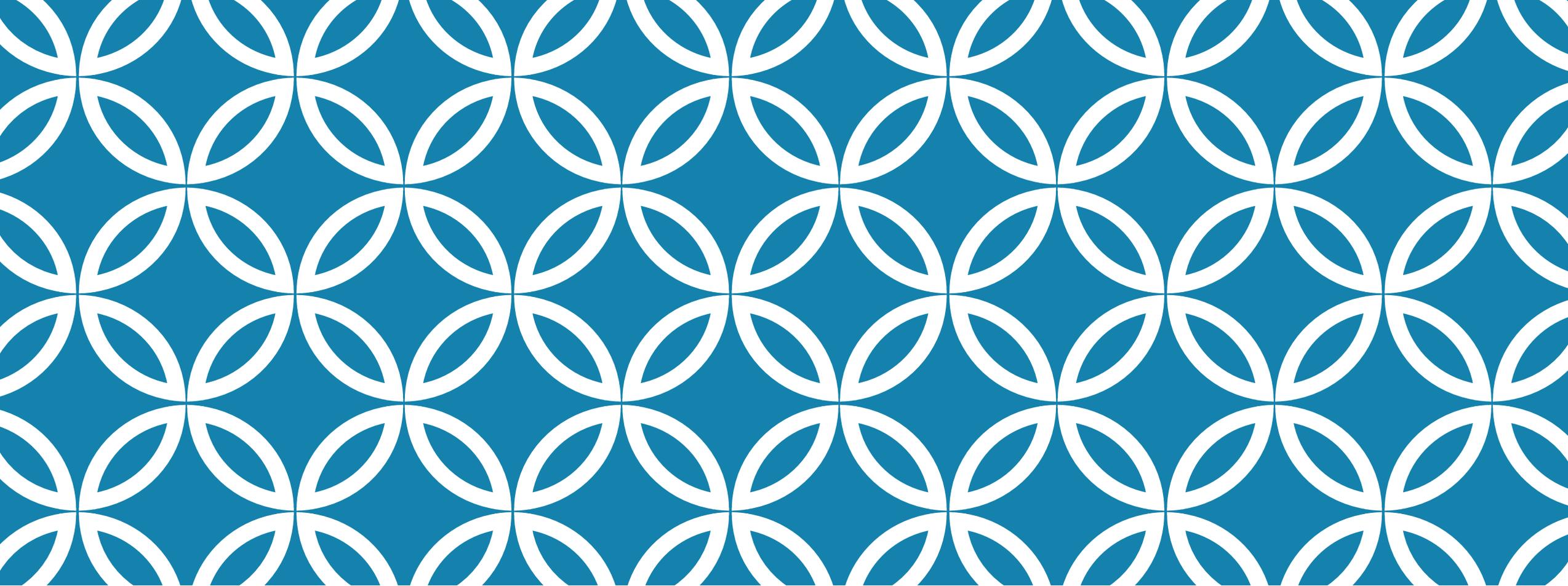


**RASH DECISIONS
TIEN NGUYEN, MD
JUNE 30, 2015**





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)

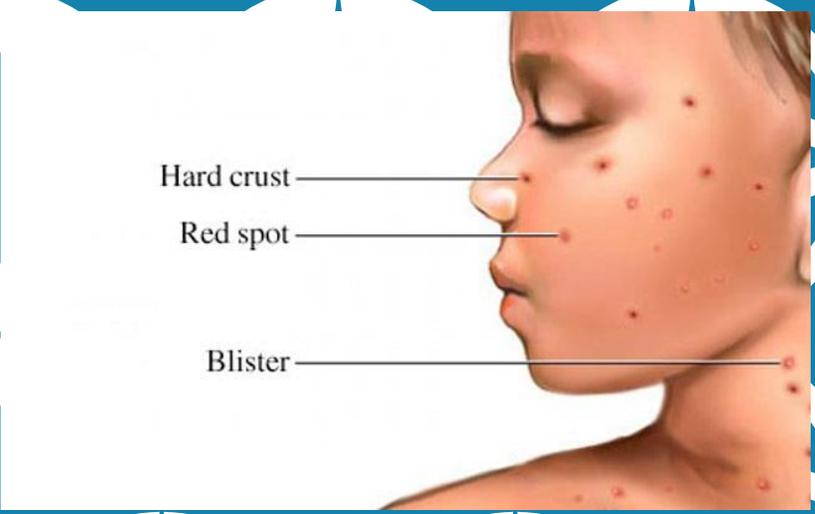
- Rate of infection: 90% household; classroom and hospital lower at 12-33%
- Airborne isolation (negative pressure room) and contact isolation

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 1 yo and 4 yo 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



BREAKTHROUGH VARICELLA IN VACCINATED PATIENT



HERPES ZOSTER (SHINGLES)



SUPERINFECTED VARICELLA



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.

EPIDEMIOLOGY

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

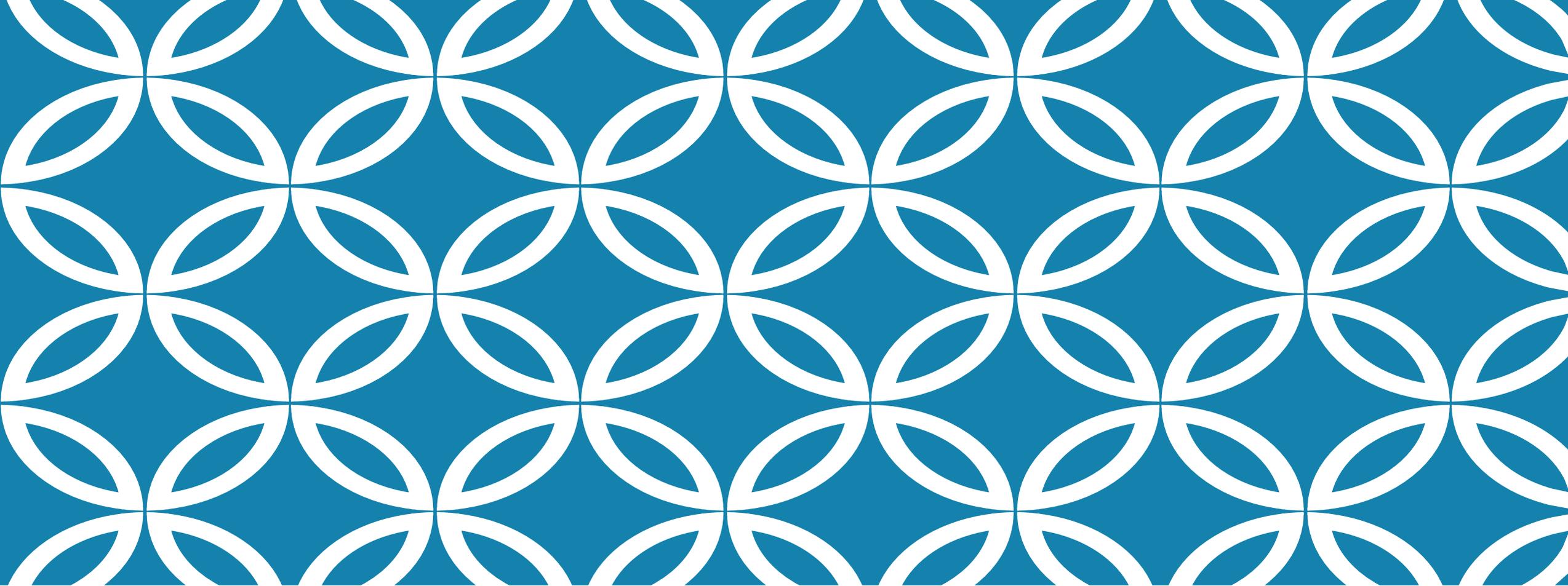
The greatest concentration of virus is shed during symptomatic primary infections and the lowest concentration of virus is shed during asymptomatic recurrent infections.





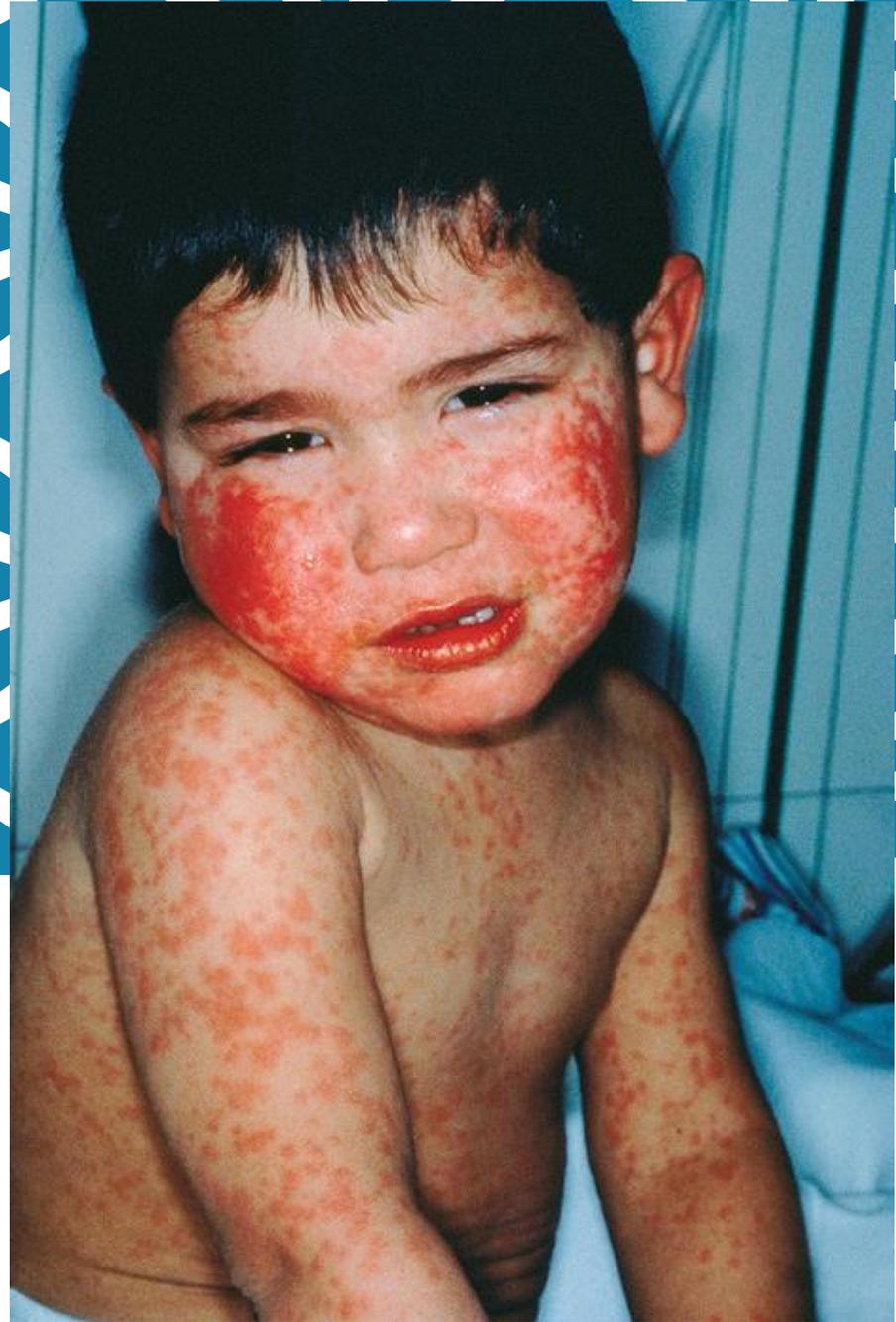
COXSACKIE VIRUS

- 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





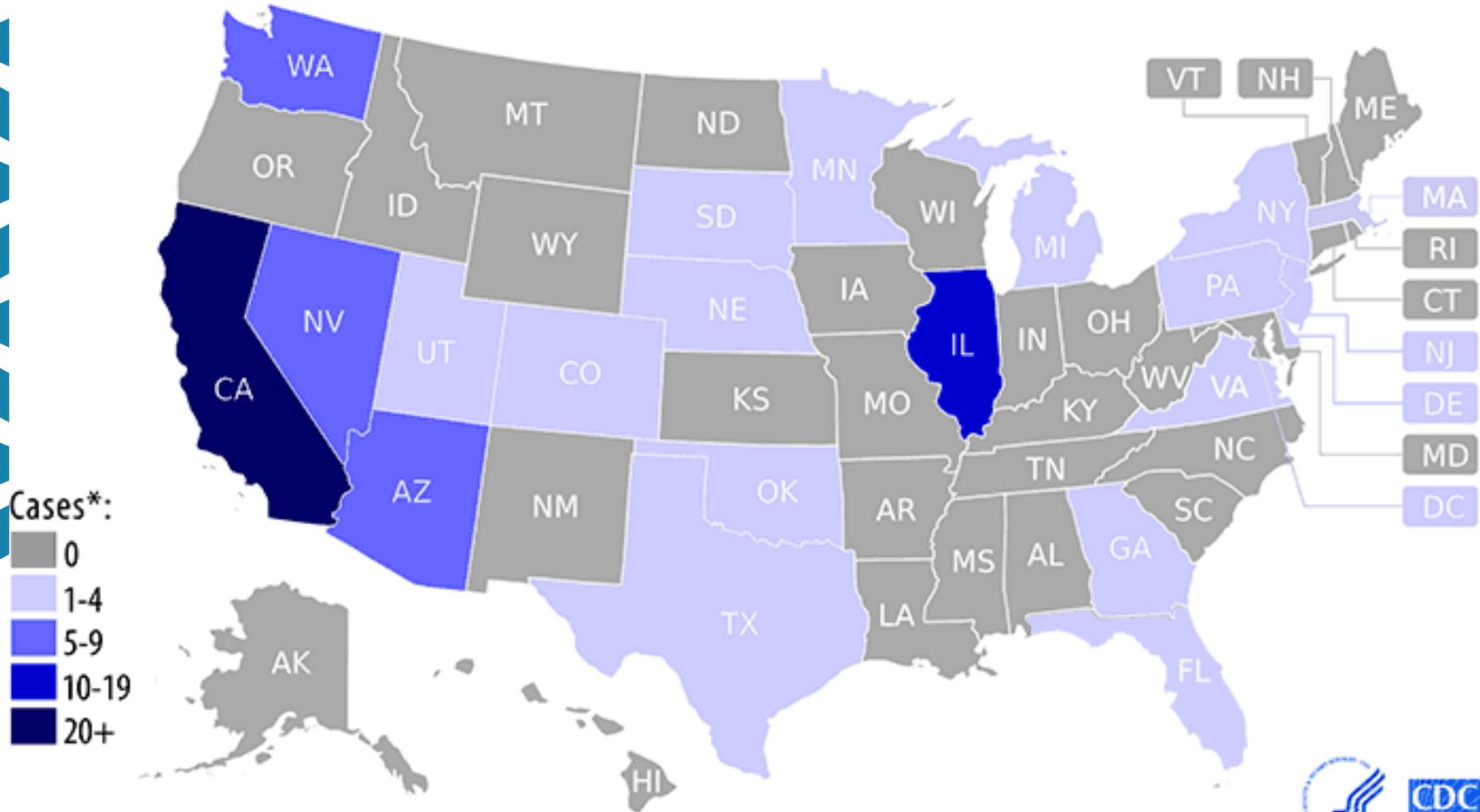
MEASLES

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

2015 Measles Cases in the U.S.

January 1 to May 29, 2015



Cases*:
 0
 1-4
 5-9
 10-19
 20+

*Provisional data reported to CDC's National Center for Immunization and Respiratory Diseases



Measles

IT ISN'T JUST A LITTLE RASH



Measles can be dangerous, especially for babies and young children.

MEASLES SYMPTOMS TYPICALLY INCLUDE

- High fever (may spike to more than 104° F)
- Cough
- Runny nose
- Red, watery eyes
- Rash breaks out 3-5 days after symptoms begin



Measles Can Be Serious



About 1 out of 4 people who get measles will be hospitalized.



1 out of every 1,000 people with measles will develop brain swelling due to infection (encephalitis), which may lead to brain damage.



1 or 2 out of 1,000 people with measles will die, even with the best care.

You have the power to protect your child.



Provide your children with **safe** and **long-lasting protection** against measles by making sure they get the **measles-mumps-rubella (MMR) vaccine** according to CDC's recommended immunization schedule.

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

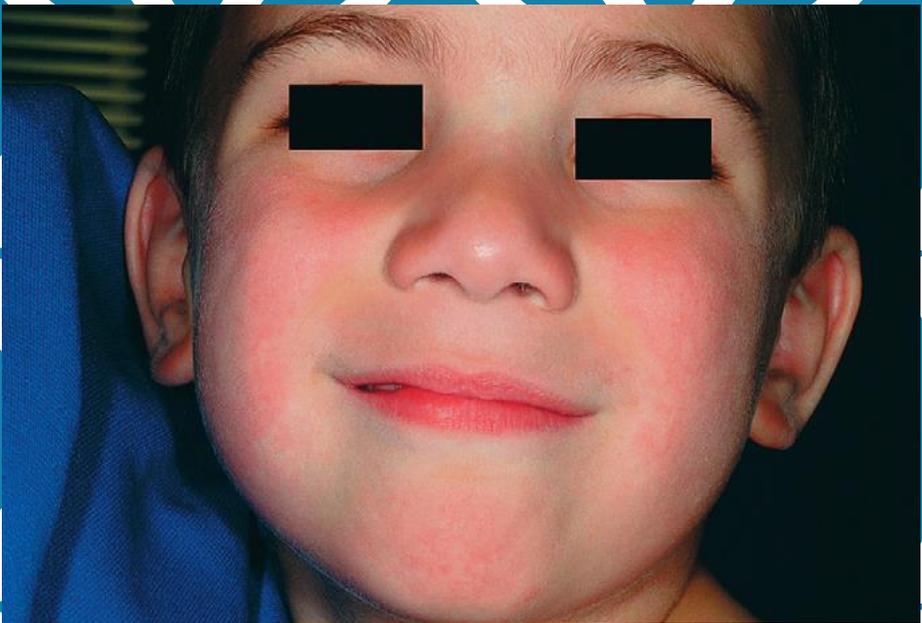
Most likely in children <5y, adults >20y

Common Complications

- 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)

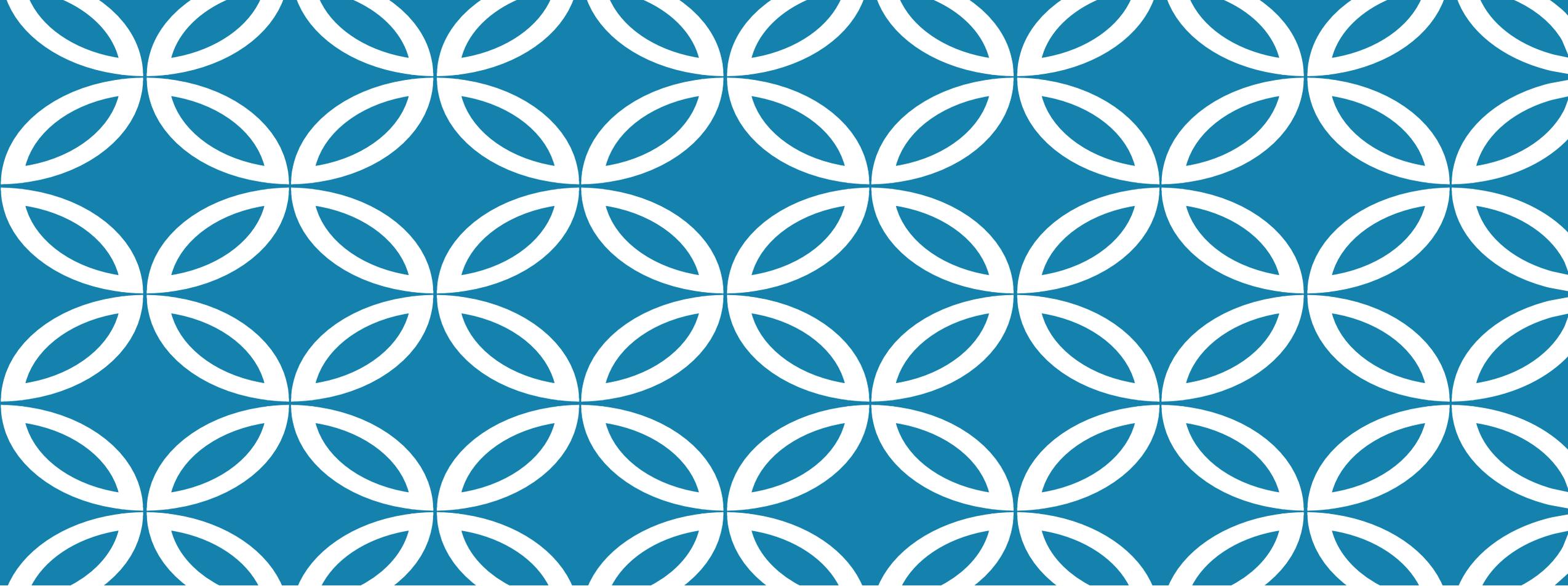
Resistant to common disinfectants and many environmental conditions

Respiratory illness

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

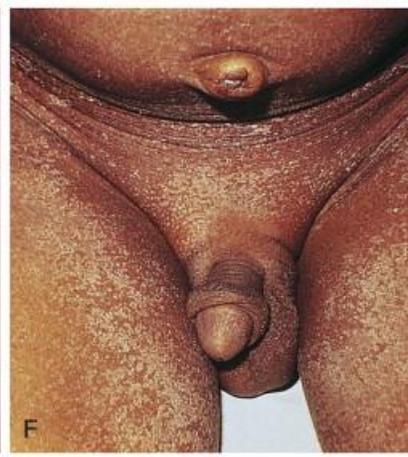
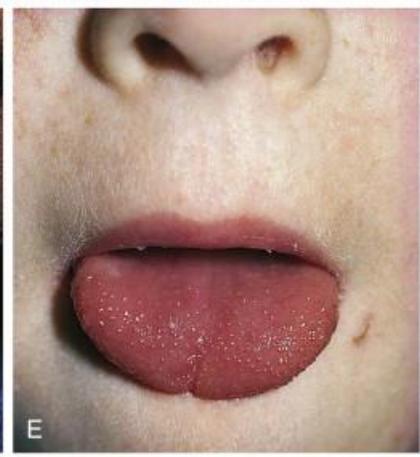
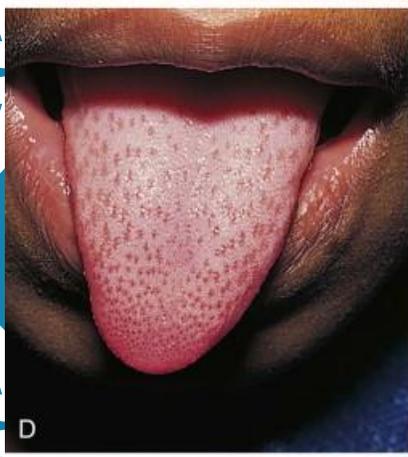
Outbreaks are more common in late winter, spring, and early summer but can occur throughout the year

Asymptomatic shedding can occur for months or longer



BACTERIAL AND TOXIN- MEDIATED RASHES





scarlet fever





FOLLICULITIS |



CELLULITIS & LYMPHANGITIS

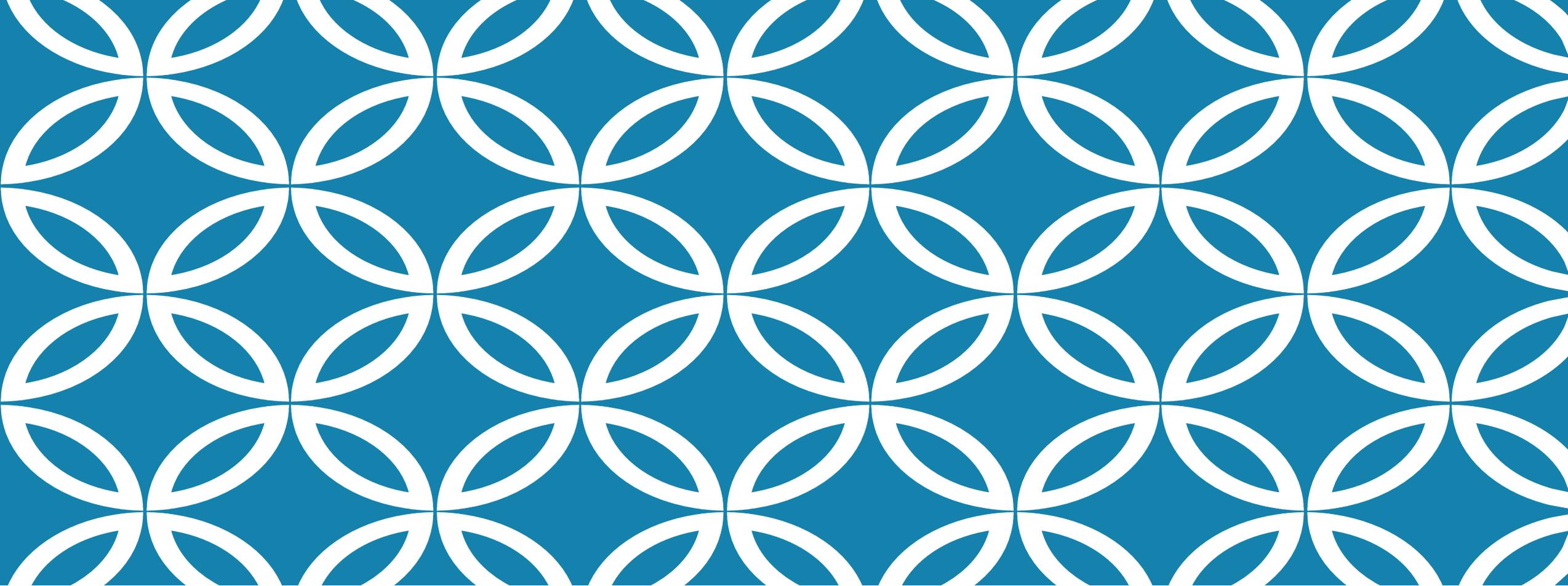


STAPHYLOCOCCAL SCALDED SKIN |



IMPETIGO

Dermnetz.org



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:

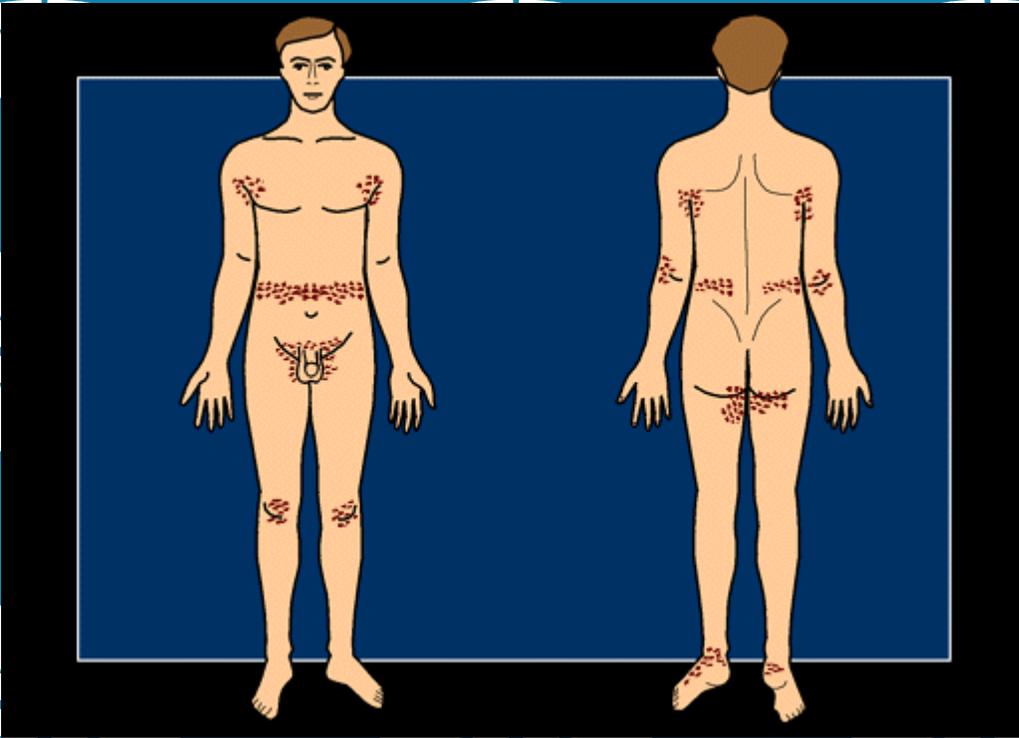
Scrapings of papules or intact burrows, preferably from the terminal portion

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

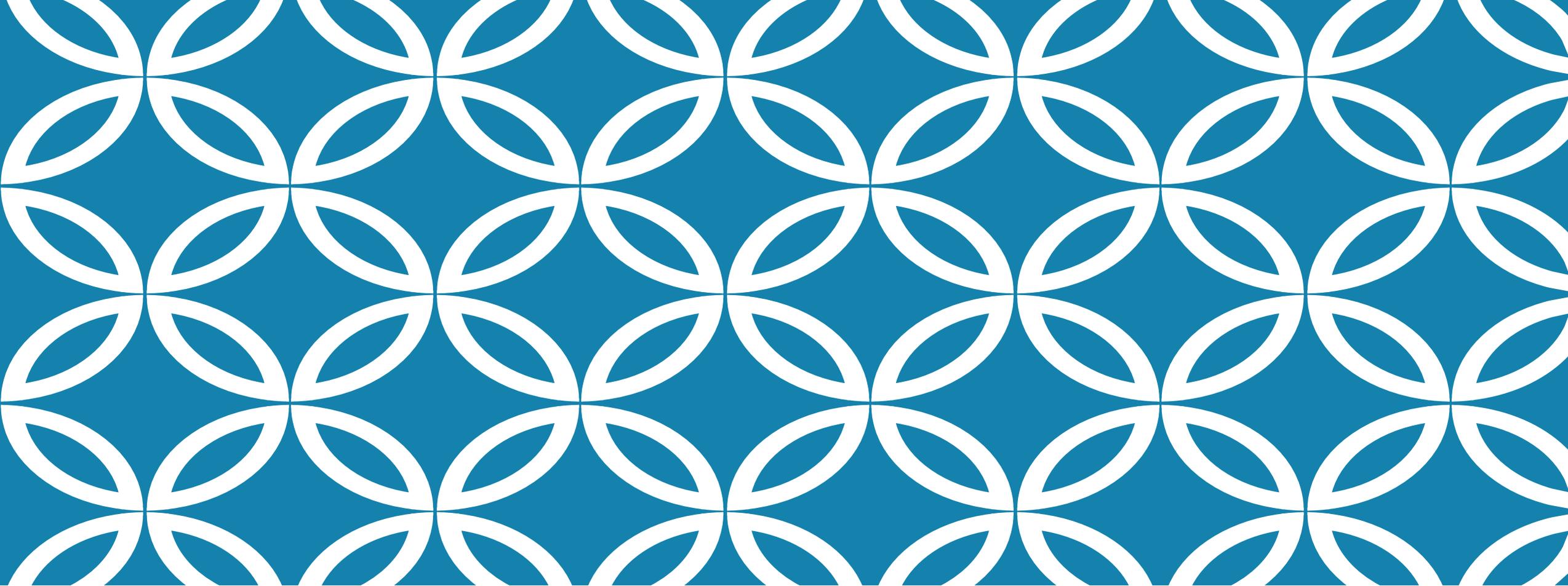


SCABIES (*SARCOPTES SCABIEI*)

http://library.med.utah.edu/kw/derm/pages/ni12_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 disinfestation 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.
- http://www.cdc.gov/parasites/scabies/gen_info/faqs.html



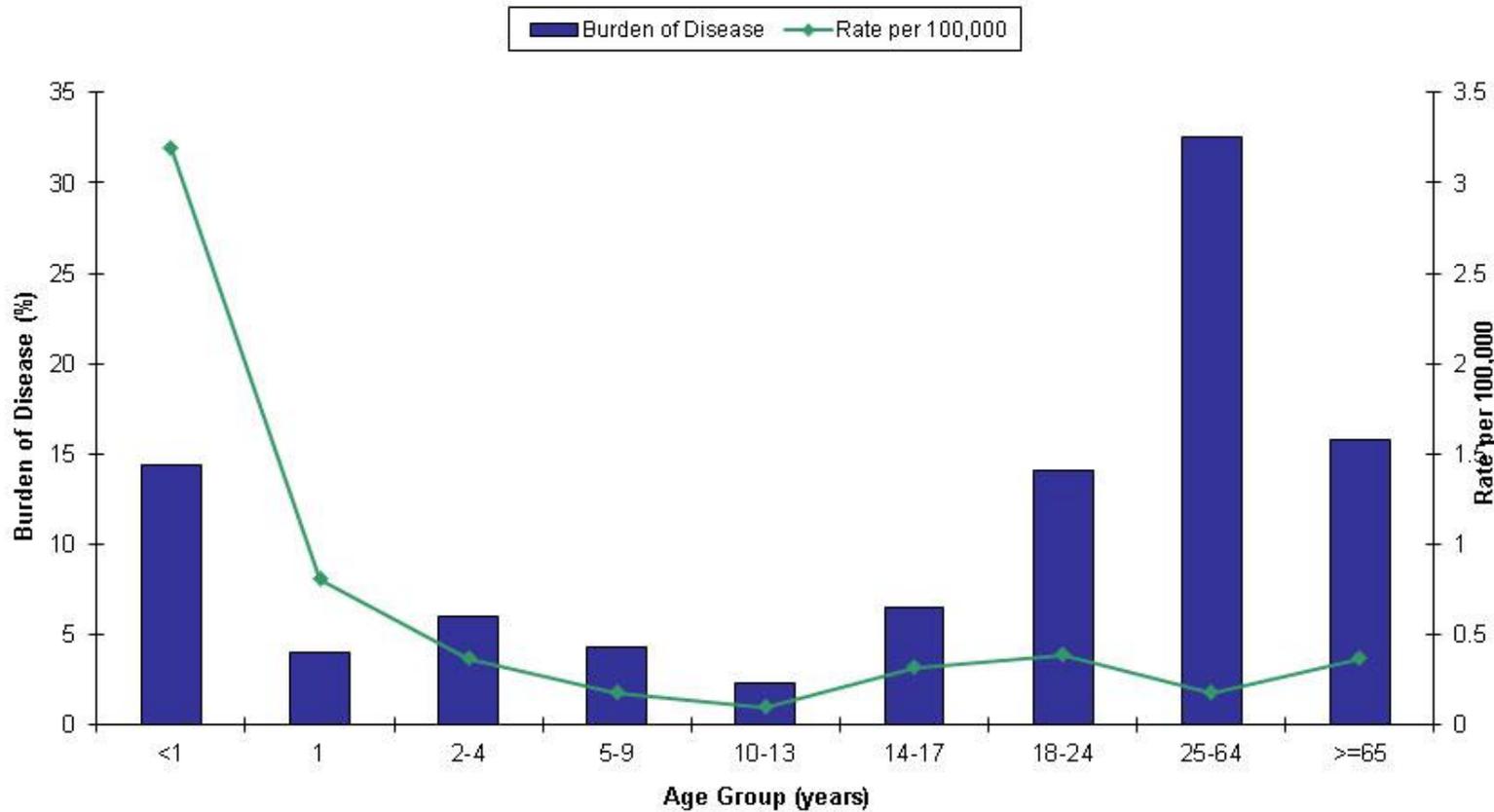
EMERGENCY RASHES





MENINGOCOCCUS

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>

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

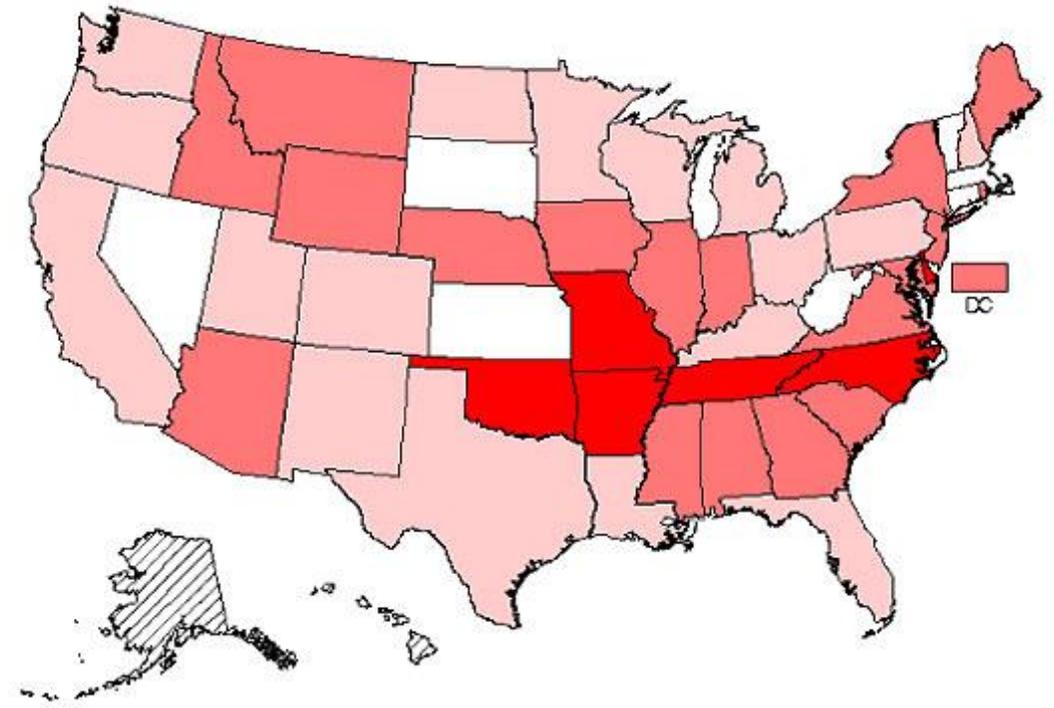
- **Prevention**

- Vaccination with Menactra (MCV-4)

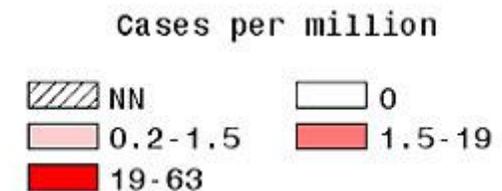


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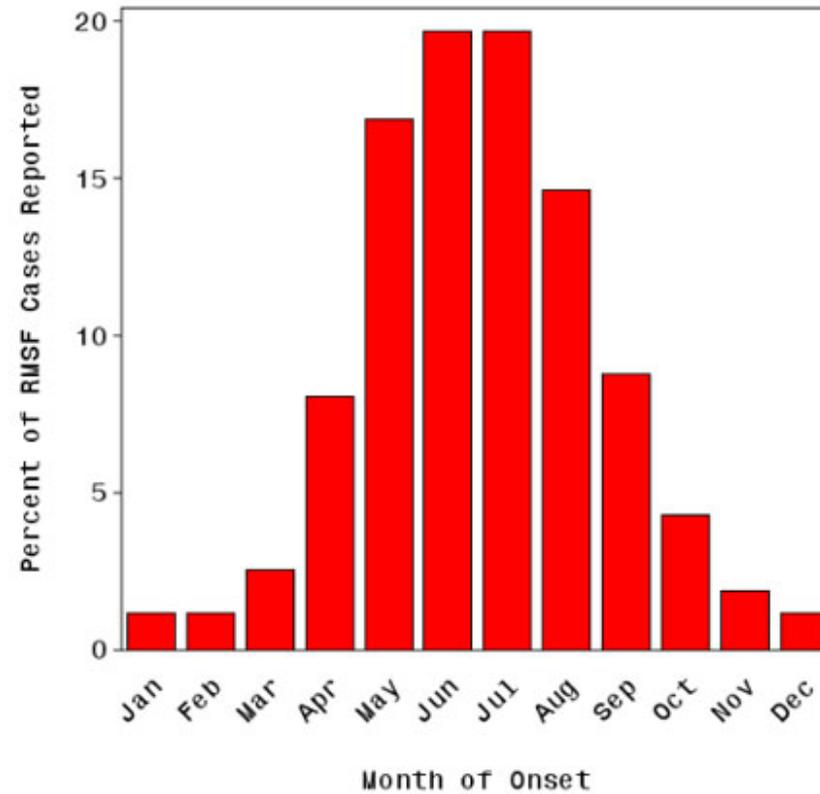
VECTOR-BORNE & ZOONOTIC DISEASES:			
Chikungunya	3	0	0
Dengue	9	5	1
Hantavirus Pulmonary Syndrome	0	4	1
Rocky Mountain spotted fever	14	5	23
West Nile Virus Infection	0	0	0
Animals with Rabies ^f	31	41	20



RMSF CASES CDC- 2010



RMSF CASES FROM 1993-2010

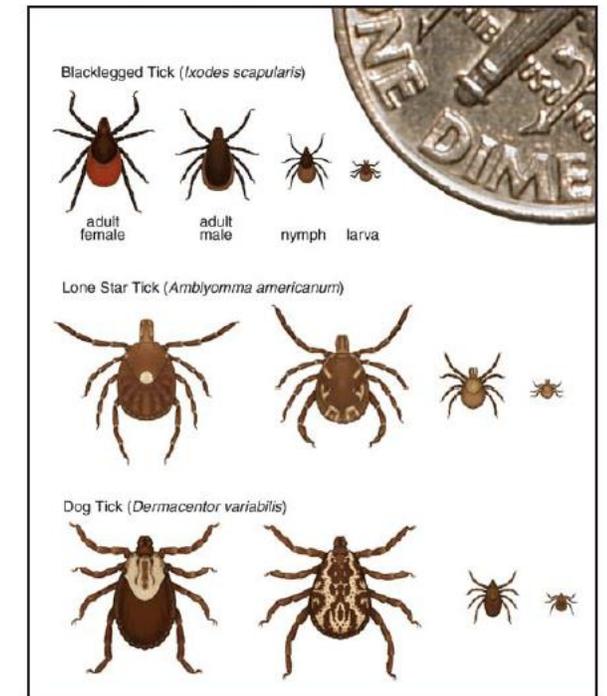


RMSF (ROCKY MOUNTAIN SPOTTED FEVER)

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*



Photo/GDC

* Ticks are shown in relative size to each other and to a dime.

RASH RMSF CDC

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.

- <http://www.azdhs.gov/phs/oids/vector/rocky-mountain-spotted-fever/>

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
Rid 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!



Palm to palm



Between fingers



Back of hands



Base of thumbs



Back of fingers



Fingernails



Wrists



Rinse and wipe dry

Remember to wash our hands:



After using
the toilet



After sneezing
or coughing



After playing
with pets



After sports or
playing outside



Before eating

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