# Varicella (Chickenpox)

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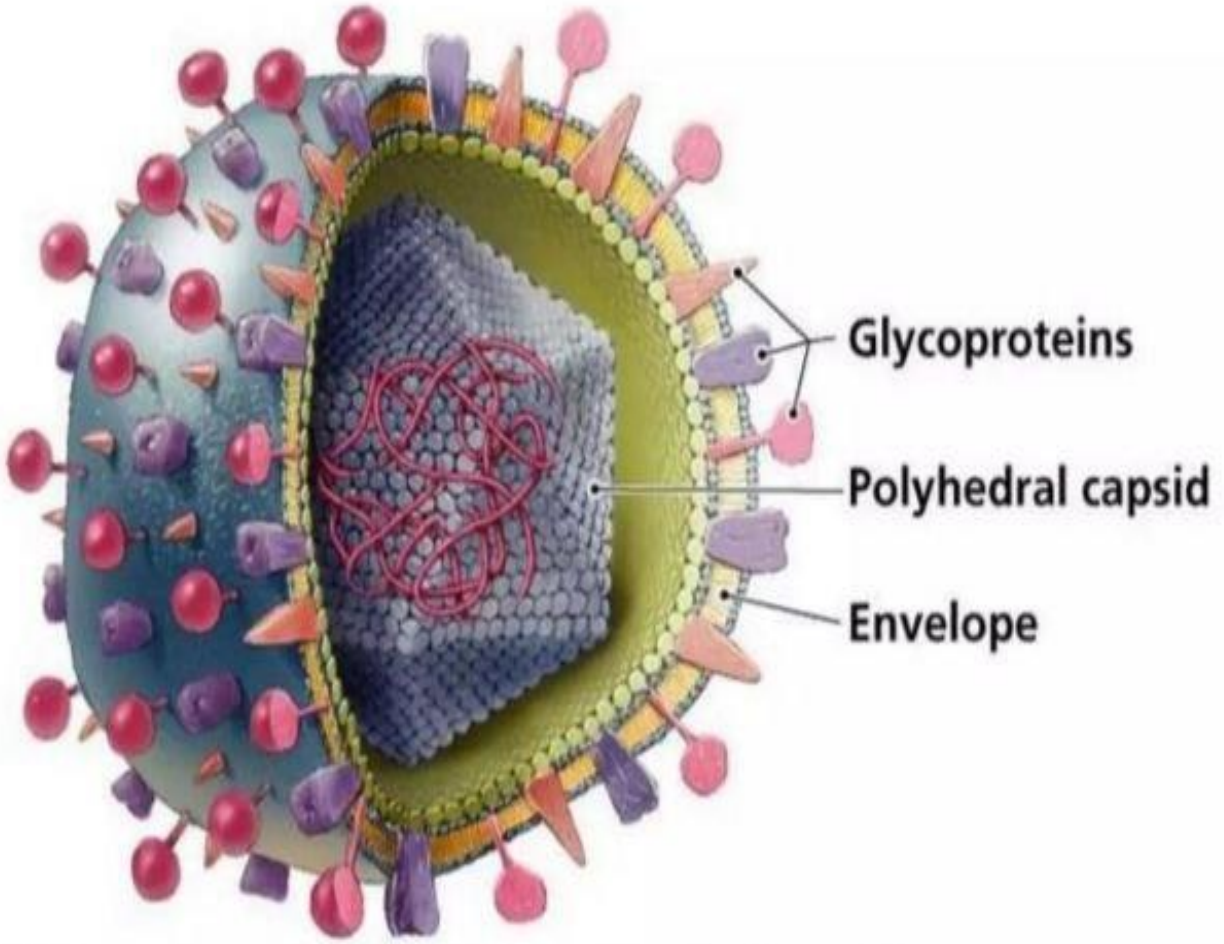
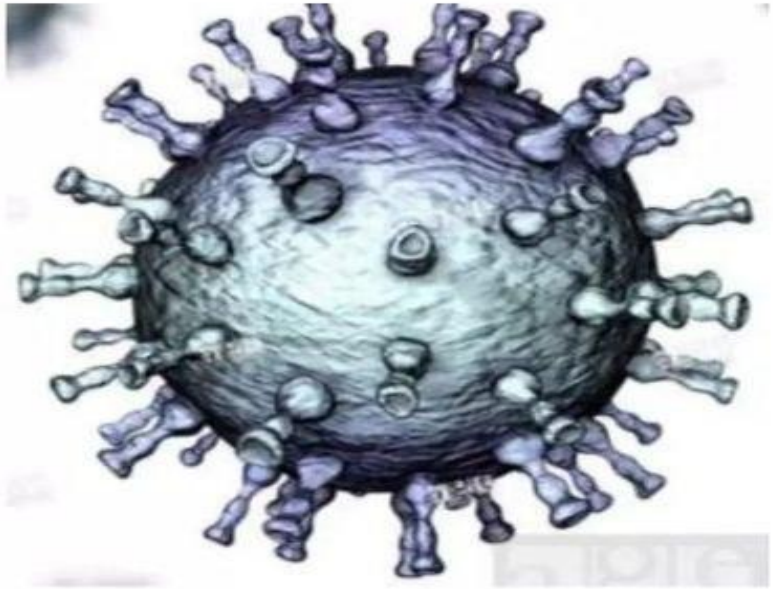
- **Varicella (Chickenpox)**:
- is the primary disease, after incubation period of **14-21 days**, brief prodromal symptoms of fever, malaise.
- A papulovesicular rash then appear in crops on the trunk then spread to the head and extremities. Itchy and ends by crusting.
- varicella (**chickenpox)** in a primary infection that occurs especially in children and reactivation can cause the onset of **zoster** that is more frequent in the elderly.

# Varicella-Zoster Virus (VZV)

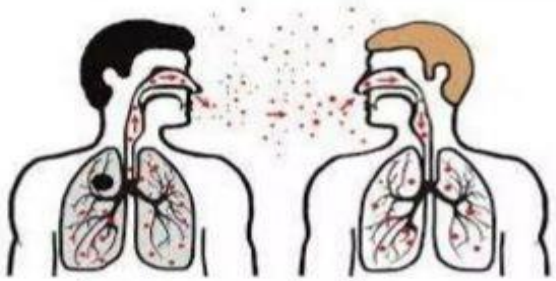


# INFECTIOUS AGENT

- Varicella Zoster Virus [Human (alpha)herpes 3)
- DNA virus, member of herpes.
- VZV only affects Human & Commonly causes Chicken pox in childrens , teen & Young adults,
- And Herpes Zoster (Shingles) In adults & rarely in children.



- **Mode of transmission**



  - *Direct*
    - Person to person through droplet or air borne spread
    - Virus can cross the placenta
  - *Indirect*
    - Through articles freshly soiled by the discharge from the mucus membrane of the patient
- **Incubation Period**
  - 14-16 days
- **Susceptibility & Resistance**
  - It is universal among those not previous attacked

**Who Is at Risk?**

- Children (ages 5 to 9) experience mild classic disease.
- Teenagers and adults are at risk for more severe disease with potential pneumonia.
- Immunocompromised people and newborns are at risk for life-threatening pneumonia, encephalitis, and progressive disseminated varicella.
- Elderly and immunocompromised people are at risk for recurrent disease (herpes zoster [shingles]).

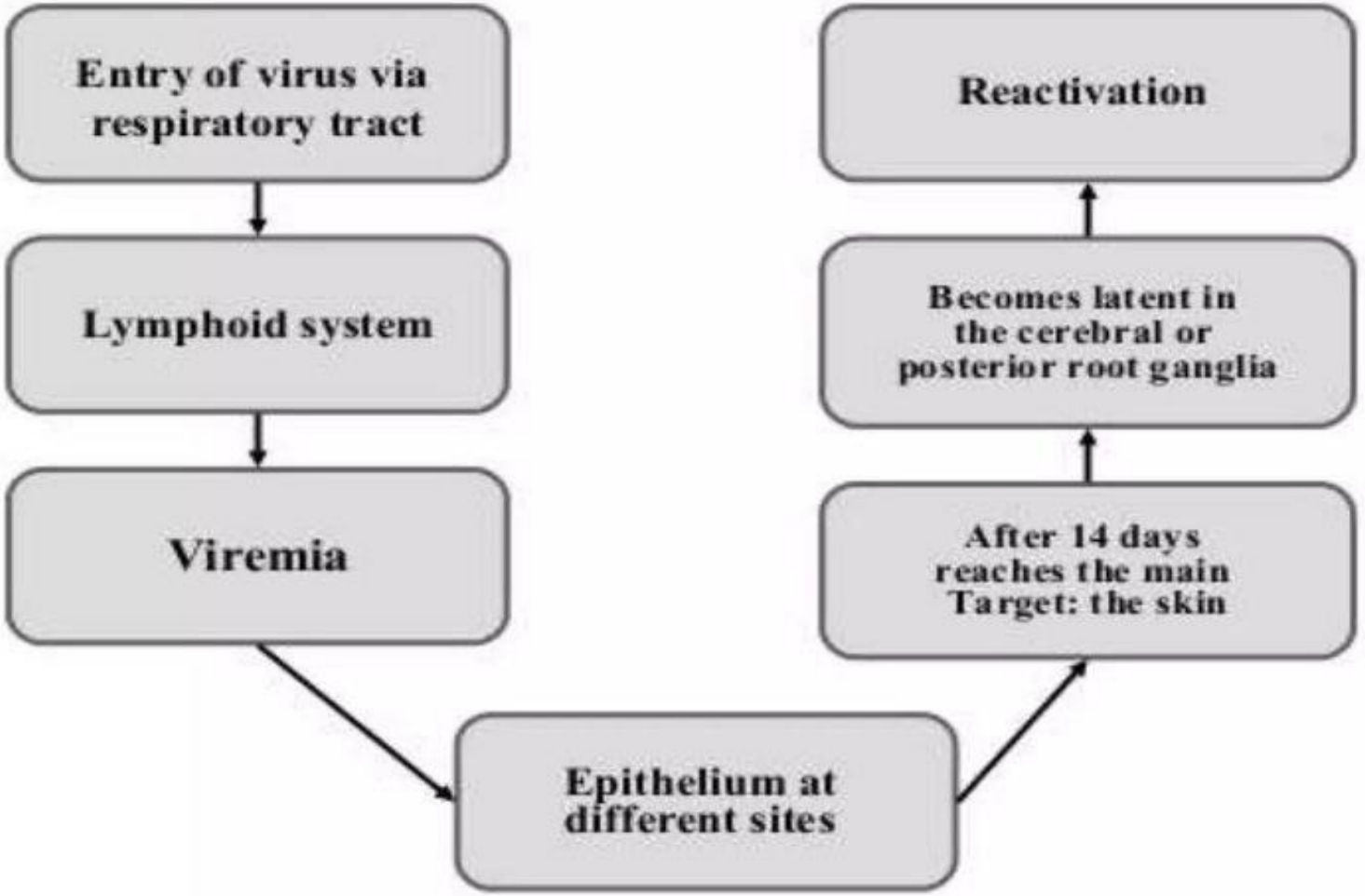
**Geography/Season**

- Virus is found worldwide.
- There is no seasonal incidence.

# How it spreads?

- By mother to baby by pregnancy, labour or nursing.
- By airborne respiratory droplets (coughs or sneezes).
- By skin-to-skin contact (handshakes or hugs).
- By saliva (kissing or shared drinks).
- By touching a contaminated surface (blanket or doorknob).
- By direct contact with the fluid that is in the chickenpox or shingles rash blisters.

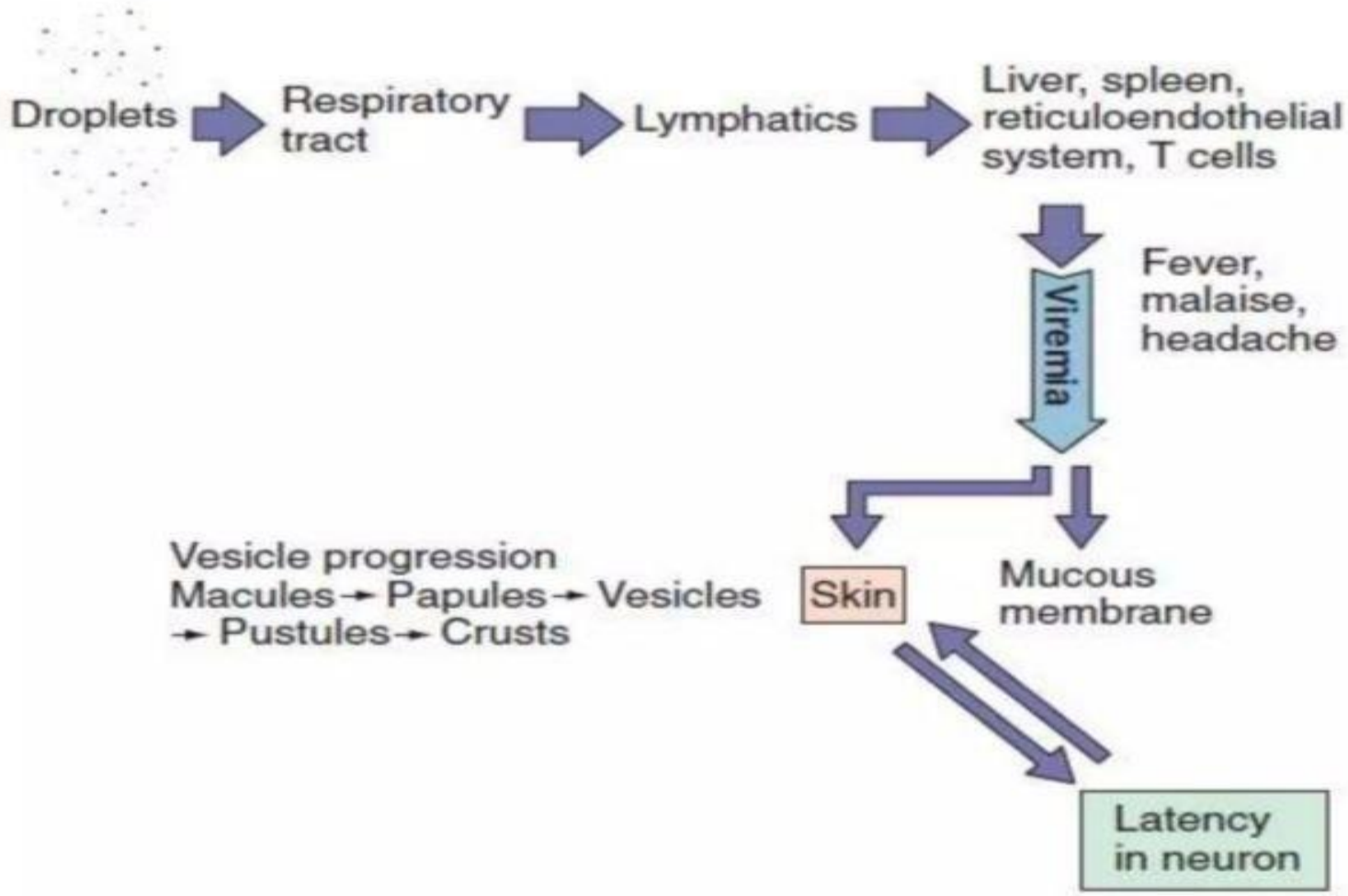
# PATHOGENESIS



# Disease Mechanisms

Varicella ($1^{st}$)

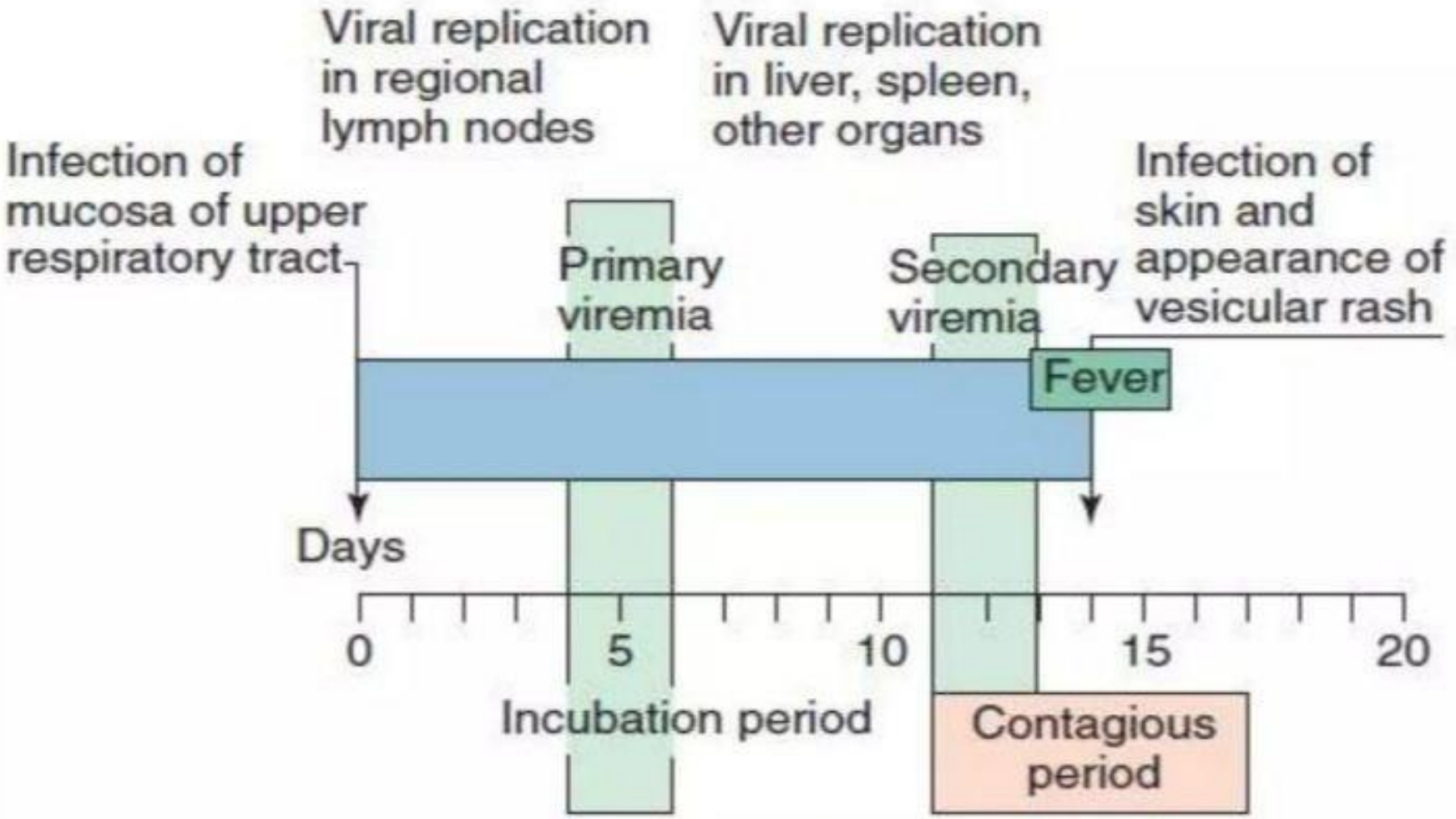
Herpes Zoster (Shingles) ($2^{nd}$)




Mechanism of spread of varicella-zoster virus (VZV) within the body

# Symptoms

- The early symptoms: mild fever, loss of appetite, headache and feeling tired
- followed by the appearance of a red rash that becomes blistered and itchy, mostly on the trunk, head and face with some on the arms and legs.
- The blisters can occur in the eyes, mouth and throat, vagina and urinary tract. For up to 5-7 days, new blisters appear, filled with liquid containing the virus which then form crusts that fall off after 1-2 weeks.




Time course of varicella (chickenpox). The course in young children, as presented in this figure, is generally shorter and less severe than that in adults.

- Rapid Evolution
  - Macule→ papule → vesicles → pustule → scab

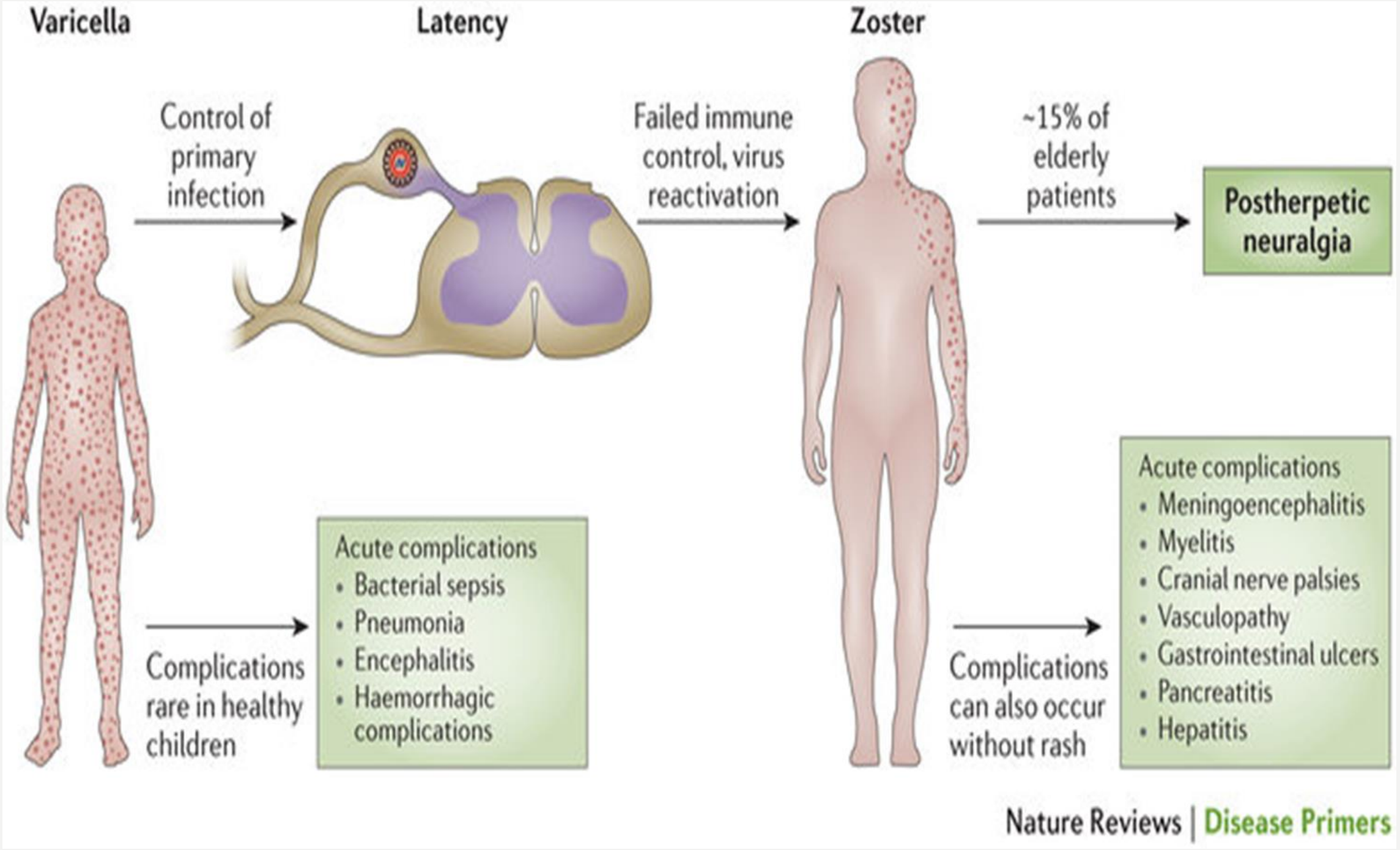

- Pleomorphism
  - A characteristic features of the rash in chicken pox
  - All stage of rash may be seen simultaneously at one time in same area
  - This is due to appearing in successive crop for 4 to 5 days in same area
- Fever
  - Does not run high but shows exacerbation with each fresh crop of eruption


# COMPLICATIONS

- In most cases, chicken pox a mild, self-limiting disease. The mortality is less than 1 % in uncomplicated cases.
- Varicella Hemorrhage
- Pneumonia
- Encephalitis
- Acute cerebellar ataxia
- Reye's syndrome
- Fetal death and Birth defects

- **Fetal varicella syndrome (FVS)** is a rare complication of maternal varicella infection occurring in <2% of the babies born to women infected with varicella between 7 and 28 weeks of pregnancy.
- The newborn may present with low birth weight, cutaneous scars, papular lesions, localized absence of skin on a limb, hypoplasia of one or more limbs, malformed digits along with various ocular and central nervous system (CNS) abnormalities.

Hypoplastic left lower limb with cicatrising skin


Varicella
Latency
Zoster
Control of primary infection
Failed immune control, virus reactivation
~15% of elderly patients
Postherpetic neuralgia
Complications rare in healthy children
Acute complications
• Bacterial sepsis
• Pneumonia
• Encephalitis
• Haemorrhagic complications
Complications can also occur without rash
Acute complications
• Meningoencephalitis
• Myelitis
• Cranial nerve palsies
• Vasculopathy
• Gastrointestinal ulcers
• Pancreatitis
• Hepatitis
Nature Reviews | Disease Primers


A reactivation of the chickenpox virus in the body, causing a painful rash- Herpes Zoster (Shingles)

- **Diagnosis**
- **1) Most diagnosis is made clinically.**
- **2) Tzanck smear**
- **3) definitive diagnosis is isolation of the virus from the lesion by growth in cell culture.**
- **4)Virus specific Ab can be detected using fluorescent Ab and enzyme immunoassay.**

# Laboratory Diagnosis

- The cytopathologic effects (CPEs) in VZV-infected cells are similar to those seen in HSV-infected cells and include Cowdry type A intranuclear inclusions and syncytia.
- These cells may be seen in skin lesions, respiratory specimens, or organ biopsy specimens.
- A direct fluorescent antibody to membrane antigen (FAMA) test can also be used to examine skin lesion scrapings or biopsy specimens.
- Antigen and genome detection are sensitive means of diagnosing VZV infection.
- PCR techniques are especially useful for systemic and neuronal disease.

# DIAGNOSIS

- Points for Diagnosis:
  - Prodrome of low-grade fever
  - Eruption of papules, vesicles and pustule
  - Typical Dew-drop on Rose petal appearance
  - Characteristic centripetal distribution

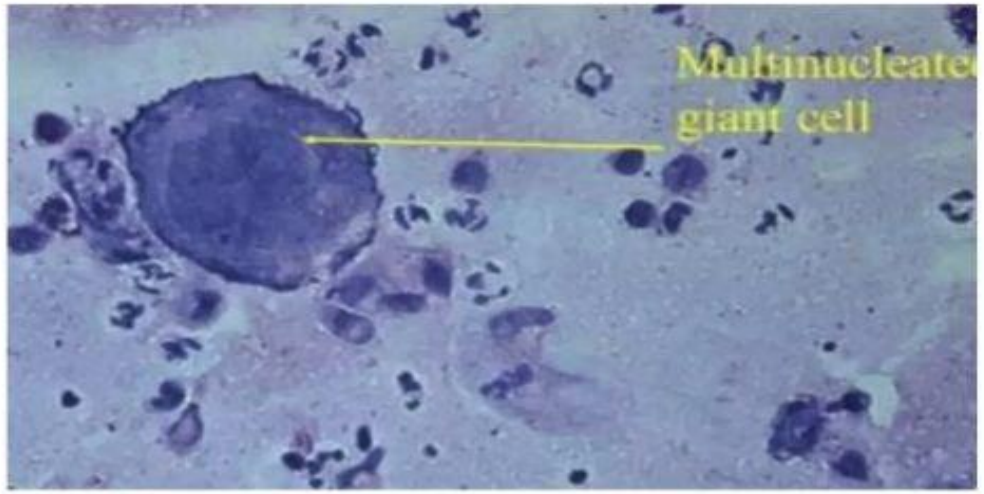
# INVESTIGATION

- Investigations are rarely required.

- In doubtful cases

  **Tzank-smear** Done from floor of vesicles

  – Floor of vesicles show of multinucleated giant cells.

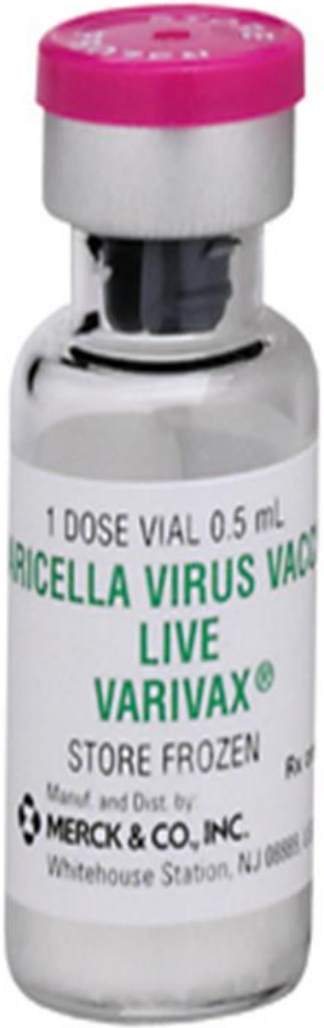


# TREATMENT

- Mild Case (chilldren)
  - Calamine lotion
  - Antihistamines
- Severe case (Adults, HIV+)
  - Acyclovir 800 mg, 5 times x 7-10 days
  - Famciclovir 250 mg TDS x 10 days
- Other:
  - Topical antibacterial Ointment like Mupirocin to prevent secondry bacterial infection
  - Antipyretic

# Varicella Vaccines

- Two live attenuated varicella virus vaccines licensed for use in US: Varivax® and Proquad®
- Both vaccines may be used for first and second doses of varicella vaccine
- Varivax ® (1,400 pfu) is the single-antigen varicella vaccine licensed in 1995 for use among healthy persons aged ≥ 12 months
- Proquad® or MMRV (9,800 pfu) is a combination measles, mumps, rubella, and varicella vaccine licensed in 2005 for use among healthy children aged 12 months-12 years

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