VESICLES & PUSTULES
VZV (VARICELLA ZOSTER VIRUS)

Chickenpox

Epidemiology

- Late winter into spring
- Those with herpes zoster provide potential risks for others to develop VZV

Transmission: respiratory route and skin lesions (contain high titers of infectious virus)

- Rate of infection: 90% household; classroom and hospital lower at 12-33%
- Airborne isolation (negative pressure room) and contact isolation

Incubation 10-21 days

Symptoms occur between 14-16 days
VARICELLA RASH

• Prodrome: fever, malaise, anorexia, headache and mild abdominal pain for 24-48 hours
• First cutaneous lesion occurs 24-72 hours later

• Varicella lesions appear first on the scalp, face, or trunk.

• Initial phase: erythematous macules later form clear fluid filled vesicles
  • vesicles with surrounding irregular margin of erythema resembling “dewdrop on a rose petal”
  • Very pruritic.

• 24 to 48 hours, fluid becomes cloudy and may exhibit characteristic umbilication when crusting begins

• New crops may form on the trunk and then the extremities with resolution of others.

• Crusts are sloughed during the final stage

• Vesicles or small ulcers on mucous membranes of the oropharynx, conjunctivae, and vagina are common.

• Lesions last 1-7 days
PREVENTION

VZV vaccine

- Children, adolescents, and adults
- two doses - at 1yo and 4yo of age

Most people who get the vaccine will not get chickenpox:

- If a vaccinated person gets chickenpox, it is usually mild—with fewer blisters and mild or no fever.
- The chickenpox vaccine prevents almost all cases of severe disease.

Notify health care provider if the person:

- has never had chickenpox disease and is not vaccinated with the chickenpox vaccine
- has a weakened immune system
  - HIV/AIDS or cancer
  - Patients who have had transplants
  - People on chemotherapy, immunosuppressive medications, or long-term use of steroids
  - pregnant

http://www.cdc.gov/chickenpox/about/prevention-treatment.html
BREAKTHROUGH VARICELLA IN VACCINATED PATIENT
HERPES ZOSTER (SHINGLES)
HERPES SIMPLEX VIRUS

- Gingivostomatitis
- Herpetic whitlow
- Herpes keratitis
HERPES SIMPLEX

ETIOLOGY:

- HSV usually involves the face and skin above the waist
- HSV can involve the genitalia and skin below the waist in sexually active adolescents
- HSV can establish latency following primary infection
  - periodic reactivation causes recurrent symptomatic disease or asymptomatic viral shedding.
HSV infections can be transmitted from:

- Symptomatic people
- Asymptomatic people
- Primary infection
- Recurrent infection

Incubation period: 2 days to 2 weeks

Contagious period:
- primary infection: 1 week (occasionally longer)
- symptomatic recurrences: 3 to 4 days

Intermittent asymptomatic reactivation of oral and genital herpes is very common

The greatest concentration of virus is shed during symptomatic primary infections and the lowest concentration of virus is shed during asymptomatic recurrent infections.
COXSACKIE VIRUS

- Common during warmer months
- Transmission: enteric and respiratory routes
- Viral replication occurs in the upper respiratory tract and distal small bowel
- Shedding from upper respiratory tract for 1 to 3 weeks
- Shedding in feces for 2 to 8 weeks
- Onset of symptoms:
  - Brief fever
  - Incubation period of 3 to 5 days
  - CNS manifestations (i.e., aseptic meningitis, poliomyelitis) usually are not observed until 9 to 12 days after exposure.
VIRAL EXANTHEMS
MEASLES

Epidemiology

- often in late winter through early spring, most frequently in crowded, urban areas.
- up to 40% of cases occur in children younger than 16 months
MEASLES

Initial symptoms: 3 C’s
- High fever
- Cough
- Coryza
- Conjunctivitis (watery eyes)

Koplik spots
- 3-5 days after onset symptoms

Rash
- 3-5 days after symptoms begin
- flat red spots that appear on the face at the hairline then spread downward to the neck, trunk, arms, legs, and feet
- Small raised bumps may also appear on top of the flat red spots.
- The spots may become joined together as they spread from the head to the rest of the body

Diagnosis
- serologic tests for measles IgM (IgM can be negative in 72 hours after rash onset)

Pima County Department of Public Health: (520) 724-9999
Transmission

- Highly contagious
  - Lives in the nose and throat mucus
  - Negative pressure isolation room - infect others with cough and sneeze
  - Airborne and alive for 2-4 hours
  - If one person has it, 90% of the people close to that person who are not immune will also become infected.
  - four days before through four days after the rash appears.
COMPLICATIONS OF MEASLES

Most likely in children <5y, adults >20y

CommonComplications
• Ear infections occur in about 1 out of every 10 children
  •can result in permanent hearing loss
• Diarrhea in <1 out of 10

Severe Complications
• Pneumonia
  • 1 out of every 20
• Encephalitis
  • 1 out of every 1,000
• Death
  • 1-2 out of every 1000
• Preterm labor
PARVOVIRUS B19

• Fifth disease AKA erythema infectiosum

• The first symptoms
  • fever
  • runny nose
  • headache

• The rashes
  • The initial “slapped cheeks rash”
  • chest, back, buttocks, or arms and legs (rash may be itchy especially on the soles and feet) It usually goes away in 7 to 10 days, but it can last several weeks
  • As the rash starts to go away, it may look reticular/lacy.
  • Papular-purpuric gloves and socks syndrome

• Painful or swollen joints or polyarthropathy syndrome
  • common in adults (especially women)
  • joint pain usually lasts 1 to 3 weeks, but it can last for months
• Epidemiology
  • Mostly in the spring
  • Symptoms within 4-20 days after getting infected
  • ~ 20% of infected children and adults have no symptoms
  • Secondary infection rates approach 50% in households, but are much lower for adults in schools or other institutions.

• Transmission
  • respiratory secretions (such as saliva, sputum, or nasal mucus)
  • most contagious before the rash or joint pain/swelling.

• Contagious period
  • When the rash appears, the child is no longer infectious.
  • People with parvovirus B19 and weakened immune systems may be contagious even after the rash appears
  • Parvovirus B19 infection results in immunity
MATERNAL TRANSMISSION

• Primary maternal infection with parvovirus B19 during pregnancy occurs mainly during the first 20 weeks
  • hydrops fetalis
    • causes 10% to 20% of all cases of nonimmune hydrops
    • possible eye damage and CNS abnormalities in infants have been reported.
  • Congenital anemia

• The likelihood that a susceptible pregnant woman will contract infection is approximately 15%

• The overall risk of fetal death is <2%

• Household exposure increases risk of transmission of infection to susceptible individuals to approximately 50%.

• Routine exclusion of pregnant women from the workplace where parvovirus is occurring is not recommended.

• Women of childbearing age who are concerned can undergo serologic testing for IgG antibody

• Fetal ultrasonography may provide reassurance
PARVOVIRUS — CONTROL MEASURES

KEY POINTS

• Children with parvovirus B19 may attend child care or school once the rash appears

• Transmission of parvovirus B19 is likely to be decreased through
  • including hand hygiene
  • proper disposal of used facial tissues
ADENOVIRUS

Found on surfaces, objects and in water (pools and small lakes)

Resistant to common disinfectants and many environmental conditions

Respiratory illness
  - ranges from the common cold to pneumonia, croup, and bronchitis
  - Can also cause gastroenteritis, conjunctivitis, cystitis, and, less commonly, neurological disease

Outbreaks are more common in late winter, spring, and early summer but can occur throughout the year

Asymptomatic shedding can occur for months or longer
BACTERIAL AND TOXIN-MEDIATED RASHES
scarlet fever
CELLULITIS & LYMPHANGITIS
STAPHYLOCOCCAL SCALDED SKIN
PESKY ARTHROPODS
SCABIES

SYMPTOMS
intensely pruritic
burrowing of adult female mites in upper layers of the epidermis
Itching is most intense at night

EPIDEMIOLOGY:
Humans: the source of infestation
Transmission usually occurs through prolonged, close, personal contact and can occur even with minimal contact with a crusted lesion
Scabies affects people from all socioeconomic levels or personal hygiene
The incubation period is 4 to 6 weeks.
People who previously were infested can develop symptoms 1 to 4 days after repeated exposure
SCABIES

DIAGNOSTIC TESTS:

Scrapings of papules or intact burrows, preferably from the terminal portion

Mineral oil, microscope immersion oil, or water applied to skin facilitates collection of scrapings.

- A scalpel is used to scrape the burrow
- Scrapings and oil can be placed on a slide under a glass coverslip and examined microscopically under low power
- Adult female mites average 330 to 450 μm in length.

TREATMENT:

- Permethrin
- Scabies lesions are the result of a hypersensitivity reaction to the mite
  - itching may not subside for several weeks despite treatment.
  - oral antihistamines and topical corticosteroids can help relieve itching
  - topical or systemic antibiotics are sometimes needed for secondary bacterial infections
SCABIES (*SARCOPTES SCABIEI*)

http://library.med.utah.edu/kw/derm/pages/n12_2.htm
CONTROL MEASURES

• Prophylactic therapy is recommended for household members.

• Symptoms of scabies infestation can appear as late as 2 months after exposure.

• All household members should be treated at the same time to prevent reinfestation.

• Bedding and clothing worn next to the skin during the 3 days before initiation of therapy should be laundered in a washer with hot water and dried using a hot cycle.

• Mites do not survive more than 3 days without skin contact.

• Children should be allowed to return to child care or school after treatment has been completed.

• Environmental disinfection is unnecessary but vacuuming of environmental surfaces is recommended.

• People with crusted scabies and their close contacts must be treated promptly and aggressively to avoid outbreaks.

EMERGENCY RASHES
Rates of Meningococcal Disease by Age Group and Burden of Disease, United States, Active Bacterial Core Surveillance System, 2003-2012

For more information visit: [http://www.cdc.gov/abcs/index.html](http://www.cdc.gov/abcs/index.html)
MENINGOCOCCUS

• Clinical Features
  • Fever, headache and stiff neck, sepsis and rash

• Etiologic Agent
  • Neisseria meningitidis
  • <1000 cases annually in the United States

• Sequelae
  • 10%-15% of cases are fatal
  • 11%-19% have permanent hearing loss
  • mental retardation
  • loss of limbs

• Transmission
  • colonizes mucosal surfaces of nasopharynx
  • direct contact with large droplet respiratory secretions from the patients or asymptomatic carriers

• Prevention
  • Vaccination with Menactra (MCV-4)
RMSF CASES CDC - 2010
RMSF CASES FROM 1993-2010
RMSF
(ROCKY MOUNTAIN SPOTTED FEVER)

*Rickettsia rickettsia*
- 2-14 days after the bite of an infected dog tick
- tick bite is usually painless
- Sudden onset of fever and headache
- Early symptoms may be non-specific
- Few people with the disease will develop all symptoms

- Fever
- Rash (occurs 2-5 days after fever, may be absent in some 10% of cases)
- Headache
- Nausea
- Vomiting
- Abdominal pain (may mimic appendicitis or other causes of acute abdominal pain)
- Myalgias
- Anorexia
- Conjunctival injection (red eyes)

*FIGURE 12. Comparison of Ixodes scapularis (blacklegged tick), Amblyomma americanum (lone star tick), and Dermacentor variabilis (American dog tick), by life stage*
A serious illness that can be fatal in the first eight days of symptoms if not treated

Patients who are treated early may recover quickly

Rash

- RMSF (90%) have some type of rash during the course of illness
- some people do not develop the rash until late in the disease process
- small, flat, pink, non-itchy spots (macules)
  - Starts on the wrists, forearms, and ankles and spreads to the trunk and sometimes the palms and soles
- The red to purple, spotted (petechial) rash of RMSF is usually not seen until >6th day
- Petechial rash is a sign of progression to severe disease and every attempt should be made to begin treatment before petechiae develop.

COMPLICATIONS FROM RMSF

• Vasculitis
• bleeding/clotting-
  damage to brain
  other organs
• Loss of circulation with damaged fingers, toes or even limbs
• Infection in children
  • nausea, vomiting, and loss of appetite
  • less likely to report a headache, but more likely to develop an early rash than adults
• Altered mental status
• Conjunctival injection
STEVENS-JOHNSON SYNDROME
STEVENS-JOHNSON SYNDROME

- Non specific symptoms
  - Fever
  - Dehydration

- Mucocutaneous
  - Stomatitis with bleeding crusts
  - Oral and genital erosions
  - Difficulty swallowing- esophageal and pulmonary mucosal sloughing
  - Purulent conjunctivitis with light sensitivity
  - Occasionally mucosal sloughing
  - Dusky erythematous macules, targetoid lesions, bullae, and skin sloughing (+ Nikolsky sign)

- Visceral
  - Lymphadenopathy
  - Hepatosplenomegaly with hepatitis
  - Uncommon: pneumonitis, arthritis, myocarditis, and nephritis
DID YOU WASH YOUR HANDS?

• Before, during, and after preparing food
• Before eating food
• Before and after caring for someone who is sick
• Before and after treating a cut or wound
• After using the toilet
• After changing diapers or cleaning up a child who has used the toilet
• After blowing your nose, coughing, or sneezing
• After touching an animal, animal feed, or animal waste
• After handling pet food or pet treats
• After touching garbage
Let's Wash Our Hands!

Whooshy washy! Wet our hands Under running water
Add some soap and Rub them hard Don’t miss any part!
Between our fingers Under the nails Kill germs without fail
Front and back And round the wrist No germs will be missed!
They may hide But we shall seek So we will not fall sick!
Splishy splashy Bye bye germs Down the drain they squirm
With clean towels We dry our hands Now let's show our friends!

Remember to wash our hands:
- After using the toilet
- After sneezing or coughing
- After playing with pets
- After sports or playing outside
- Before eating
REFERENCES

www.CDC.gov

Hurwitz clinical pediatric dermatology: a textbook of skin disorders of childhood and adolescence / Amy S. Paller, Anthony J. Mancini.

