



# SIGNS AND SYMPTOMS IN INFECTIONS

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# **INFECTION**

## **Definition**

- ❑ **The invasion and growth of microorganisms in the body.**

# INFECTION

## Definition

❑ **Microorganisms: Small, living organisms not visible to the naked eye.**

❑ **Fungi**

❑ **Bacteria**

❑ **Viruses**

❑ **Protozoans**

❑ **Prions**

❑ **Pathogens: Microorganisms that cause disease**

❑ **Disease results if the invading pathogen causes impairment in the host.**

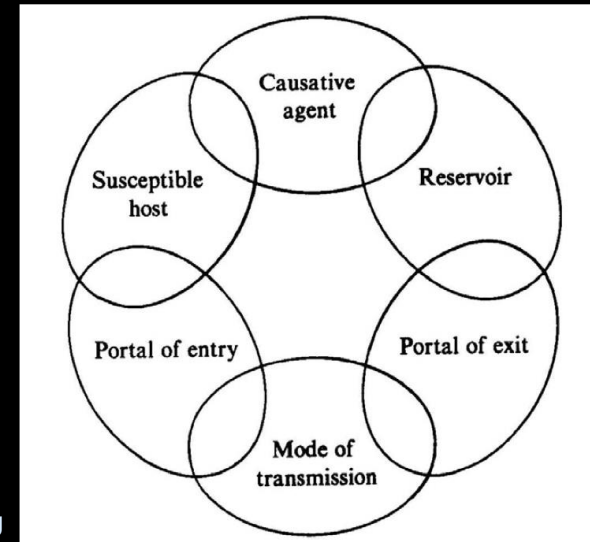


# INFECTION

## Chain of Infection

### ❑ Conditions that must exist for disease to occur and spread

1. **Causative Agent:** A pathogen such as a bacterium or virus that can cause disease.
2. **Reservoir:** The place where a causative agent can live. Common reservoirs are human body, animals, environment and fomites which is nonliving objects such as doorknobs, cups, utensils, needles.
3. **Portal of Exit:** The way for a causative agent to escape from the reservoir pathogens can leave the body through such as urine, feces, saliva, blood, tears, mucous discharge, sexual secretions, and wounds
4. **Mode of Transmission:** The way that causative agent can be transmitted to a host including direct contact; person-to-person, examples include: sex, saliva/kissing, handshake/touching and indirect contact; contaminated substances examples include: food, air, soil, insects, animals, feces, equipment
5. **Portal of Entry:** A way for the causative agent to enter a new host. Different portals of entry include breaks in the skin, respiratory tract, digestive tract, genitourinary tract, circulatory system
6. **Susceptible Host:** An individual who can contract the disease. Humans become susceptible if large numbers of pathogens invade the body and body defenses are weak



# INFECTION

## The Natural History of a Communicable Disease

- ❑ The natural history of a communicable disease refers to the sequence of events that happen one after another, over a period of time, in a person who is not receiving treatment.
- ❑ Signs and symptoms are related to these different stages.
- ❑ Events that occur in the natural history of a communicable disease are grouped into four stages:
  - ❑ Exposure
  - ❑ Infection
  - ❑ Infectious disease
  - ❑ Outcome



# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Definition**

Different signs and symptoms are seen with various variables such as the organ system involved and the causative microorganism.

- ☐ **Fever**
- ☐ **Chills and sweats**
- ☐ **Change in cough or a new cough**
- ☐ **Sore throat or new mouth sore**
- ☐ **Shortness of breath**
- ☐ **Nasal congestion**
- ☐ **Stiff neck**
- ☐ **Unusual vaginal discharge or irritation**
- ☐ **Increased urination**
- ☐ **Burning or pain with urination**
- ☐ **Redness, soreness, or swelling in any area**
- ☐ **Diarrhea**
- ☐ **Vomiting**
- ☐ **Pain in the abdomen or rectum.**
- ☐ **New onset of pain**

# SIGNS AND SYMPTOMS IN INFECTIONS

## Gastroenteritis

- ❑ Gastroenteritis is an intestinal infection marked by watery diarrhea.
  - ❑ Diarrhea
  - ❑ Abdominal pain
  - ❑ Nausea
  - ❑ Vomiting
  - ❑ Fever



# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Gastroenteritis**

- ☐ **Assess children with fever for signs of dehydration. Look for:**
  - ☐ **Prolonged capillary refill time**
  - ☐ **Abnormal skin turgor**
  - ☐ **Abnormal respiratory pattern**
  - ☐ **Weak pulse**
  - ☐ **Cool extremities**



# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Gastroenteritis**

- ❑ **Skin turgor is the skin's elasticity. It is the ability of skin to change shape and return to normal.**
- ❑ **To check for skin turgor, grasp the skin between two fingers so that it is tented up. The skin is held for a few seconds then released.**
- ❑ **Skin with normal turgor snaps rapidly back to its normal position. Skin with poor turgor takes time to return to its normal position.**



**Abnormal skin turgor**



**Abnormal skin turgor**

# SIGNS AND SYMPTOMS IN INFECTIONS

## Gastroenteritis

- ❑ This examination could be performed on arm and leg but, commonly abdomen is checked in children.



**Abnormal skin turgor**

# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Gastroenteritis**

- ❑ **Abnormal skin turgor**
- ❑ **Dry mouth**
- ❑ **Sunken eyes**
- ❑ **Sunken anterior fontanelle**
- ❑ **Irritability**



**Dehydrated infant**



# SIGNS AND SYMPTOMS IN INFECTIONS

## Gastroenteritis

- ❑ **Abnormal skin turgor**
  - ❑ The skin often has a doughy texture when the dehydration is associated with elevation of serum sodium.
- ❑ **Dry mouth**
- ❑ **Sunken eyes**
- ❑ **Sunken anterior fontanelle**
- ❑ **Irritability**

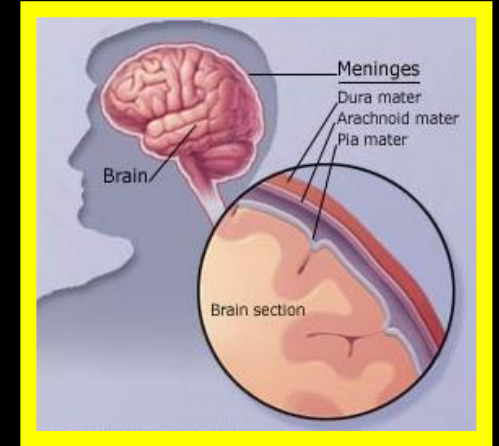


**Doughy skin**

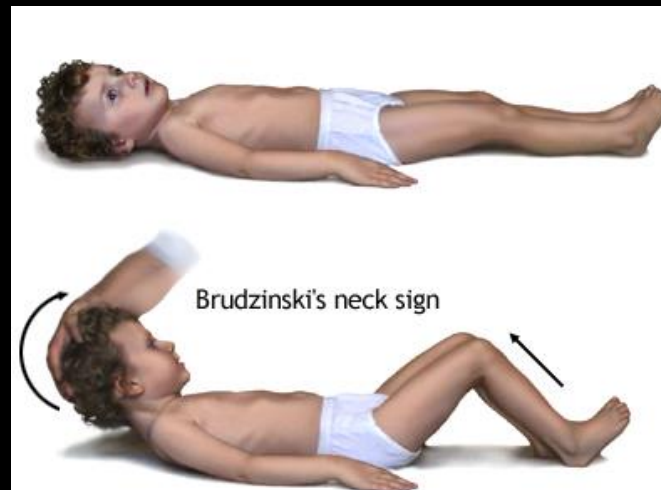
# SIGNS AND SYMPTOMS IN INFECTIONS

## Meningitis

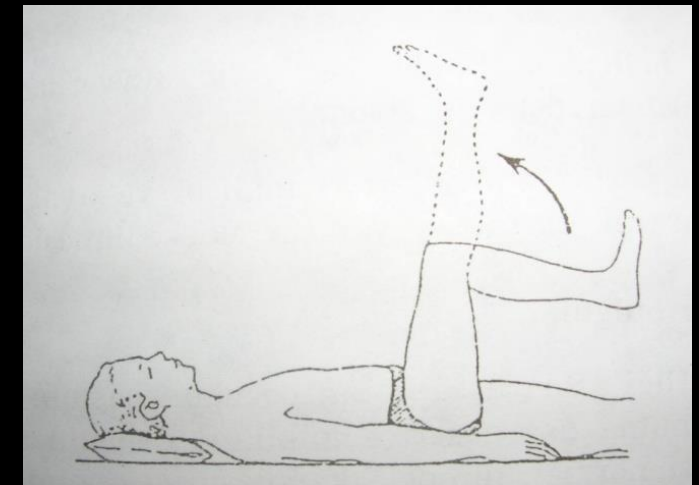
- ❑ Stiff neck
- ❑ Brudzinski's sign positivity
- ❑ Kernig's sign positivity
- ❑ Bulging fontanelle
- ❑ Decreased level of consciousness
- ❑ Convulsive status epilepticus



**Stiff neck**



**Brudzinski's sign**

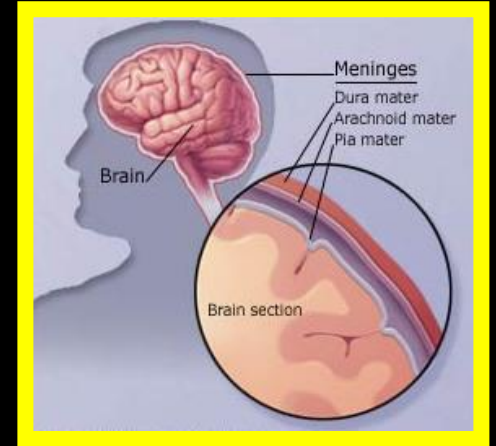


**Kernig's sign**

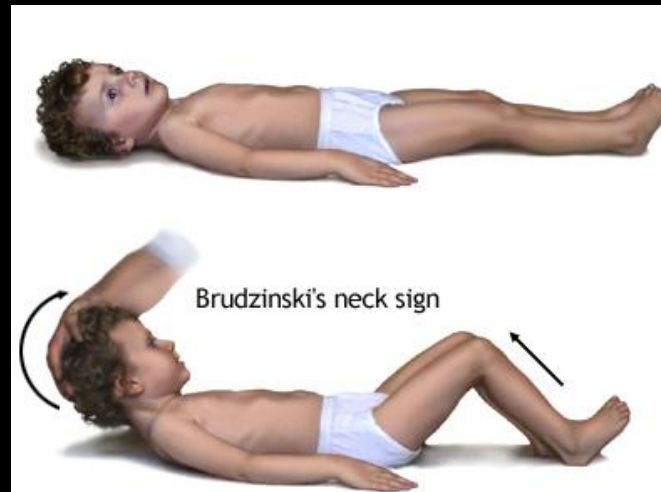
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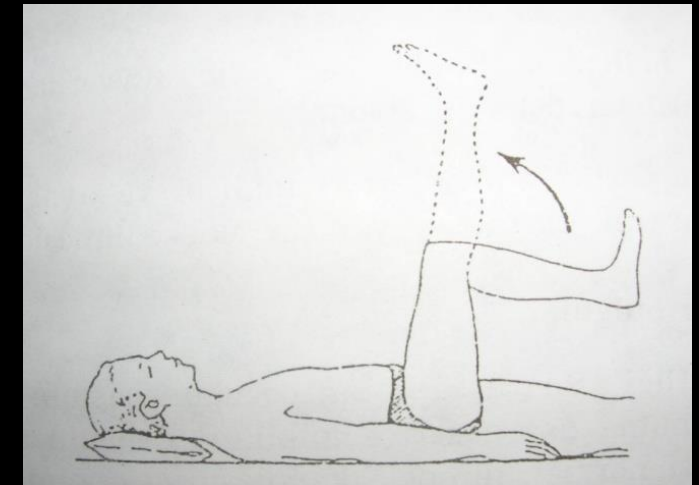
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**Stiff neck**



**Brudzinski's sign**



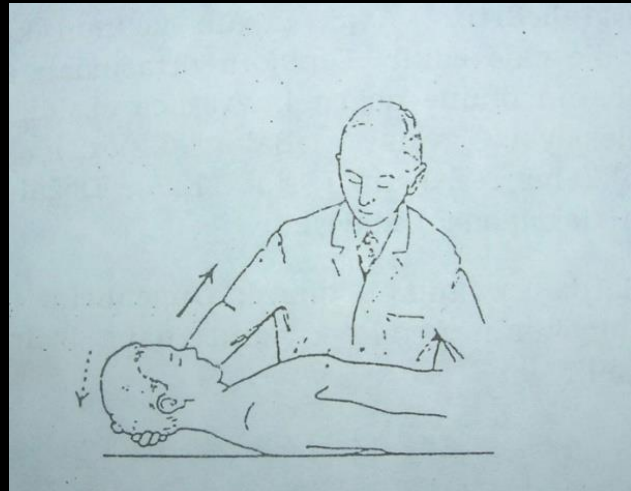
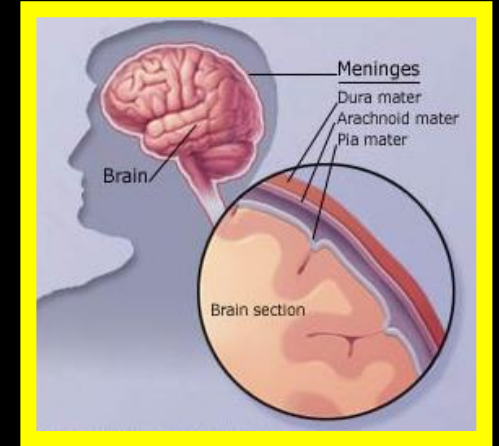
**Kernig's sign**



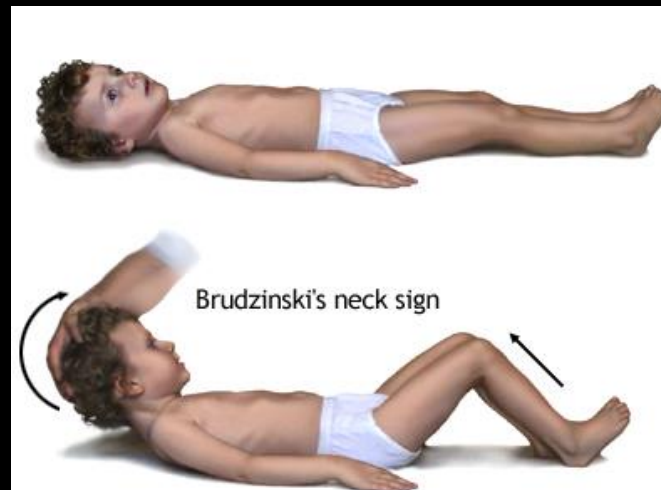
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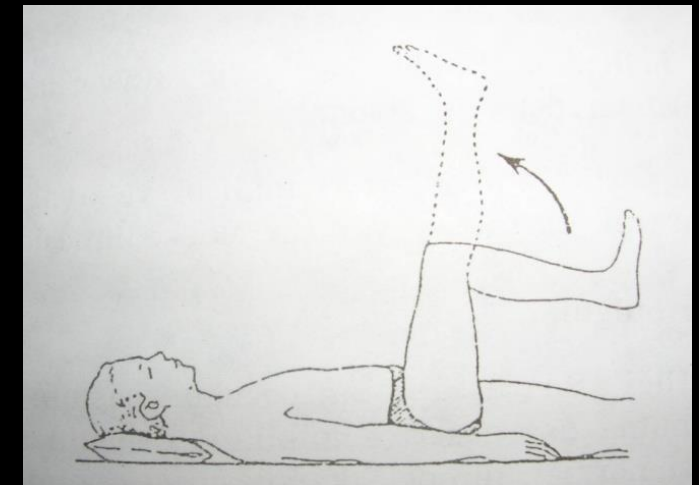
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**Stiff neck**



**Brudzinski's sign**

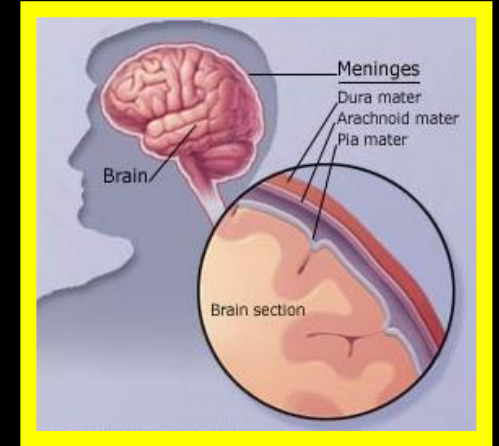


**Kernig's sign**

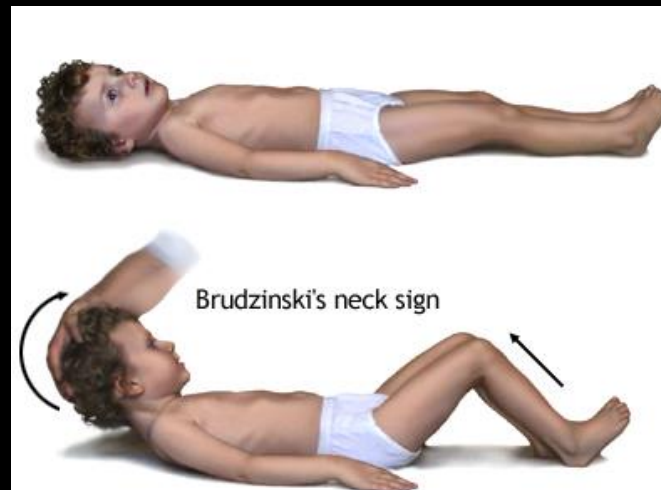
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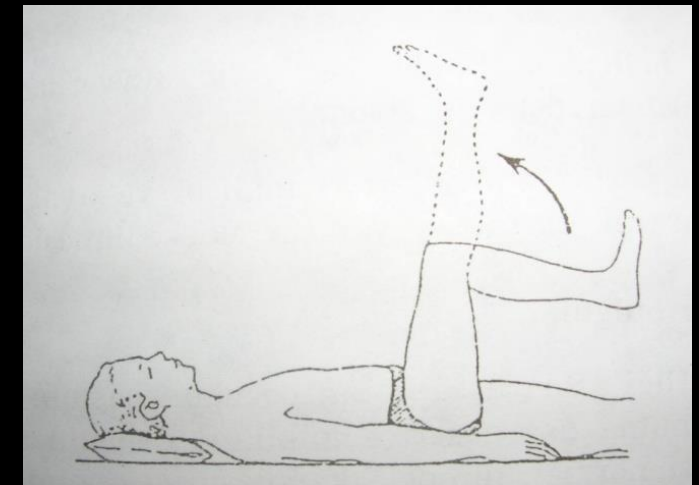
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**Stiff neck**



**Brudzinski's sign**



**Kernig's sign**



# SIGNS AND SYMPTOMS IN INFECTIONS

## Meningitis

- ❑ Consider meningococcal disease in any child with fever and a non-blanching rash, particularly if any of the following features are present:
  - ❑ An ill-looking child
  - ❑ Lesions larger than 2 mm in diameter (purpura)
  - ❑ A capillary refill time of 3 seconds or longer



**Meningococcal rash**

# SIGNS AND SYMPTOMS IN INFECTIONS

## Pneumonia

- ❑ Consider pneumonia in children with fever and any of the following signs:

- ❑ Tachypnea

Age

Tachypnea if respiratory rate greater than

**0-2 months**

**60/minute**

**2-12 months**

**50/minute**

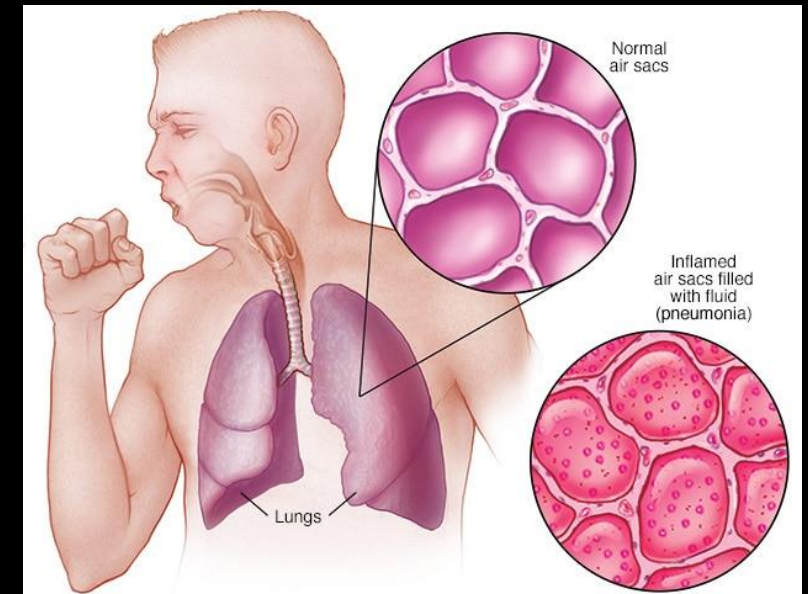
**1-5 years**

**40/minute**

**>5 years**

**20/minute**

- ❑ Crackles in the chest
  - ❑ Nasal flaring
  - ❑ Chest indrawing
  - ❑ Cyanosis
  - ❑ Oxygen saturation of 95% or less on room air.



# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Urinary Tract Infection**

- ❑ **Consider urinary tract infection in any child younger than 3 months with fever.**
- ❑ **Consider urinary tract infection in a child aged 3 months or older with fever and 1 or more of the following:**
  - ❑ **Vomiting**
  - ❑ **Poor Feeding**
  - ❑ **Lethargy**
  - ❑ **Irritability**
  - ❑ **Abdominal pain or tenderness**
  - ❑ **Urinary frequency or dysuria.**



# SIGNS AND SYMPTOMS IN INFECTIONS

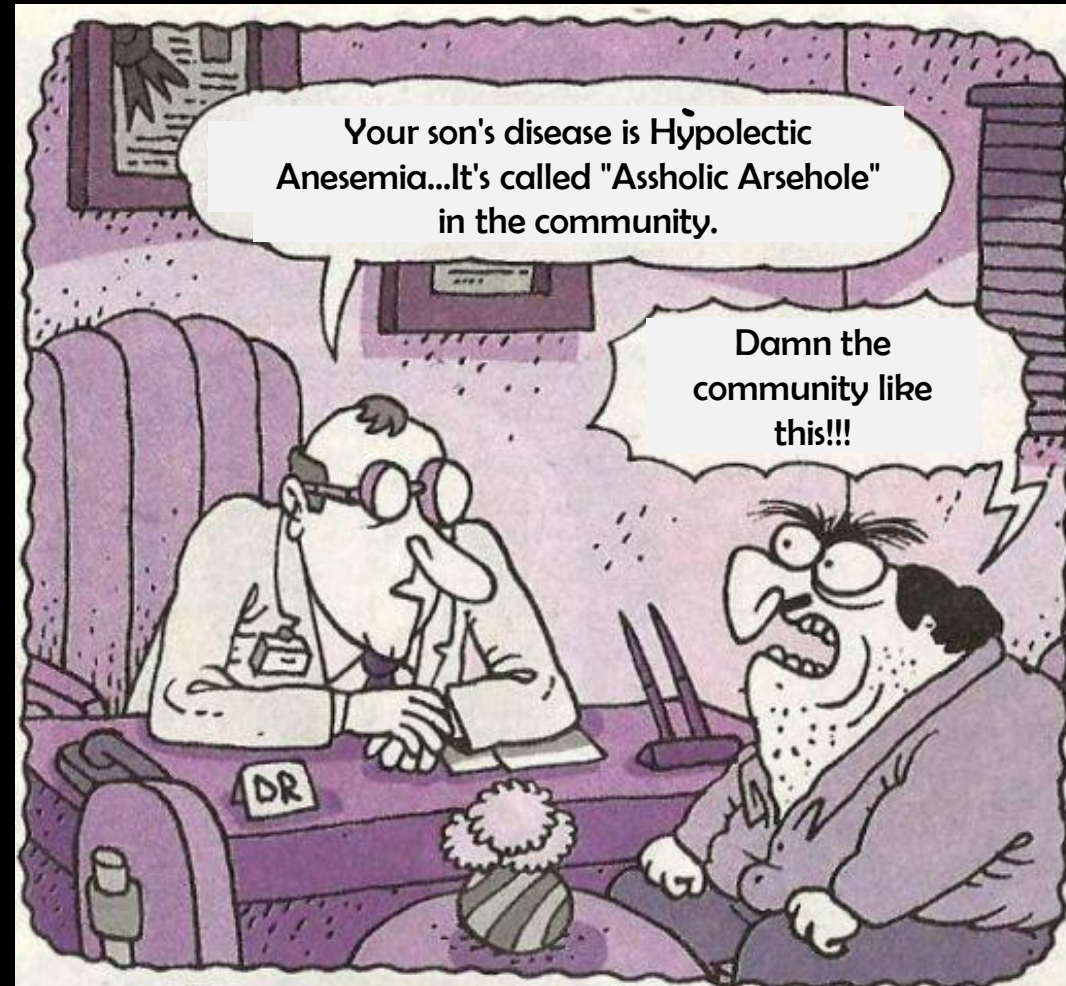
## Septic Arthritis/Osteomyelitis

- ❑ Consider septic arthritis/osteomyelitis in children with fever and any of the following signs:
  - ❑ Swelling of a limb or joint
  - ❑ Not using an extremity
  - ❑ Non-weight bearing



# SIGNS AND SYMPTOMS IN INFECTIONS

## To be able to Tell in the Community's Language...





# SIGNS AND SYMPTOMS IN INFECTIONS

## Common Childhood Exanthems

- ❑ Six separate childhood exanthems were defined in the late 19th, early part of the 20th Century. These were named in the order they were discovered and are outlined.
- ❑ The term fourth disease or Filatov-Dukes disease is thought to be a variant of scarlet fever and is no longer used.

<i>Number</i>	<i>Disease</i>
<i>First</i>	Measles (Rubeola)
<i>Second</i>	Scarlet fever
<i>Third</i>	Rubella (German measles)
<i>Forth</i>	Filatov-Dukes disease
<i>Fifth</i>	Erythema infectiosum
<i>Sixth</i>	Roseola infantum, Exanthem subitum

# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Measles**



**Conjunctivitis**



**Photophobia**



**Koplik's spots**



# SIGNS AND SYMPTOMS IN INFECTIONS

## Measles



**First day**

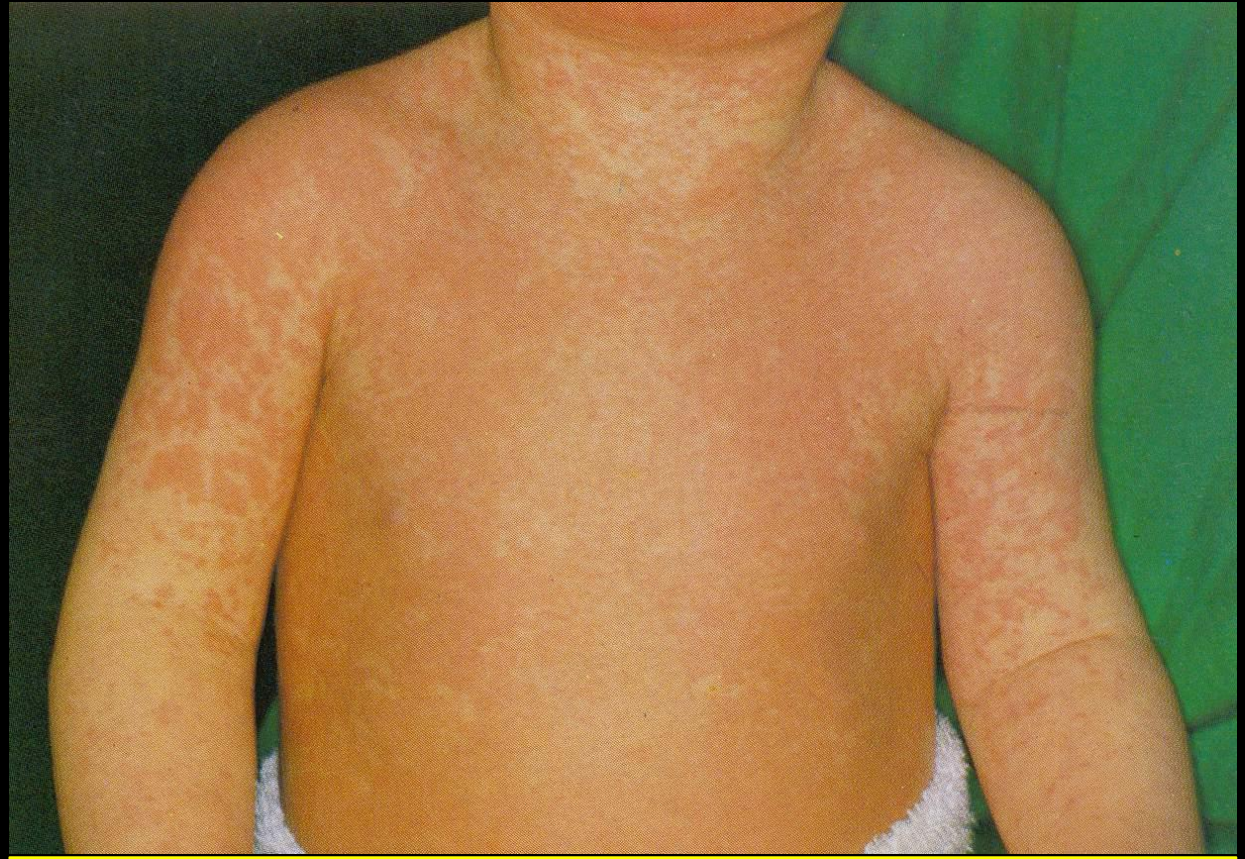


# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Measles**



**Second day**

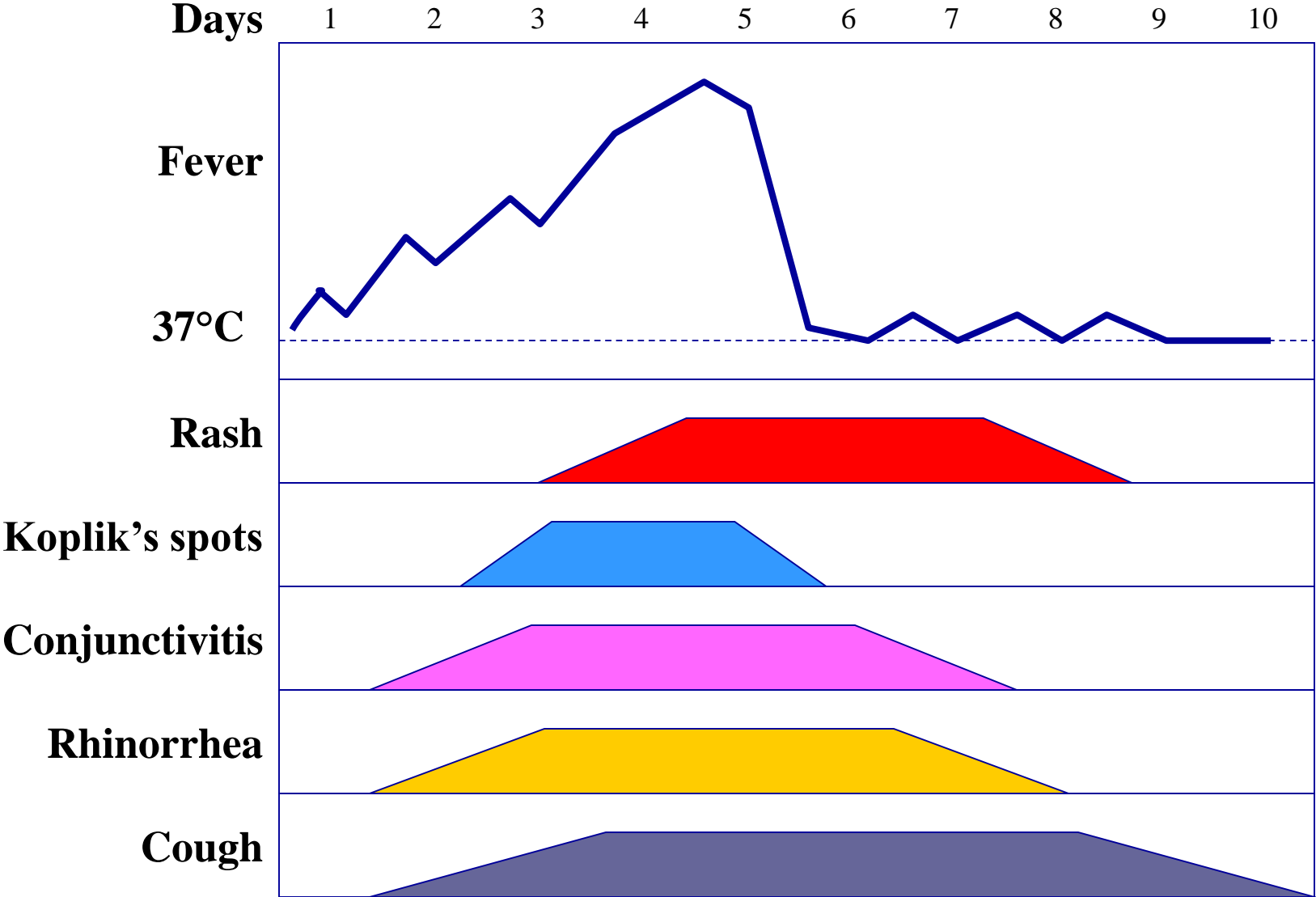


**Third day**



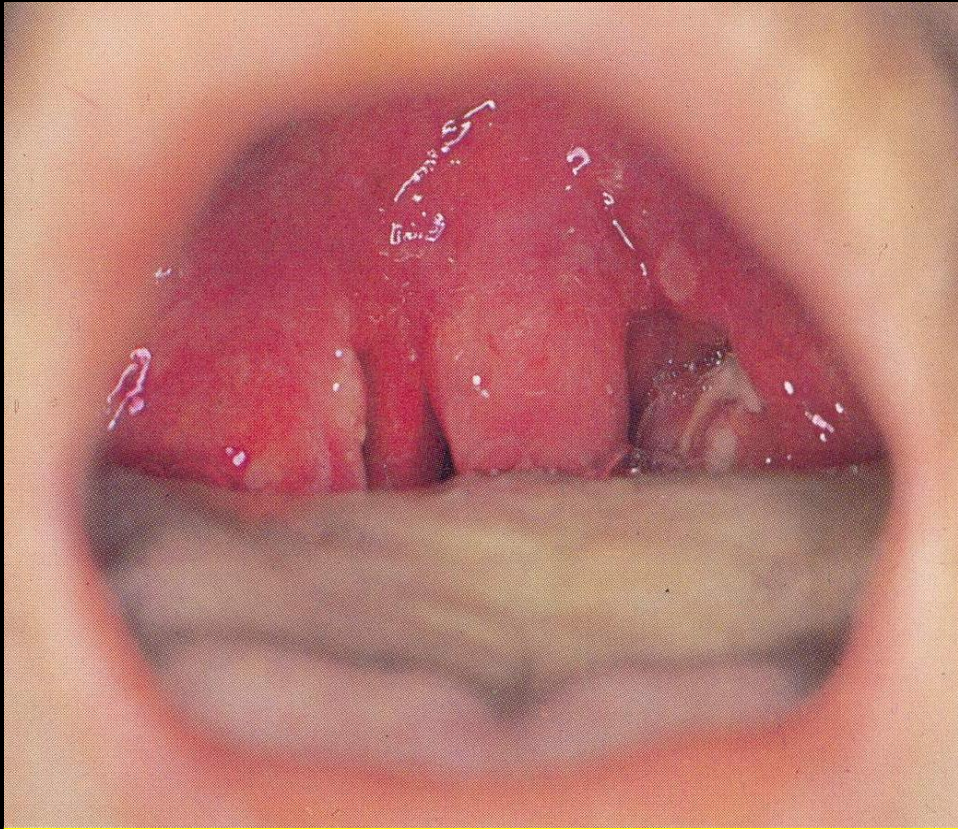
# SIGNS AND SYMPTOMS IN INFECTIONS

## Measles



# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Pharyngitis and Tonsillitis**



**Pharyngitis, exudative tonsillitis**



**Pharyngitis, palatal petechiae**



# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Pharyngitis and Tonsillitis**



**White strawberry tongue**



**Red strawberry tongue**



# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Pharyngitis and Tonsillitis**

**Scarlet fever**



**Circumoral pallor**



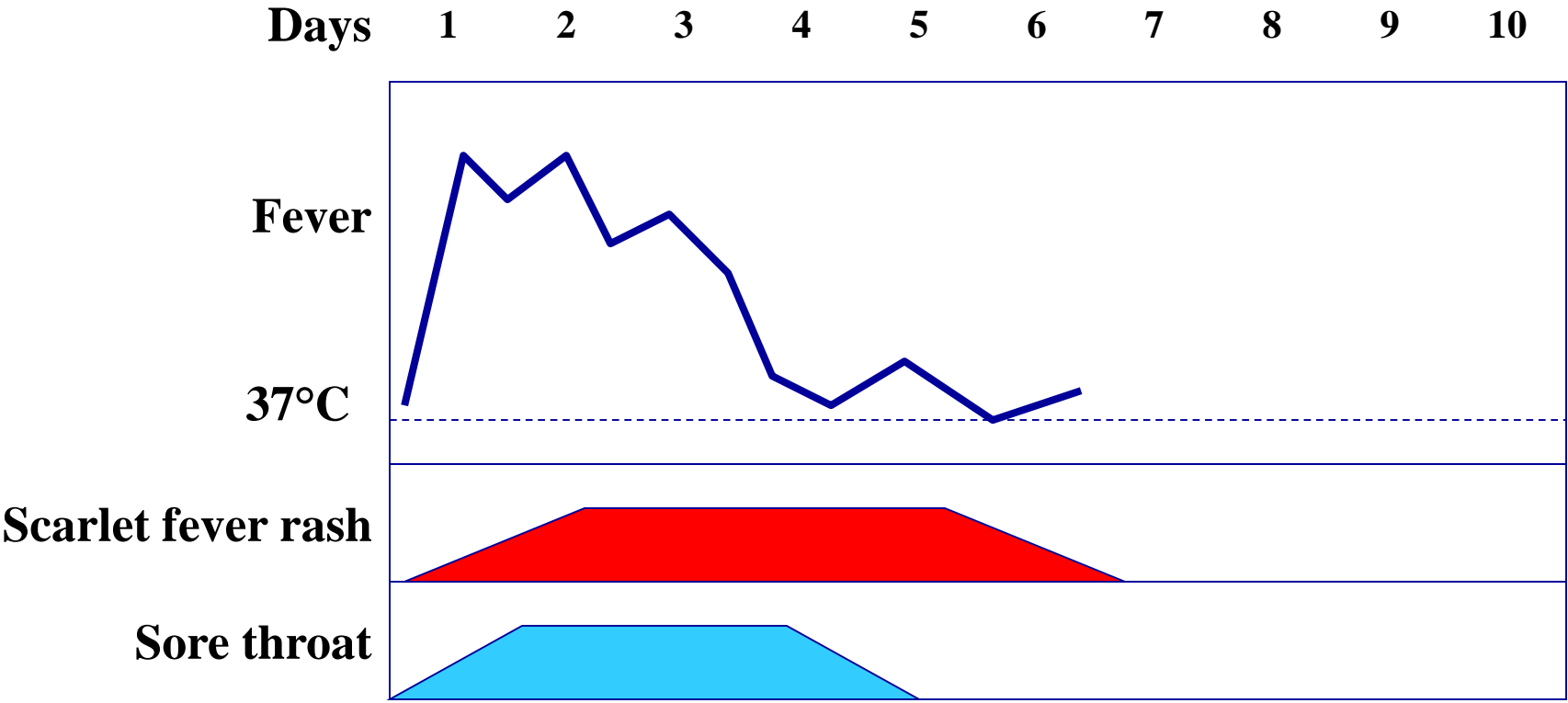
**Sandpaper-like rash**



**Pastia's lines**

# SIGNS AND SYMPTOMS IN INFECTIONS

## Scarlet Fever





# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Rubella**



**Forchheimer's spots**



**Rubella rash**

# SIGNS AND SYMPTOMS IN INFECTIONS

## Rubella



**Suboccipital lymph nodes**

FIG 1. Photograph of a 2-year-old boy with rubella showing bilateral suboccipital lymph nodes and a maculopapular rash on the back. One of the lymph nodes is indicated by a white arrow



**Posterior auricular lymph nodes**



# SIGNS AND SYMPTOMS IN INFECTIONS

## Rubella

Days 1 2 3 4 5 6 7 8 9 10

Fever

37°C

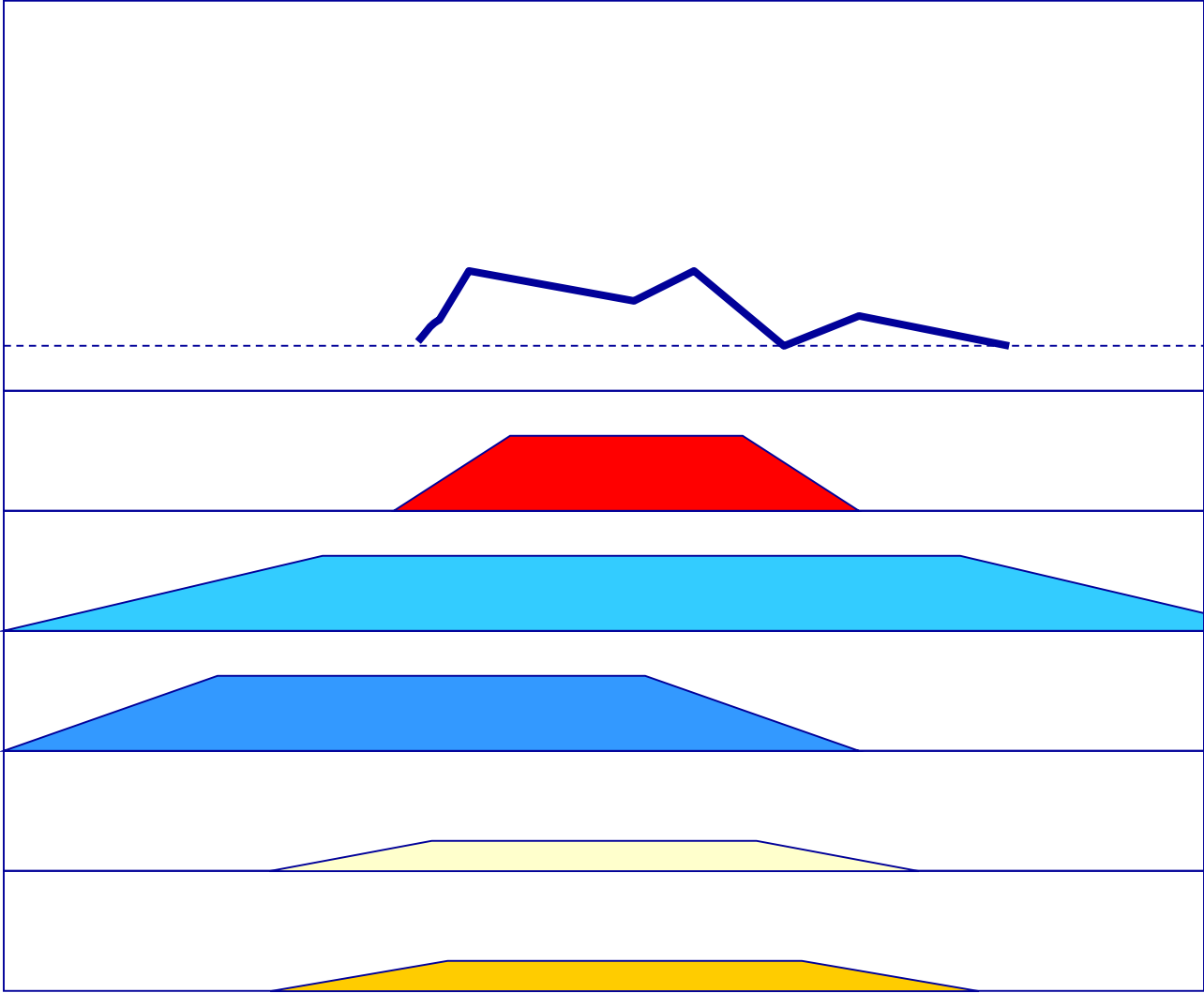
Rash

Lymphadenopathy

Malaise

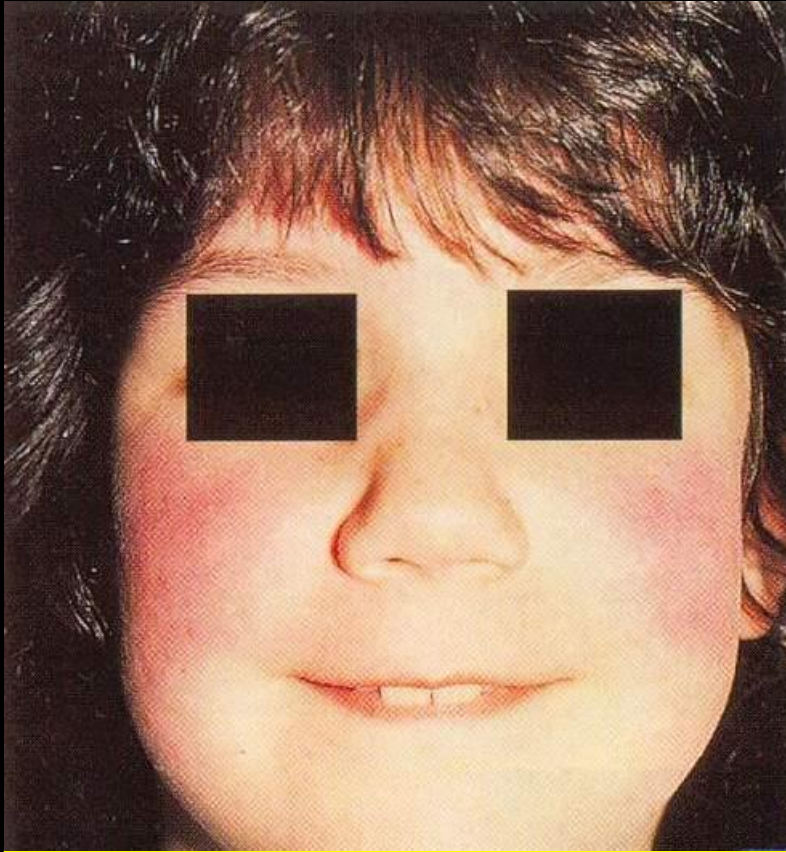
Conjunctivitis

Rhinorrhea



# SIGNS AND SYMPTOMS IN INFECTIONS

## **Fifth Disease (Erythema Infectiosum)**



**"Slapped cheek" rash**



**Fifth disease "lacy" rash**

# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Sixth Disease (Roseola Infantum)**



**Sixth disease rash**

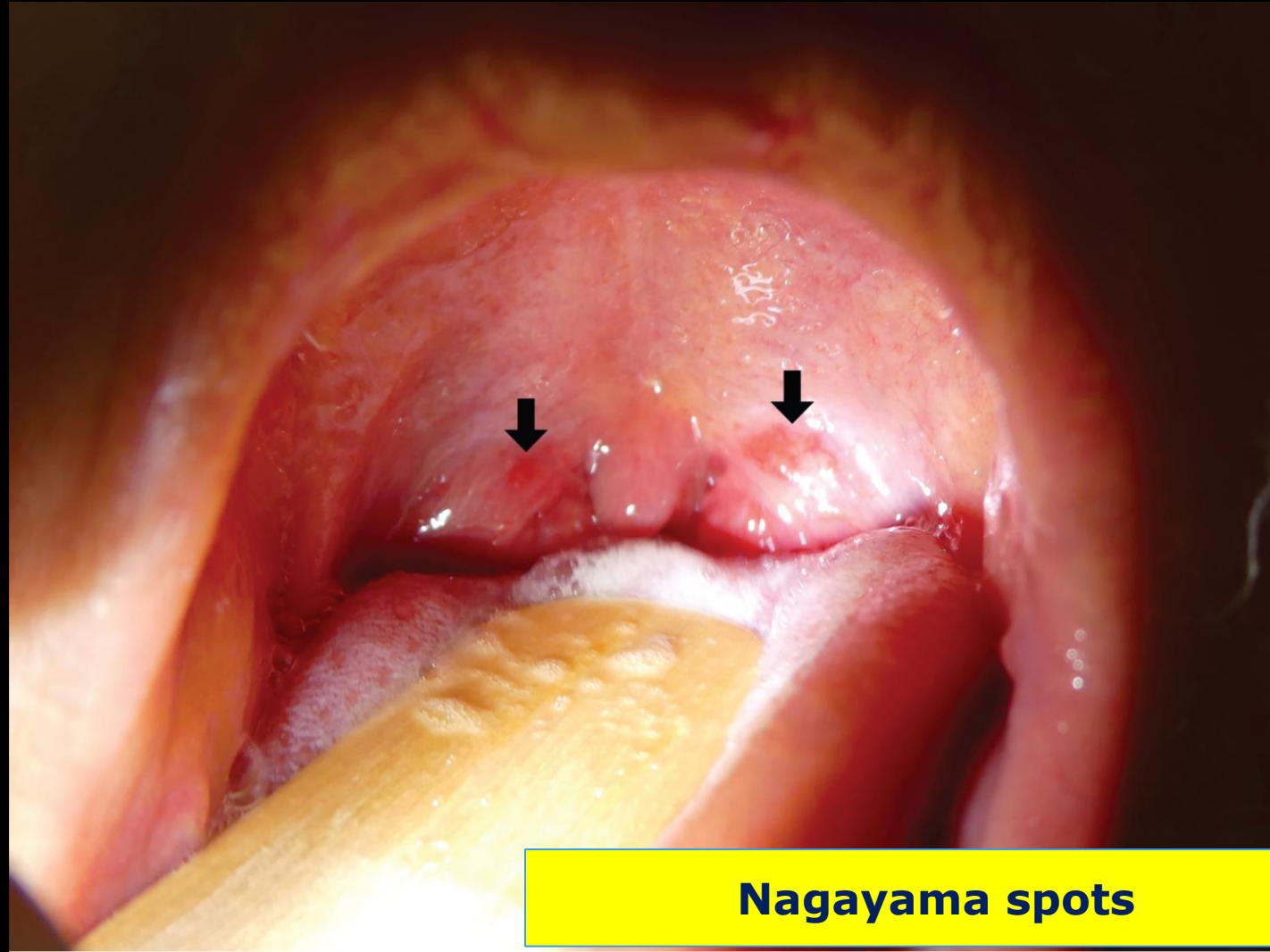


**Sixth disease rash**



# **SIGNS AND SYMPTOMS IN INFECTIONS**

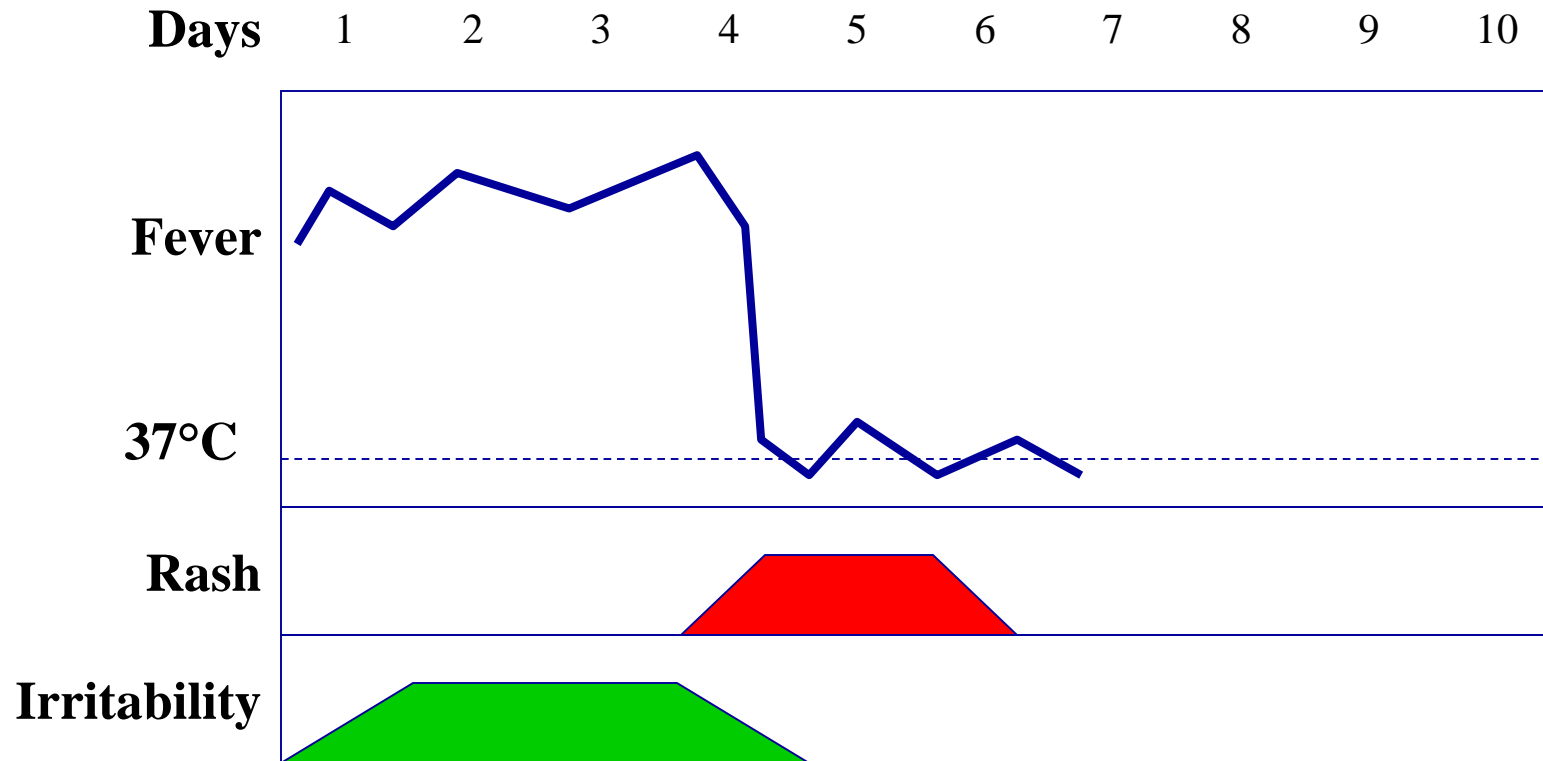
## **Sixth Disease (Roseola Infantum)**



**Nagayama spots**

# SIGNS AND SYMPTOMS IN INFECTIONS

## Sixth Disease (Roseola Infantum)



# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Chickenpox**



**Polimorph rash**



**Oral chickenpox lesions**

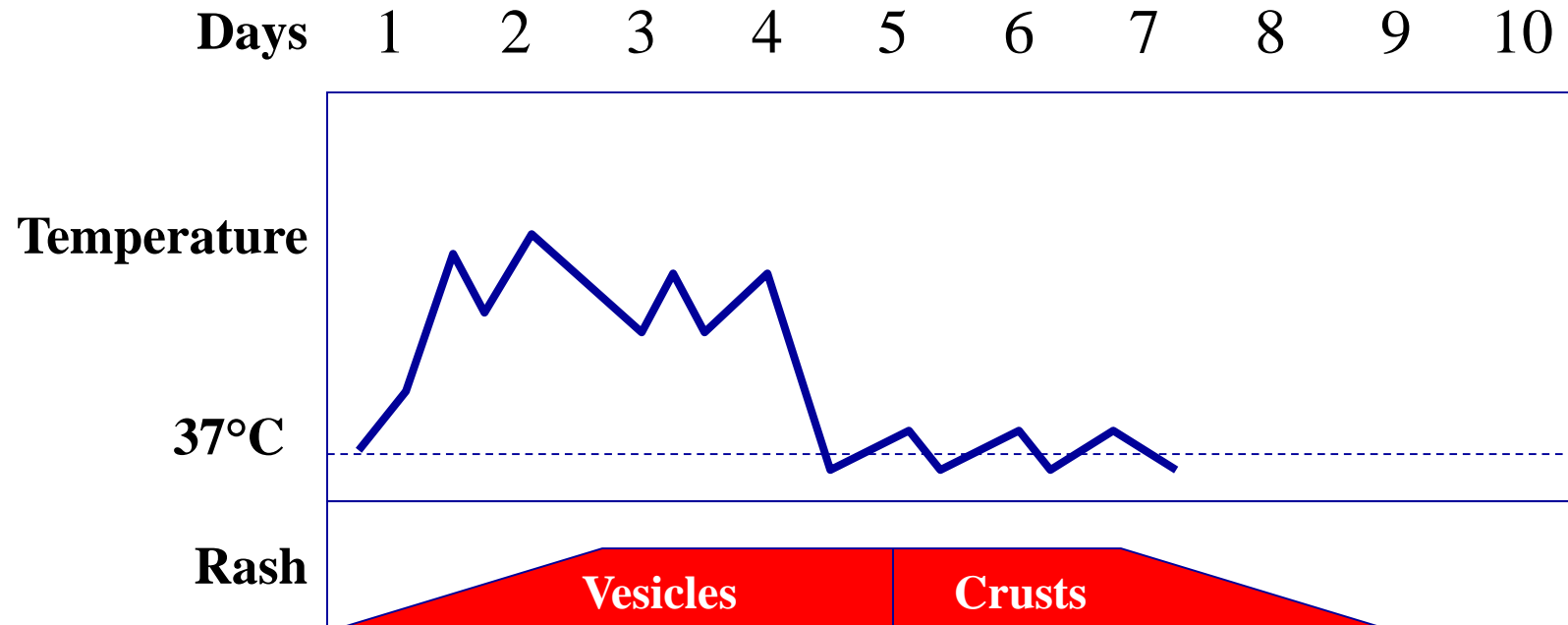


**Severe chickenpox rash**



# SIGNS AND SYMPTOMS IN INFECTIONS

## Chickenpox





# **SIGNS AND SYMPTOMS IN INFECTIONS**

## **Herpes Zoster After Chickenpox**



**Herpes zoster**



**Herpes zoster**



# SIGNS AND SYMPTOMS IN INFECTIONS

## Movie Recommendation

### The Andromeda Strain (1971)

