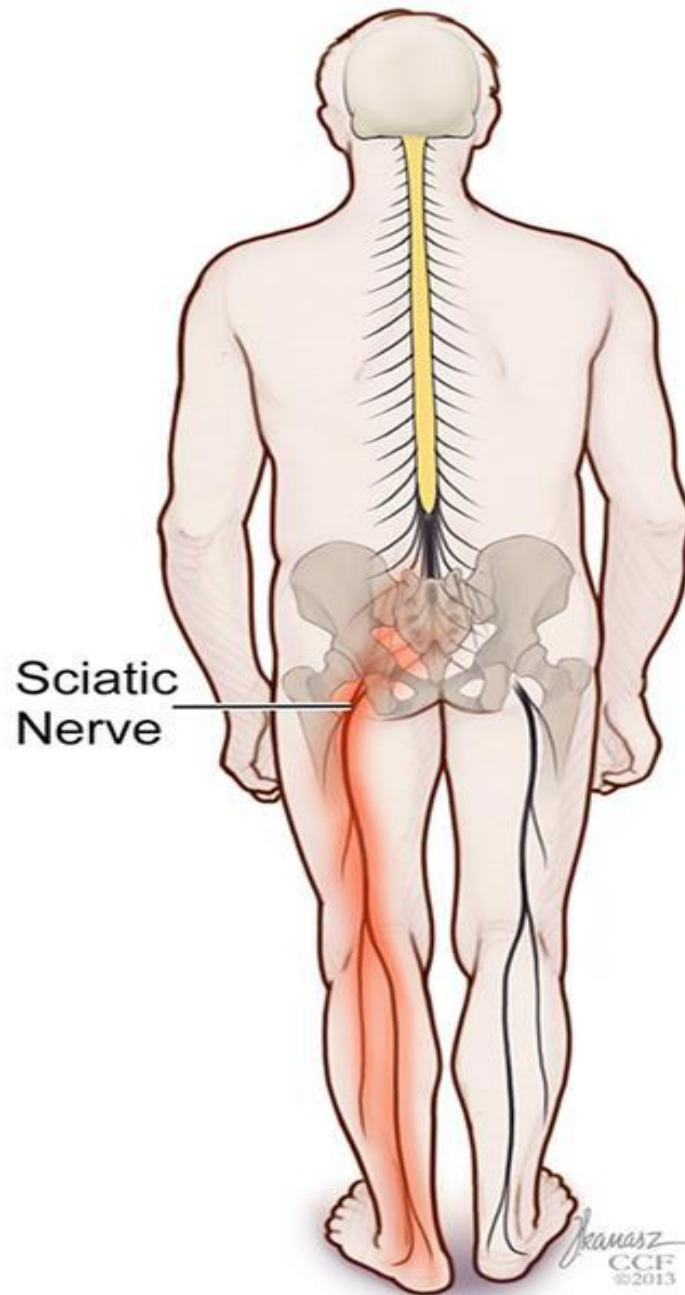


Peripheral nervous system disorder

Dr Nanis Ghareeb

Sciatica



- Sciatica is nerve pain from an injury or irritation to the sciatic nerve, which originates in your buttock/gluteal area.
- Term “sciatica” is commonly used to describe any pain that originates in the lower back and radiates down the leg.
- Sciatica is a very common complaint. About 40% of people experience sciatica sometime during their life. Back pain is the third most common reason people visit their healthcare provider.

What is sciatica?

- Have an injury/previous injury: to your lower back or spine
- Live life: normal aging can put your nerves at risk of being injured or pinched by the changes and shifts in bone, disks and ligaments.
- Are overweight: The weight you carry in the front of your body is what your spine (crane) has to lift. The more weight you have, the more your back muscles (counterweights) have to work. This can lead to back strains, pains and other back issues.
- Lack a strong core: Your “core” are the muscles of your back and abdomen. The stronger your core, the more support you’ll have for your lower back.
- Have an active, physical job: that require heavy lifting or jobs with prolonged sitting and un proper body form during weight lifting increase your risk of low back problems.

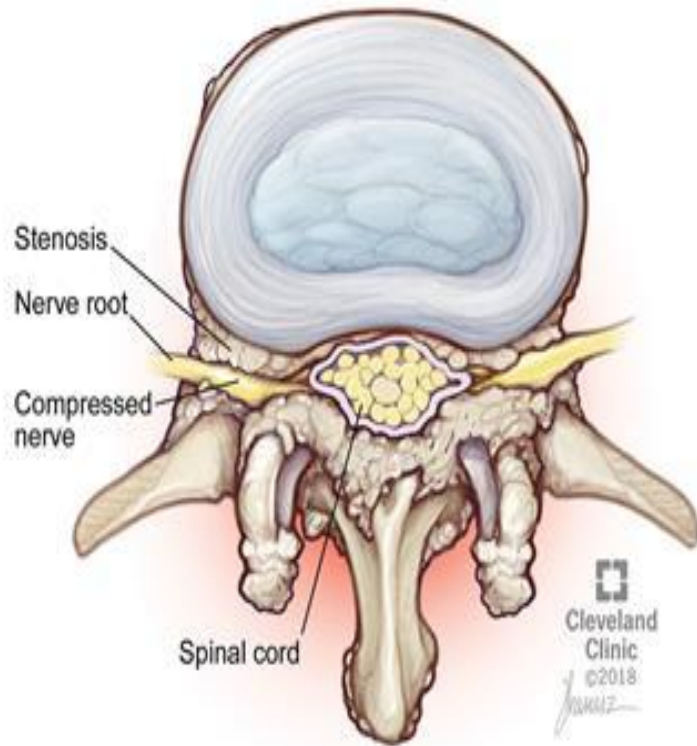
What are the risk factors for sciatica?

- Have diabetes: Diabetes increases your chance of nerve damage, which increases your chance of sciatica.
 - Have osteoarthritis: Osteoarthritis can cause damage to your spine and put nerves at risk of injury.
 - an inactive lifestyle: Sitting for long period of time and not exercising and keeping your muscles moving, flexible and toned can increase your risk of sciatica.
 - Smoke: The nicotine in tobacco can damage spinal tissue, weaken bones, and speed the wearing down of vertebral disks.
 - Pregnancy: certain hormones of pregnancy cause a loosening of their ligaments. Loosened ligaments can cause the spine to become unstable and might cause disks to slip, The baby's weight and position can also add pressure to the nerve.
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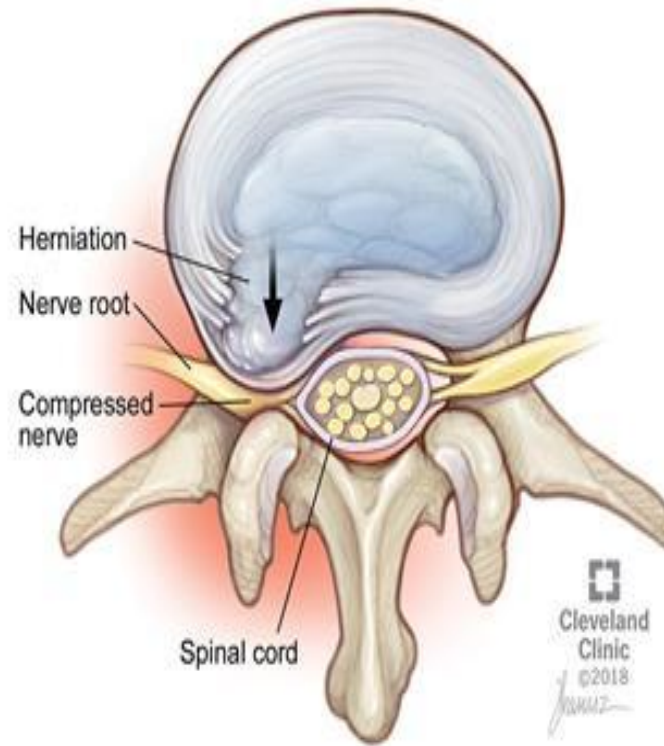
- A herniated or slipped disk that causes pressure on a nerve root.
- Degenerative disk disease is the natural wear down of the disks between vertebrae of the spine.
- Spinal stenosis is the abnormal narrowing of the spinal canal.
- Spondylolisthesis is a slippage of one vertebra so that it is out of line with the one above it, narrowing the opening through which the nerve exits.
- Osteoarthritis. Bone spurs (jagged edges of bone) can form in aging spines and compress lower back nerves.
- Trauma injury to the lumbar spine or sciatic nerve.
- Tumors in the lumbar spinal canal that compress the sciatic nerve.

What causes sciatica?

Spinal Stenosis (top view)



Herniated Disc (top view)



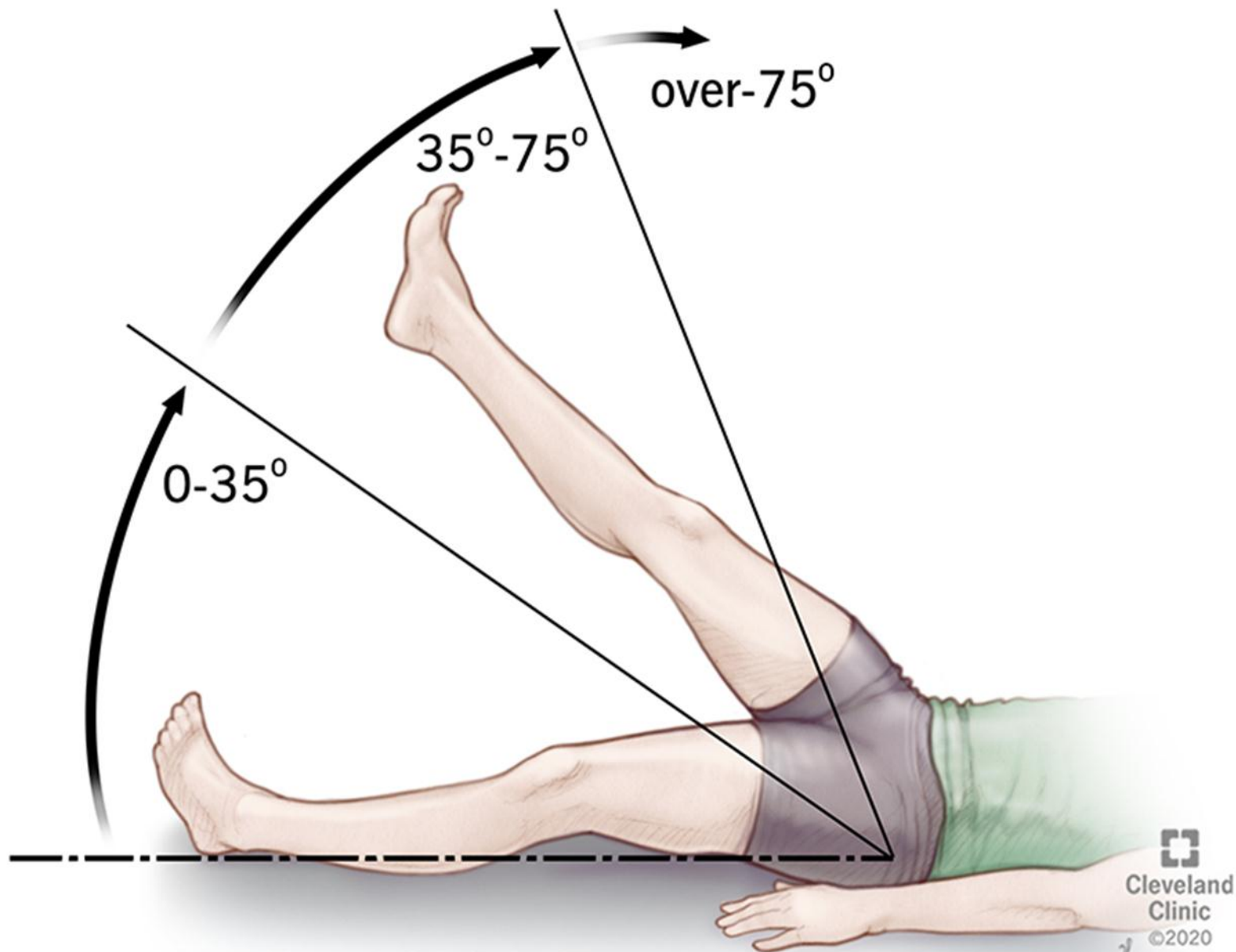
The symptoms of sciatica include:

- Moderate to severe radiating pain in lower back, buttock and down your leg with distribution of sciatic nerve.
- Numbness or weakness in your lower back, buttock, leg or feet.
- Pain that worsens with movement; loss of movement.
- “Pins and needles” feeling in your legs, toes or feet.

What are the symptoms of sciatica?

- Physical exam, a straight leg raise test. For this test, you'll lie on your back with your legs straight. Your provider will slowly raise each leg and note the point at which your pain begins. This test helps pinpoint the affected nerves and determines if there is a problem with one of your disks.
- Spinal X-rays to look for spinal fractures, disk problems, infections, tumors and bone spurs.
- Magnetic resonance imaging (MRI) or computed tomography (CT) scans to see detailed images of bone and soft tissues of the back.
- Nerve conduction velocity studies/electromyography to examine how well electrical impulses travel through the sciatic nerve and the response of muscles.

How is sciatica diagnosed?



Straight-leg Test

(for compressive neurogenic causes of back pain)



Leprosy

(Hansen's Disease)
(Lepi: scales on the fish)

Leprosy (Hansen's disease)

- Hansen's disease (also known as leprosy) is an infection caused by bacteria called *Mycobacterium leprae*. These bacteria grow very slowly and it may take up to 20 years to develop signs of the infection.
- The bacteria attack the nerves, which can become swollen under the skin. This can cause the affected areas to lose the ability to sense touch and pain, which can lead to injuries, like cuts and burns.
- Each year, about 150 people in the United States and 250,000 around the world get the illness. In the past, Hansen's disease was feared as a highly contagious, devastating disease, but now we know that it's hard to spread and it's easily treatable once recognized

What is Hansen's Disease?

- It is not known exactly how Hansen's disease spreads between people.
- Scientists currently think it may happen when a person with Hansen's disease coughs or sneezes, and a healthy person breathes in the droplets containing the bacteria.
- Prolonged, close contact with someone with untreated leprosy over many months is needed to catch the disease.
- Hansen's disease is also not passed on from a mother to her unborn baby during pregnancy and it is also not spread through sexual contact.

Transmission

- Symptoms mainly affect the skin, nerves, and mucous membranes (the soft, moist areas just inside the body's openings).
- skin symptoms such as: discolored patches of skin, (lighter than the skin around) , nodules, thick, dry skin , painless ulcers on the soles of feet and painless swelling on the face or earlobes.
- Symptoms caused by damage to the nerves: numbness of affected areas of the skin ,muscle weakness or paralysis (especially in the hands and feet), enlarged nerves (especially those around the elbow and knee and in the sides of the neck) and eye problems that may lead to blindness (when facial nerves are affected)
- Symptoms caused by the disease in the mucous membranes are: a stuffy nose and nosebleeds

Signs and Symptoms

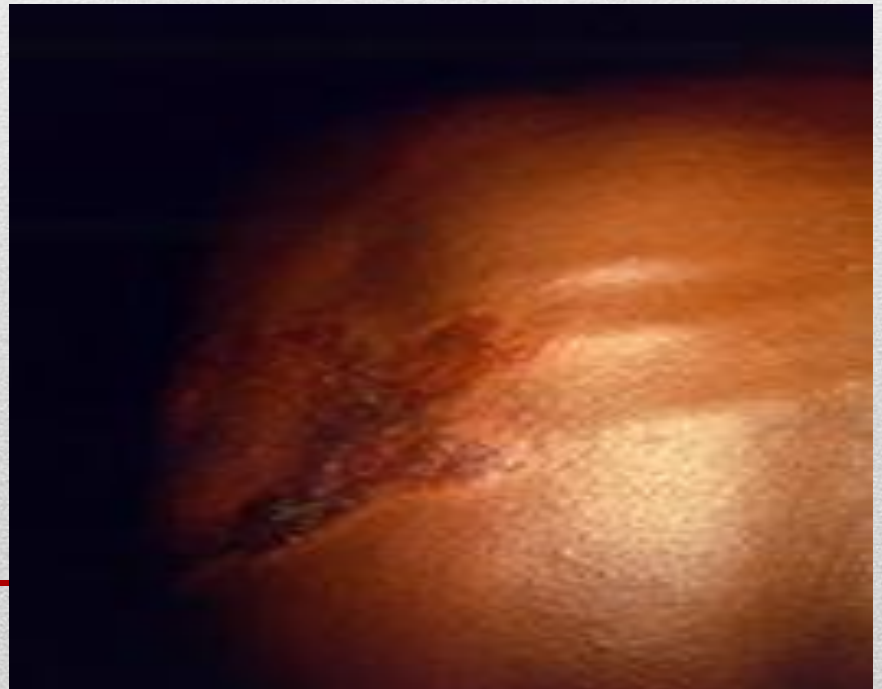
The signs of advanced leprosy can include:

- Paralysis and crippling of hands and feet
- Shortening of toes and fingers due to reabsorption
- Chronic non-healing ulcers on the bottoms of the feet
- Blindness
- Loss of eyebrows
- Nose disfigurement





- Enlarged nerves below the skin and dark reddish skin patch overlying the nerves affected by the bacteria on the chest of a patient with Hansen's disease.



- Hansen's disease can be recognized by appearance of patches of skin that may look lighter or darker than the normal skin. Sometimes the affected skin areas may be reddish. Loss of feeling in these skin patches is common. You may not feel a light touch or a prick with a needle.
- To confirm the diagnosis, doctor will take a sample of skin or nerve (through a skin or nerve biopsy) to look for the bacteria under the microscope and may also do tests to rule out other skin diseases.

Diagnosis and Treatment

- Hansen's disease is treated with a combination of antibiotics. Typically, 2 or 3 antibiotics are used at the same time. This is called multidrug therapy. This strategy helps prevent the development of antibiotic resistance by the bacteria, which may otherwise occur due to length of the treatment.
 - Early diagnosis and treatment usually prevent disability that can result from the disease, and people with Hansen's disease can continue to work and lead an active life. Once treatment is started, the person is no longer contagious. However, it is very important to finish the entire course of treatment as directed by the doctor.
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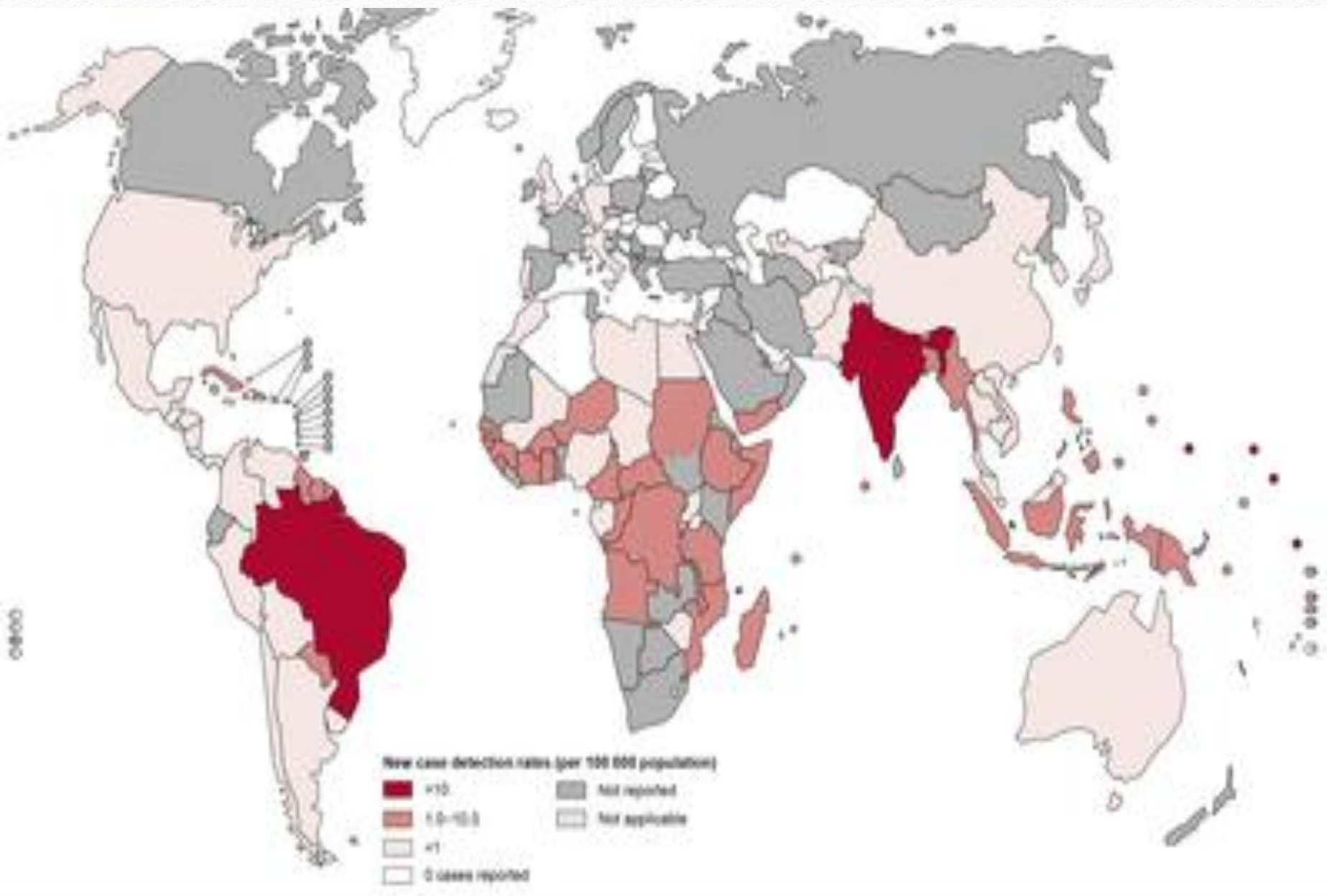
BEFORE
TREATMENT



AFTER
TREATMENT

Hansen's disease

At the age of 7, this girl had thickened facial skin due to Hansen's disease. After 2 years of treatment with antibiotics, her appearance had improved dramatically.



- World Leprosy Day is observed on the last Sunday of January each year.
- Aims to raise awareness about leprosy (now called Hansen's disease) and teach people about this ancient disease that is easily curable today.

World Leprosy Day

TETANUS (Lockjaw)

- * Intact Sensorium
- * Headache
- * Difficult Swallowing
- * Sore Throat
- * Irritability
- * Tonic Spasms
- * Prevention -
Childhood
Immunizations



- * Spasms of
Facial Muscles
 - Fixed Smile
 - Elevated Eyebrows
- * Jaw Stiffness
- * Fever
- * Restlessness
- * Chills
- * Exaggerated
Reflexes
- * Profuse Sweating

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Tetanus(lockjaw):

- Tetanus is an infection caused by bacteria called *Clostridium tetani*. When the bacteria invade the body, they produce a poison (toxin) that causes painful muscle contractions. Another name for tetanus is “lockjaw”. It often causes a person’s neck and jaw muscles to lock, making it hard to open the mouth or swallow.
 - It does not spread from person to person. The bacteria are usually found in soil, dust, and manure and enter the body through breaks in the skin — usually cuts or puncture wounds caused by contaminated objects.
 - In the United States, there are about 30 cases a year.
-

- Tetanus germs are likely to grow in deep puncture wounds caused by dirty nails, knives, tools, wood splinters, and animal bites acquired through exposure to the spores of the bacterium *Clostridium tetani* which are universally present in the soil and from animal feces.
 - The spores can get into the body through broken skin, these include: wounds contaminated with dirt(feces)or spit(saliva) ,wounds caused by an object puncturing the skin (puncture wounds), burns , crush injuries and injuries with dead tissue.
 - Tetanus bacteria can also infect the body through breaks in the skin caused by surgical procedures, insect bites, dental infections , compound fractures, chronic sores and infections, intravenous (IV) drug use, Intramuscular injections (shots given in a muscle)
-

- The incubation period : is usually between 3 and 21 days (average 10 days). However, it may range from one day to several months, depending on the kind of wound. Most cases occur within 14 days. In general, doctors see shorter incubation periods with:
 - More heavily contaminated wounds
 - More serious disease
 - A worse outcome (prognosis)

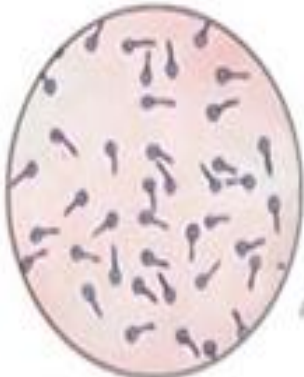
Incubation period:



Symptoms of tetanus include:

- Jaw cramping
- Sudden, involuntary muscle spasms — often in the stomach
- Painful muscle stiffness all over the body
- Trouble swallowing
- Jerking or staring (seizures)
- Headache , fever and sweating
- Changes in blood pressure and heart rate

Symptoms

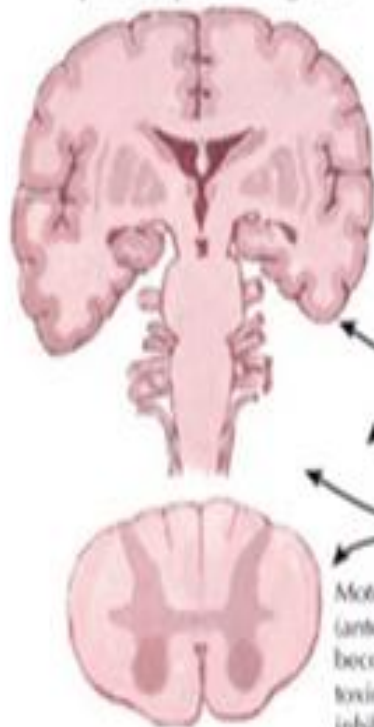


Clostridium tetani: gram-positive, spore-bearing rods

Organisms enter through large, small, or even unrecognized wound. Deep, infected punctures are most susceptible, since organisms thrive best anaerobically.



Spasm of jaw, facial, and neck muscles (trismus [lockjaw], risus sardonicus), and dysphagia are often early symptoms after variable incubation period.



Toxin produced locally passes via bloodstream or along nerves to central nervous system.

Motor neurons of spinal cord (anterior horn) and brainstem become hyperactive because toxin specifically attacks inhibitory (Renshaw) cells.



Complete tetanic spasm in advanced disease. Patient rigid in moderate opisthotonos, with arms extended, abdomen boardlike. Respiratory arrest may occur.

- Serious health problems that can happen because of tetanus include:
- Uncontrolled/involuntary tightening of the vocal cords (laryngospasm)
- Broken bones (fractures)
- Infections gotten by a patient during a hospital visit (hospital-acquired infections)
- (pulmonary embolism)
- (aspiration pneumonia)
- Breathing difficulty, possibly leading to death (1 to 2 in 10 cases are fatal)

Complications



Tetanus is a medical emergency requiring:

- Care in the hospital
- Immediate treatment with medicine called human tetanus immune globulin (TIG)
- Aggressive wound care
- Drugs to control muscle spasms
- Antibiotics

Treatment

- Babies need 3 shots of DTaP to build up high levels of protection against diphtheria, tetanus, and whooping cough. Then, young children need 2 booster shots to maintain that protection through early childhood. CDC recommends shots at the following ages:
- 2 months, 3 months, 4 months
- 15 through 18 months, 4 through 6 years
- Healthcare professionals can give DT instead of DTaP. For example, children who had a very bad reaction to DTaP can receive DT

vaccination



- Preteens should get one shot of Tdap between the ages of 11 and 12 years to boost their immunity. Teens who didn't get Tdap as a preteen should get one shot the next time they visit their healthcare professional..
 - Pregnant women should get Tdap during the early part of the 3rd trimester of every pregnancy. By doing so, she helps protect her baby from whooping cough in the first few months of life.
 - All adults who have never received one should get a shot of Tdap. This can be given at any time, regardless of when they last got Td. This should be followed by either a Td or Tdap shot every 10 years.
-

People of all ages need TETANUS VACCINES



DTaP
for young children

- ✓ 2, 4, and 6 months
- ✓ 15 through 18 months
- ✓ 4 through 6 years

Tdap
for preteens

- ✓ 11 through 12 years

Td or Tdap
for adults

- ✓ Every 10 years

www.cdc.gov/tetanus



- Any child who had a life-threatening allergic reaction after a dose of DT should not get another dose .
- Has seizures or another nervous system problem. Had a fever over 105°F after a dose of DTaP
- Had severe pain or swelling after any vaccine containing tetanus or diphtheria.
- Ever had a condition called Guillian-Barré Syndrome.
- Any child who suffered a brain or nervous system disease within 7 days after a dose of DTaP not attributable to another cause should not get another dose.
- If your child has a mild illness, such as a cold, they can probably get the vaccine. If your child has a more serious illness, they should probably wait until they recover.

Contraindication:

- Immediate and good wound care can also help prevent infection.
- Don't delay first aid of even minor, non-infected wounds like blisters, scrapes, or any break in the skin.
- Wash hands often with soap and water or use an alcohol-based hand rub if washing is not possible.



Rabies

Vaccinate your pet



Vampire bats in Latin America



Rabies is a Rhabdovirus

5) Infection of brain neurons



6) Virus spread along nerves to salivary glands, cornea, skin & other organs



Dog, wolf, fox are principal reservoirs

1) Man bitten by rabid animal (dog)



2) Virus from infected saliva enters the wound



4) Virus travels through nerves to spinal cord and brain

3) Virus multiplies in muscle



Disease progresses to death within one to several weeks



#roypath

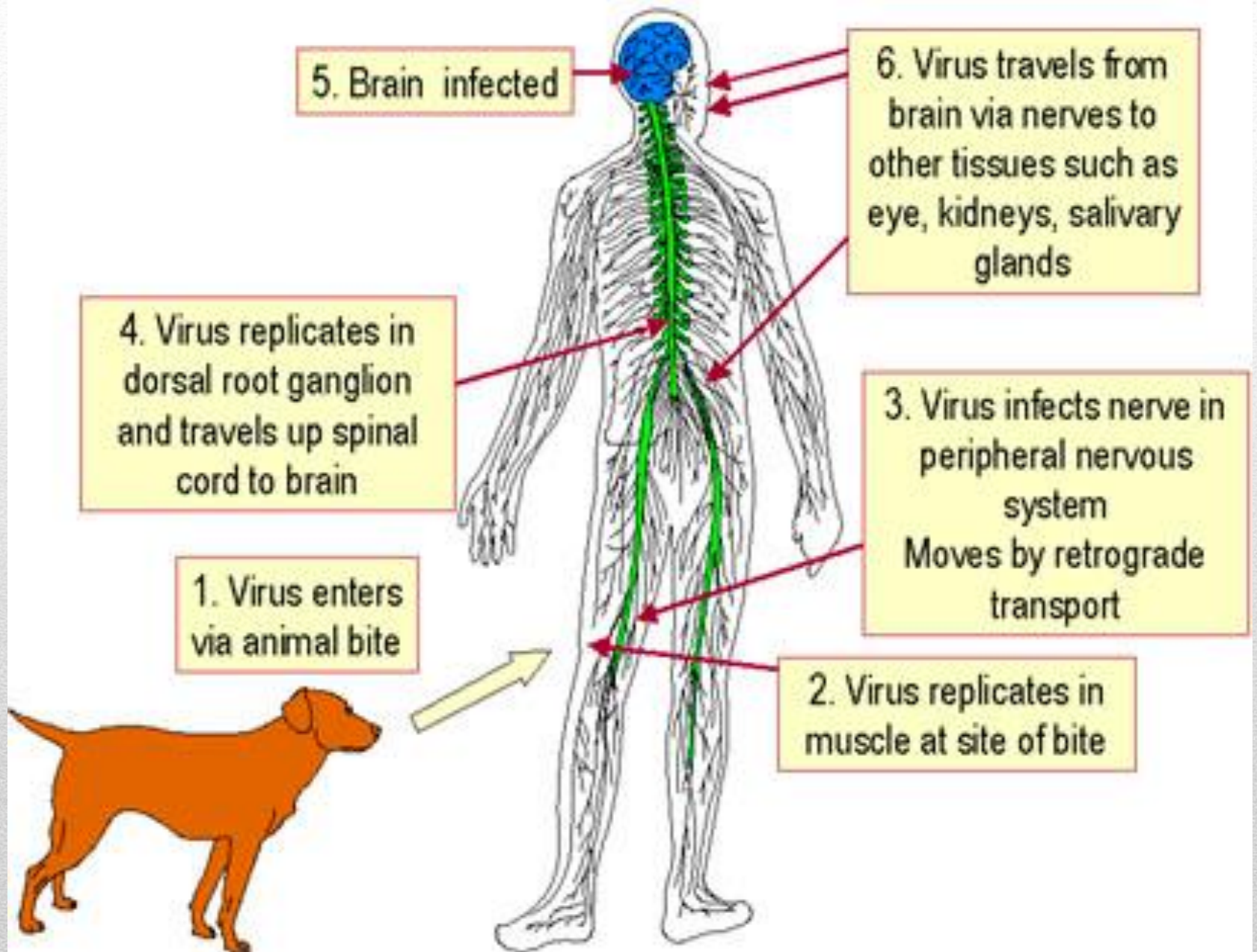
histopathology-india.net

Rabies

- Rabies is a fatal but preventable viral disease. It can spread to people and pets if they are bitten or scratched by a rabid animal
 - rabies is mostly found in wild animals like bats, raccoons, skunks, and foxes. However, in many other countries dogs still carry rabies, and most rabies deaths in people around the world are caused by dog bites.
 - The rabies virus infects the central nervous system. If a person does not receive the appropriate medical care after a potential rabies exposure, the virus can cause disease in the brain, ultimately resulting in death.
-

- People usually get rabies from the bite of a rabid animal.
- It is also possible, but rare, for people to get rabies from non-bite exposures, which can include scratches, abrasions, or open wounds that are exposed to saliva or other potentially infectious material from a rabid animal.

How is rabies transmitted?



- The first symptoms of rabies may be very similar to those of the flu including general weakness or discomfort, fever, or headache. These symptoms may last for days.
- There may be also discomfort or a prickling or itching sensation at the site of the bite,
- progressing within days to acute symptoms of cerebral dysfunction, anxiety, confusion, and agitation.
- As the disease progresses, the person may experience delirium, abnormal behavior, hallucinations, hydrophobia (fear of water), and insomnia. The acute period of disease typically ends after 2 to 10 days.
- Once clinical signs of rabies appear, the disease is nearly always fatal

Signs and symptoms:

Furious rabies

Affects 80% of infected people

Paranoia, **terror**, hallucinations, and finally, delirium

Insomnia

Hydrophobia (fear of water)

- Over-salivating
- Difficulty swallowing
- Extremely painful **muscle spasms** in throat & larynx
- **Panics** at the sight of water
- Unquenchable thirst

Hyperactivity

Death by **cardiac arrest**

Paralytic rabies

Affects 20% of infected people

Less dramatic and usually **LONGER** course than furious rabies

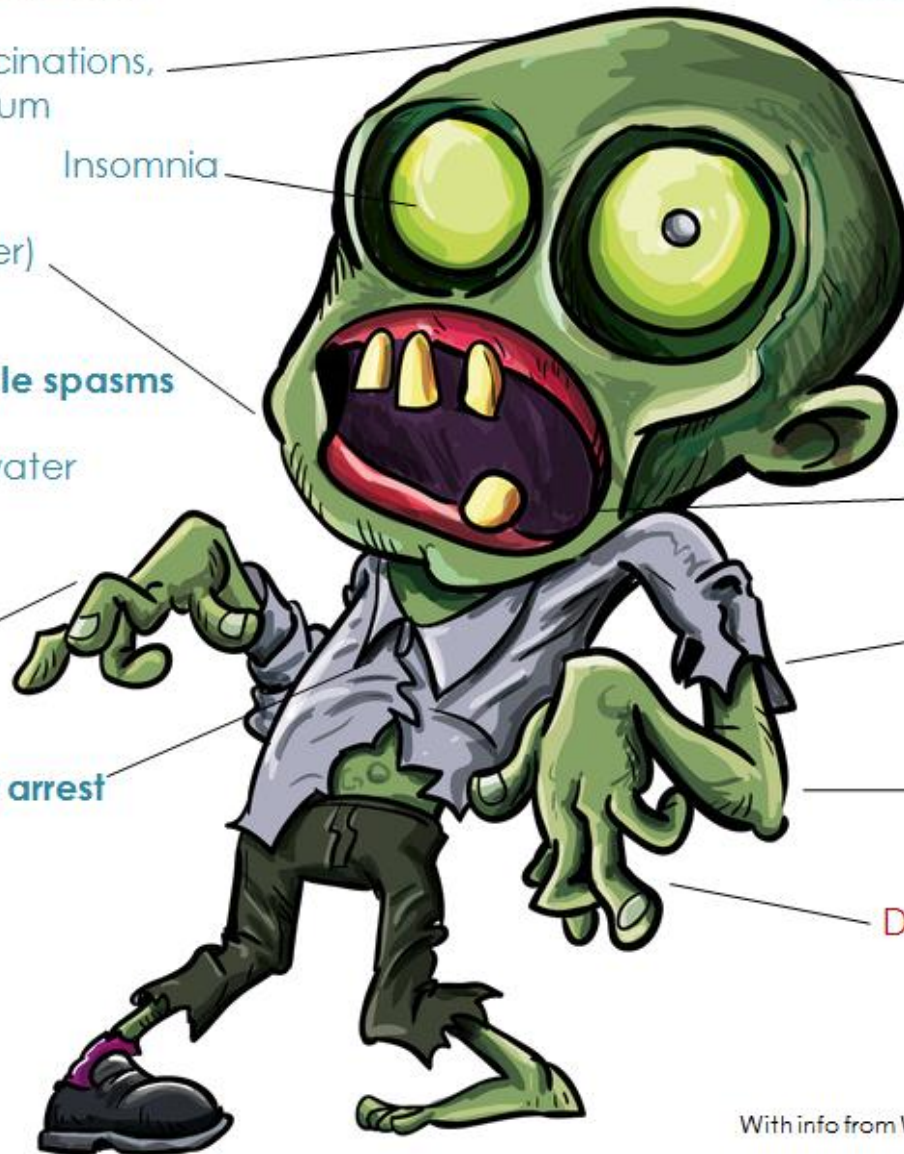
Gradual **coma**

NO hydrophobia

Muscle weakness & loss of sensation

Paralysis

Death



- In animals, rabies is diagnosed using the direct fluorescent antibody (DFA) test, which looks for the presence of rabies virus antigens in brain tissue.
- Histologic examination of tissues from clinically rabid animals show Negri bodies
- Immunohistochemistry (IHC): sensitive and specific means to detect rabies in formalin-fixed tissues.



How is rabies diagnosed?

- Dose of human rabies immune globulin (HRIG) and rabies vaccine given on the day of the rabies exposure, and then a dose of vaccine given again on days 3, 7, and 14. For people who have never been vaccinated against rabies previously
- People who have been previously vaccinated or are receiving pre-exposure vaccination for rabies should receive only vaccine.

Post-exposure prophylaxis:

- Three 1.0-mL injections of vaccine should be administered intramuscularly (deltoid area) — one injection per day on days 0, 7, and 21 or 28.

Primary vaccination

- September 28 is World Rabies Day, to raise awareness about rabies and bring together partners to enhance prevention and control efforts worldwide.
- While rabies is a 100% preventable disease, more than 59,000 people die from the disease around the world each year.

World Rabies Day

Thank you
