

# VIRAL GASTROENTERITIS

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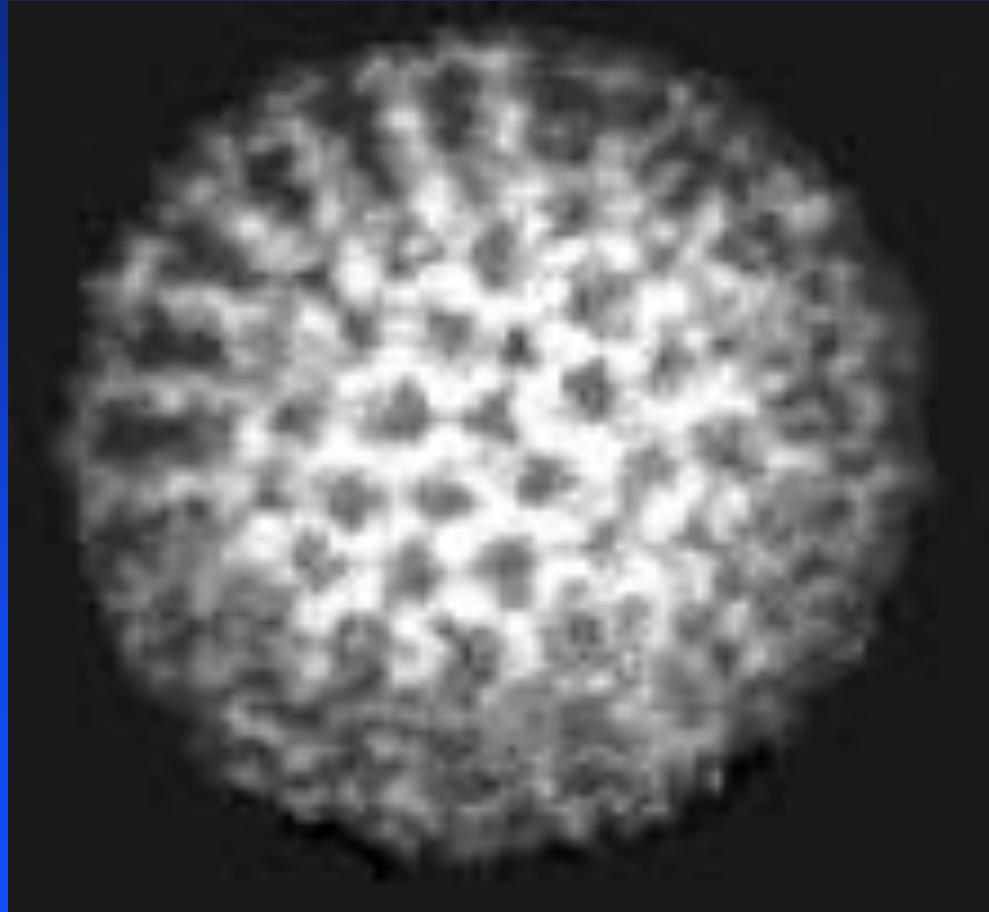
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# VIRAL GASTROENTERITIS

- **ROTAVIRUS**
- **ADENOVIRUS**
- **CALICIVIRUS**
- **ASTROVIRUS**

# ROTAVIRUSES





# PROPERTIES

- Member of the Reovirus family
- Non-enveloped, dsRNA viruses with icosahedral symmetry
- 11 segments RNA
- RNA-dependent RNA polymerase
- The capsid has double shell
- 7 serotypes (A-G)

# Rotavirus Epidemiology

- Max. incidence of illness: **6 - 24 months**
- Re-infection common throughout life
- Infections at < 6 months and > 5 years of age often **asymptomatic or mild**
- **sporadic**

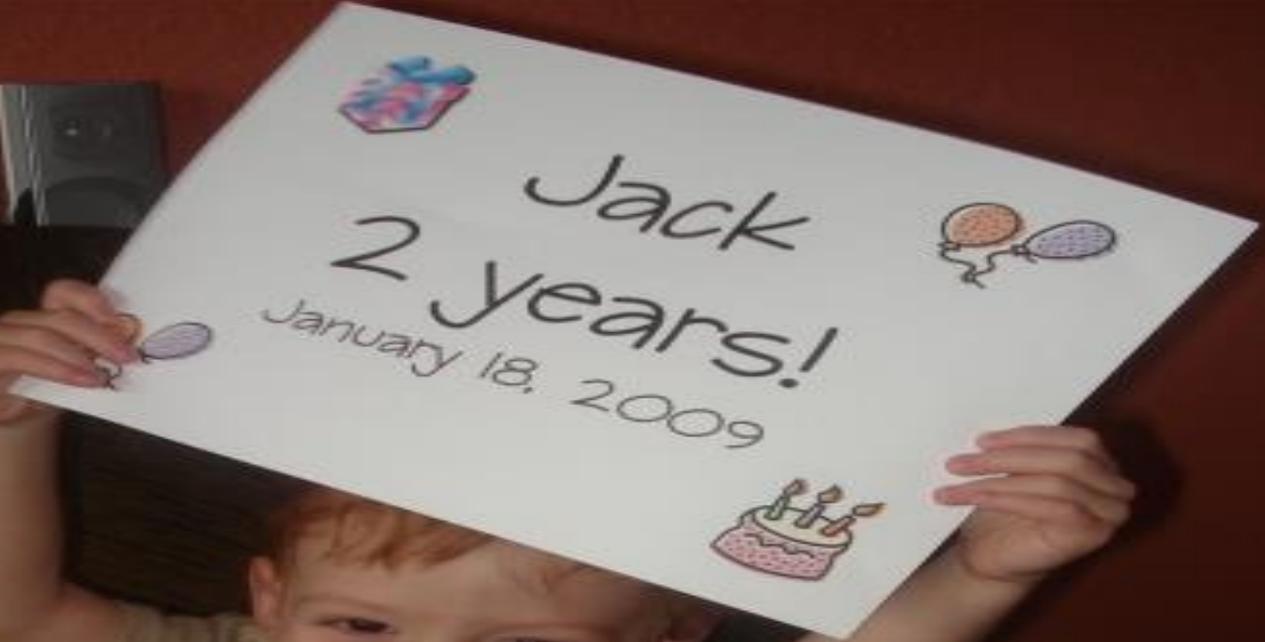


# Rotavirus Clinical Illness

- **Characteristic clinical triad:**
  - fever
  - vomiting
  - diarrhea
- Frequent coryza and cough
- Dehydration is leading complication

# CLINICAL FINDINGS

- Babies under 2 years are the main victims.
- Incubation period: 1 - 3 days
- Duration: 3 - 8 days
- Nausea, vomiting some time projectile and watery, non-bloody diarrhea
- Dehydration is the main complication



Jack  
2 years!  
January 18, 2009

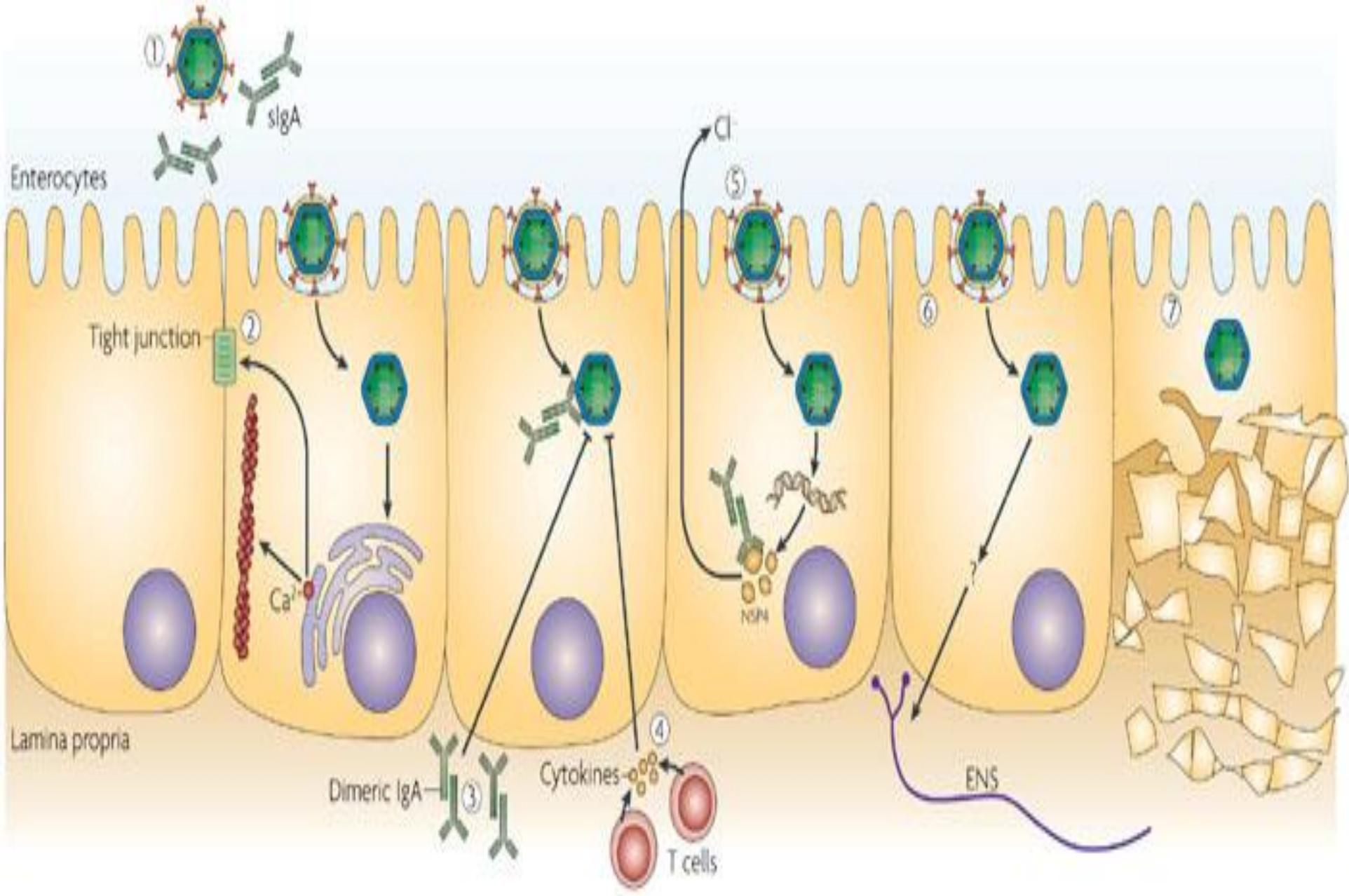


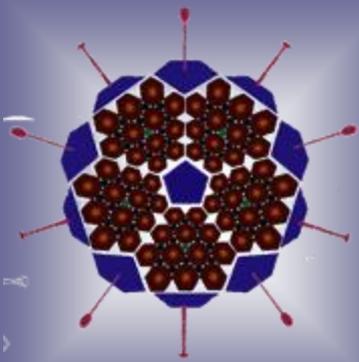
# TRANSMISSION

- Fecal-oral route
- Season: winter
- By age of 6 years, the majority of children have antibodies to at least one serotype.

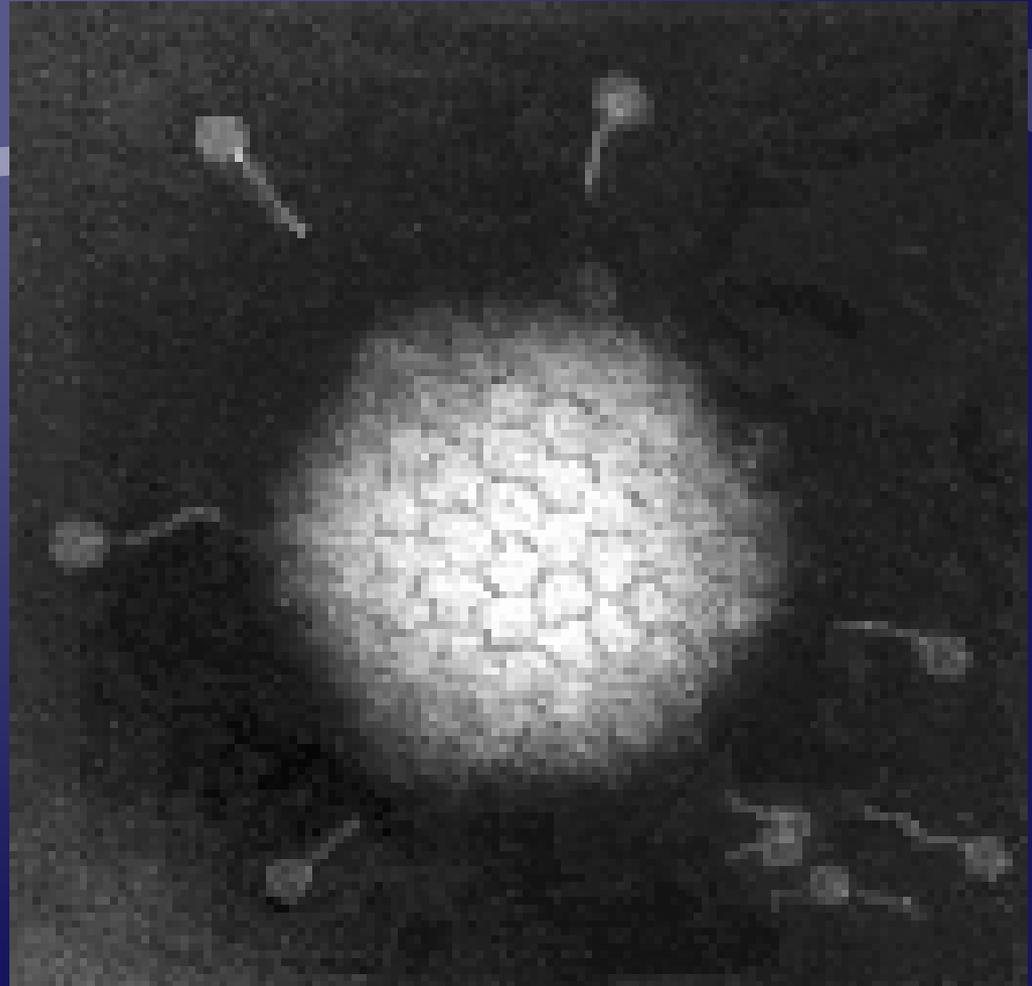
# PATHOGENESIS

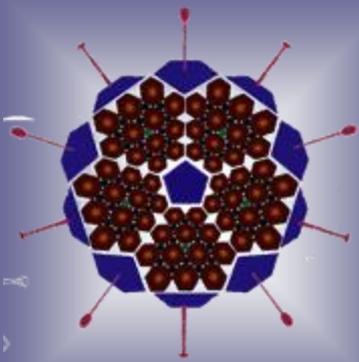
- Rotavirus replicates in the mucosal cells of the small intestine, damaging the transport mechanisms with consequent loss of fluids and electrolytes.
- No inflammation occurs and the diarrhea is non-bloody.





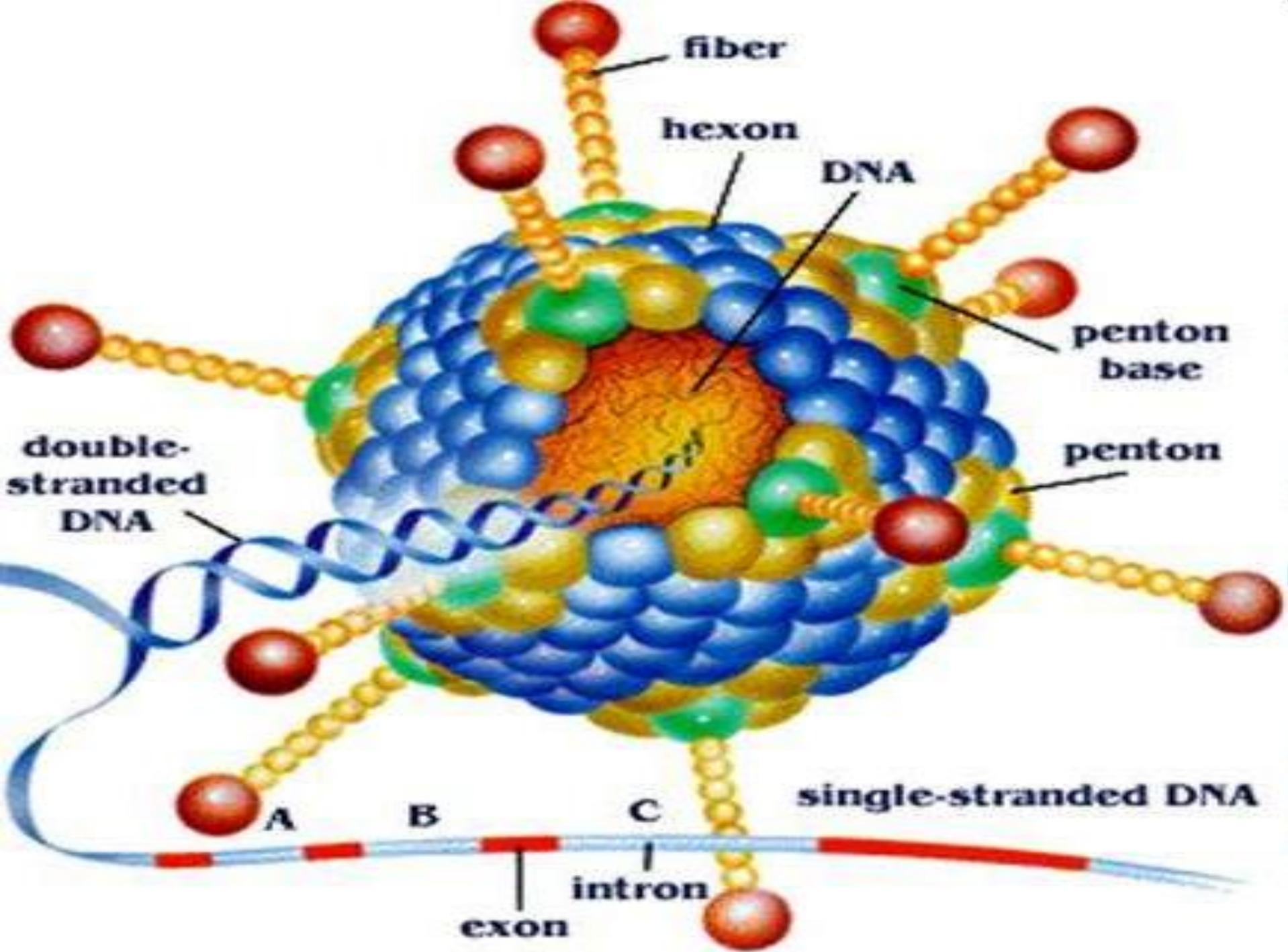
# ADENOVIRUSES

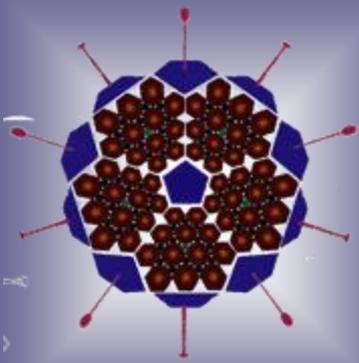




# Adenoviruses

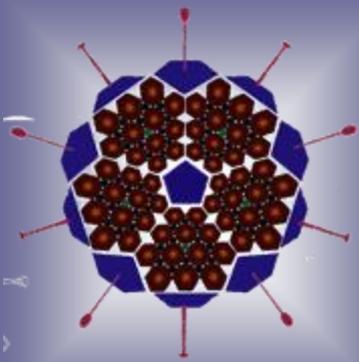
- Family Adenoviridae
- dsDNA, non-enveloped; 70 - 75 nm
- icosahedral capsid
- Adenovirus is the only virus with a fiber protruding from each of the 12 vertices of the capsid.
- The fiber is the organ of attachment and is a hemagglutinin.
- There are 41 known antigenic serotypes
- **Types 40 and 41** cause infantile gastroenteritis.





# Adenovirus 40/41 Epidemiology

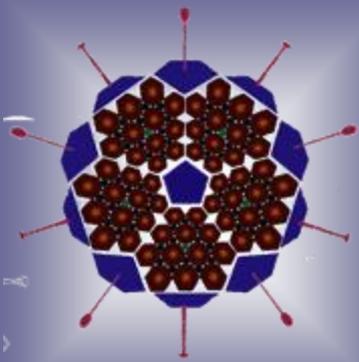
- **Second leading cause of cases (5-20%) and hospitalizations in infants**
- Occurs year around; **no seasonal peak**
- Predominates in late fall and winter
- Asymptomatic or mild illness in older children, adults
- Transmission: person-to-person



## Adenovirus 40/41 Clinical Illness

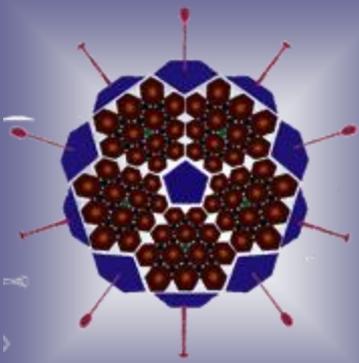
- **Incubation:** 7-8 days
- **Duration:** 8-12 days
- Diarrhea predominates
- Nausea / Vomiting
- Cramping abdominal pain
  - Due to excessive fluid
  - Increased peristalsis
- Absence of blood and fecal Leukocytes
  - Key to differential with bacterial infections





# Physical Signs

- Voluminous, non-bloody Stools
- Dehydration
  - Decreased urination
  - Mental status changes
  - Dry mucous membranes
  - Lethargy



# Clinical appearance of dehydration

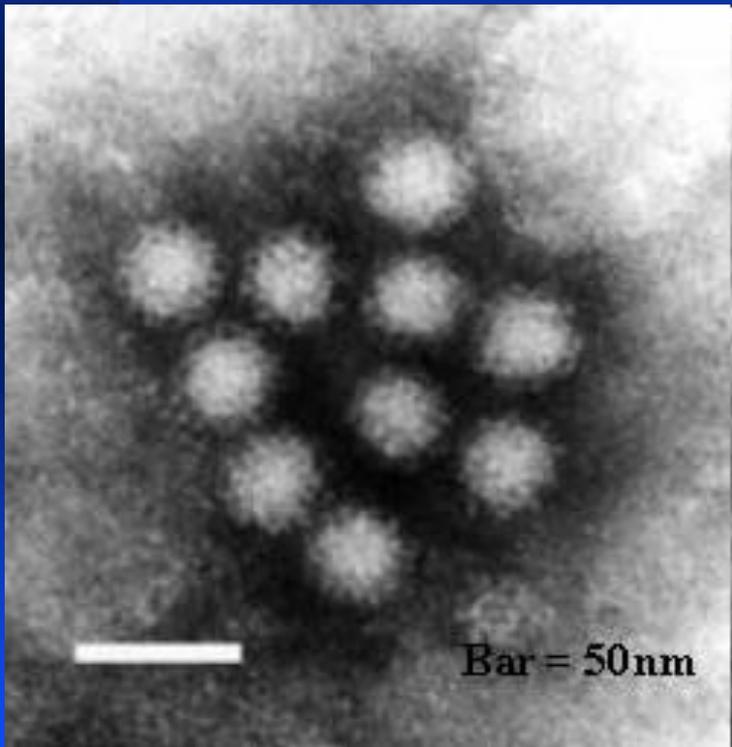
Photo Credit: Dr. D. Mahalanabis, World Health Organization



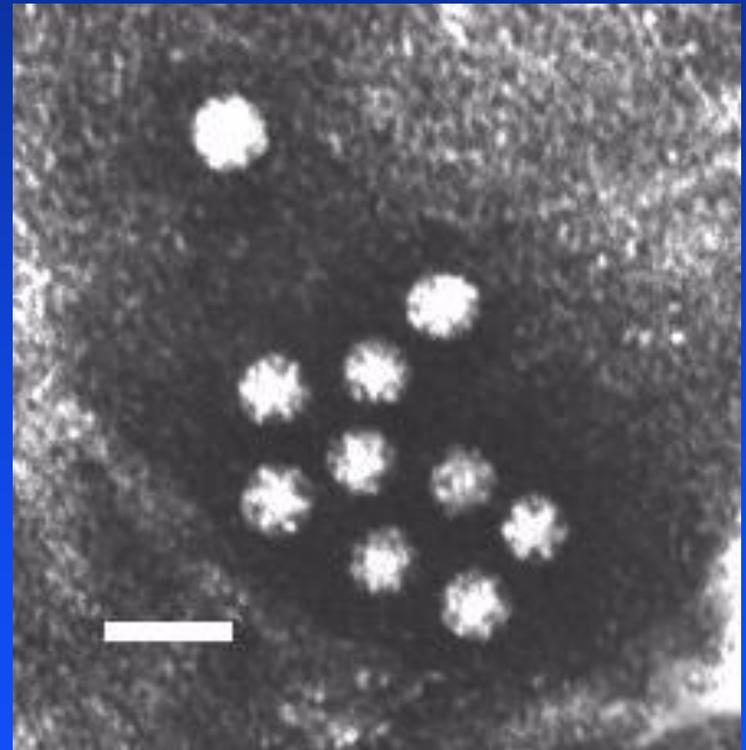
# Caliciviruses

# Astroviridae

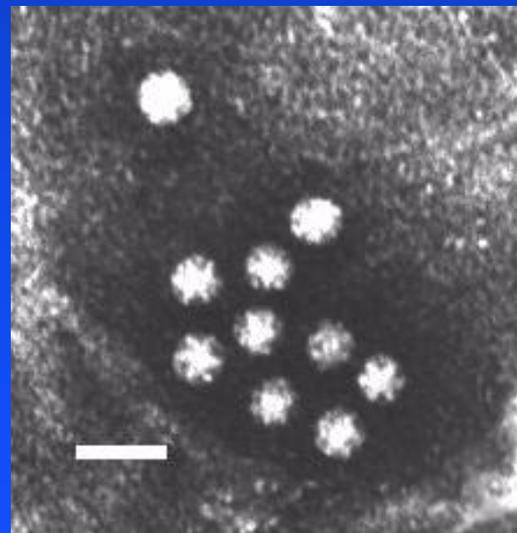
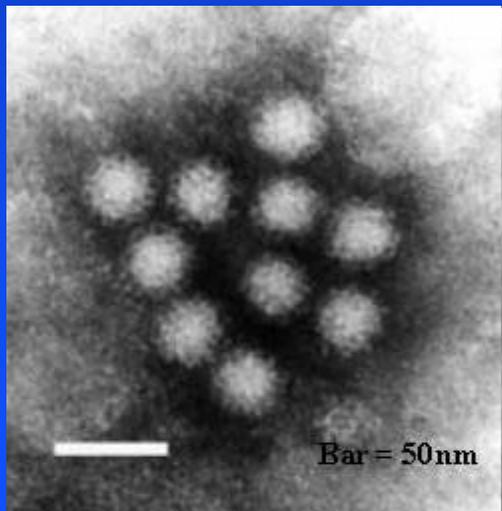
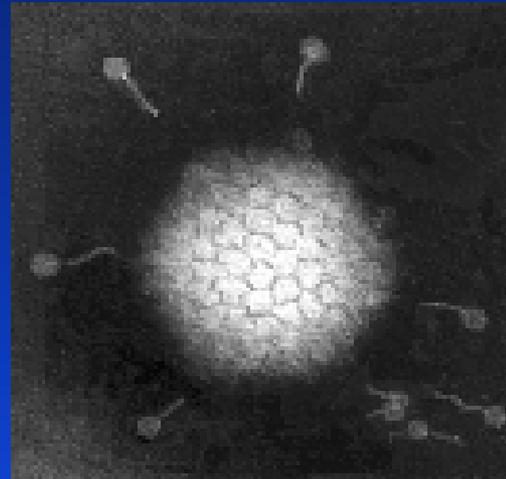
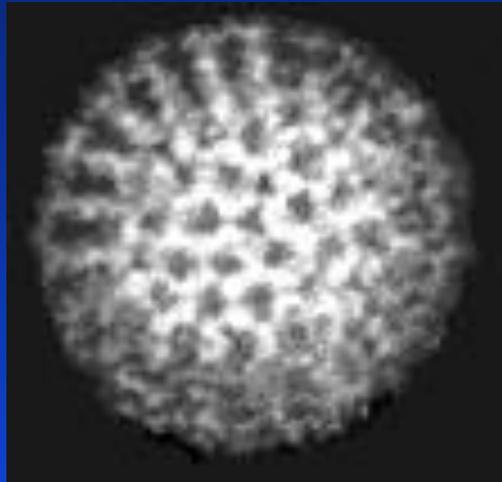
## NOROVIRUS



## ASTROVIRUS



# GASTROENTERITIS VIRUSES



# Guidelines for Specimen Collection

- ❑ Collect stool within 48 hours after onset
- ❑ Bulk sample; no preservatives; rectal swabs of little value
- ❑ Refrigerate at 4°C; do not freeze

# Laboratory Testing Available

- Rotavirus: EIA\*, EM, RT-PCR
- Adenovirus 40/41: EIA\*
- Norovirus: RT-PCR\*, EM
- Astrovirus: RT-PCR\*, EM

\* Method of Choice

# Management

- Self limiting course
  - Replace fluids and electrolytes
- Oral Rehydration (ORT)
  - Mild to moderate dehydration
- Severe Dehydration
  - ORT can be successful
  - IV fluids
  - Shock
  - Uremia
  - Ileus
  - Fluid loss > 10 ml/kg/hr

# VIRAL GASTROENTERITIS

## Prevention

- Hand washing; hygiene; dealing with infants
- Vaccination like Rotavirus vaccine (RotaShield) contains four serotypes of live, attenuated virus.