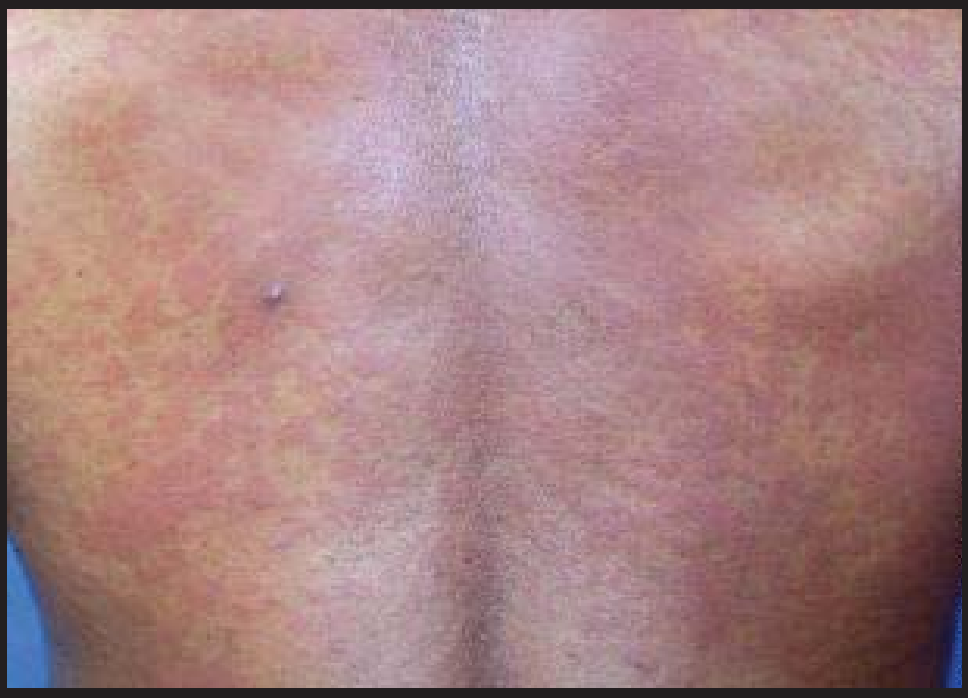
Acute retroviral syndrome

Occur approximately two to four weeks after primary HIV infection

Mononucleosis-like illness characterized by

- fever, sore throat, malaise, headache, lymphadenopathy, mucocutaneous ulceration, arthritis and rash

The rash, seen in more than 50 percent of patients

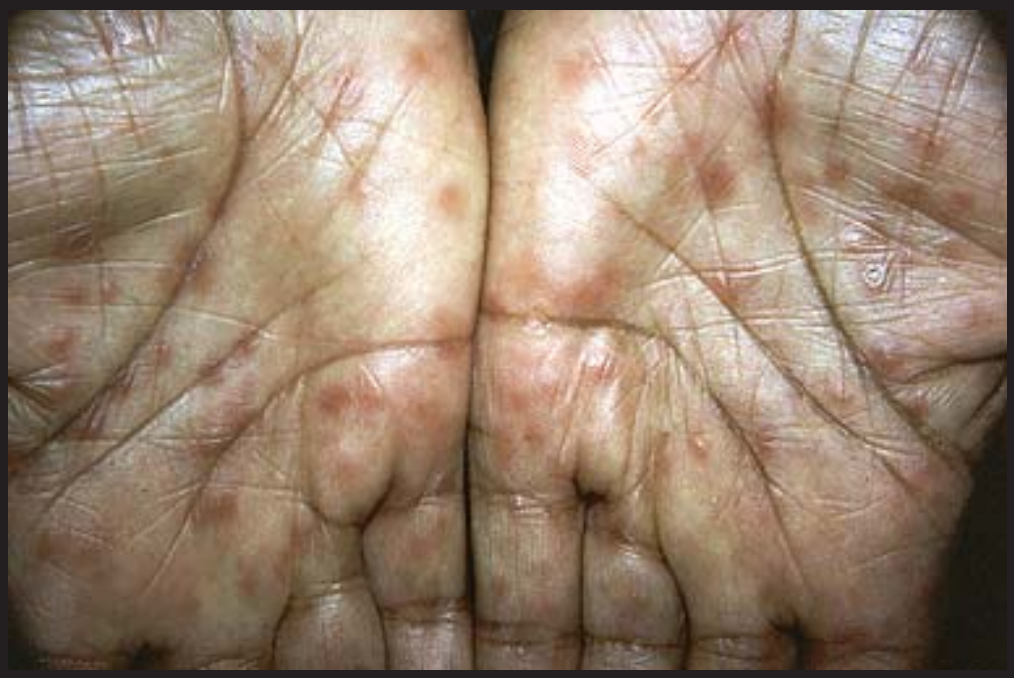


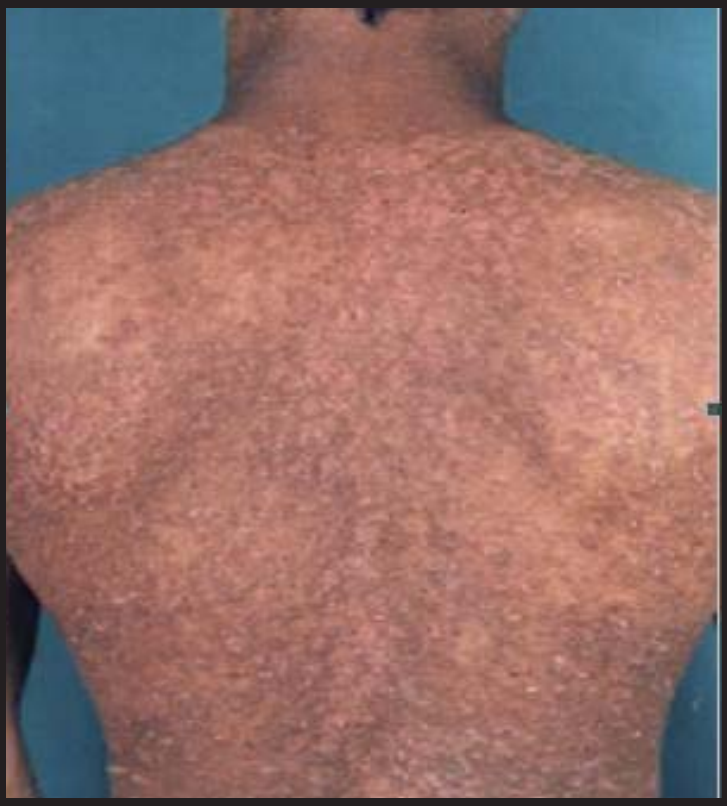
Transient, aculopapular, nonpruritic, and truncal or facial in location

Syphilis

The primary stage is characterized by the chancre

The skin lesions of secondary syphilis include a generalized papular or maculopapular rash (rarely pustular) that also affects the palms and soles





Diagnosis of our patient is measles

Message to take home

Always use standard precautions when examining patients with skin rash and fever

Take a thorough history – as indicated above

Skin lesions may be difficult to distinguish from each other

Biopsy of the lesions may yield the diagnosis