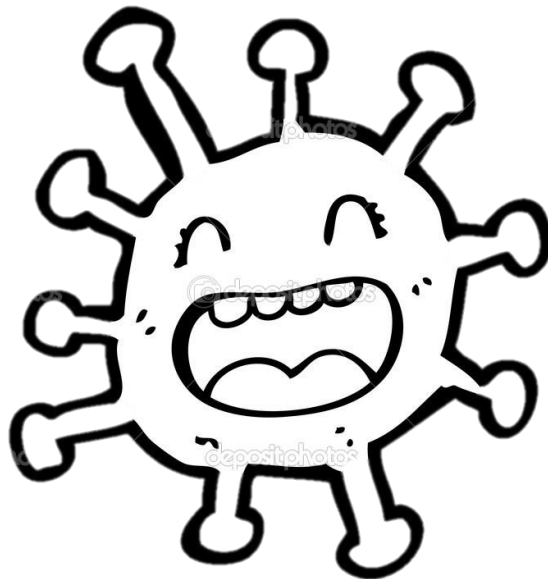
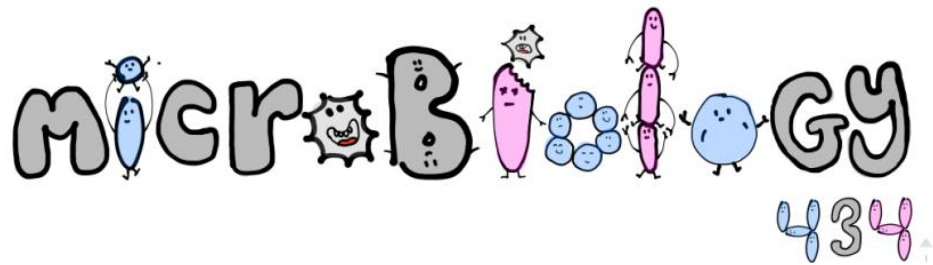


VIRAL GASTROENTERITIS

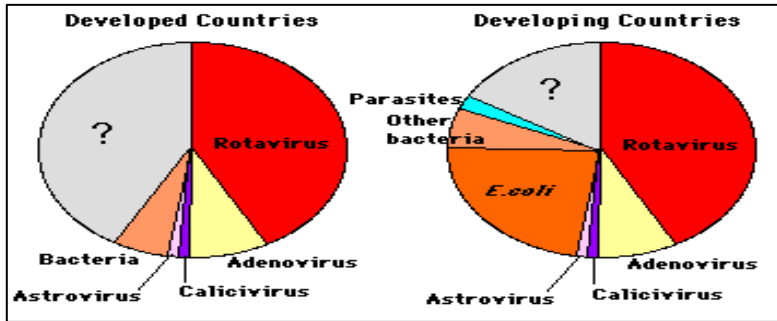


What is Gastroenteritis?

It is **inflammation** of the gastrointestinal tract, which involves both stomach and small intestine and leading to acute diarrhea and vomiting.

❖ Causes:

- Infectious & Noninfectious



- Etiologic agents in severe diarrheal illnesses requiring **hygiene and rehydration** of infants & young children.
- Other viruses:
 - Coronaviruses, and Enteroviruses

❖ Epidemiology:

- **Distribution:** Worldwide
 - ↑ **In poor hygiene**, overcrowding, and poverty.
- **Age:** Infants & young → Older children.
- **Transmission:** Faecal-oral route
- **Season:** **Winter** months.
- **Endemic** infection: **Gp A rota & adeno 40,41**
- **Epidemic** infection: **Norovirus**.

❖ Clinical Features :

- **IP** (incubation period): Short
- **Symptoms:**
 - 1-**Diarrhea**
 - 2-**Vomiting**
 - 3-**Fever**
 - 4-**abdominal cramps**
 - 5-**Dehydration** with ↓ Na → Life threatening.
- **Winter vomiting disease:**
 - Vomiting → Diarrhea
 - **Calicivirus**.

❖ Lab diagnosis:

- **Cell culture:** [c/c]
 - **Fastidious** → growing poorly → **not used**.
- **Electron microscopy:** [EM]
 - Catch all tech
 - Many disadvantages → **not used**.
- **Specific test:**
 - **ELISA or immunoassay** for detection of viral **antigens** in **stool** [rota , adeno , astro & caliciviruses]

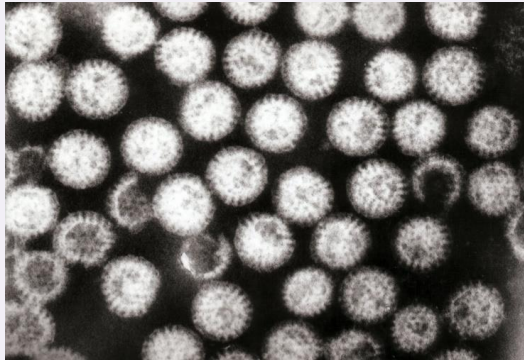
❖ Management:

- **Treatment:** **Rehydration** [supportive] - self limiting
- **Prevention:** Sanitation & hygiene measures. **[No vaccines except for rotavirus]**

ROTAVIRUS [most severe – most common]

Family

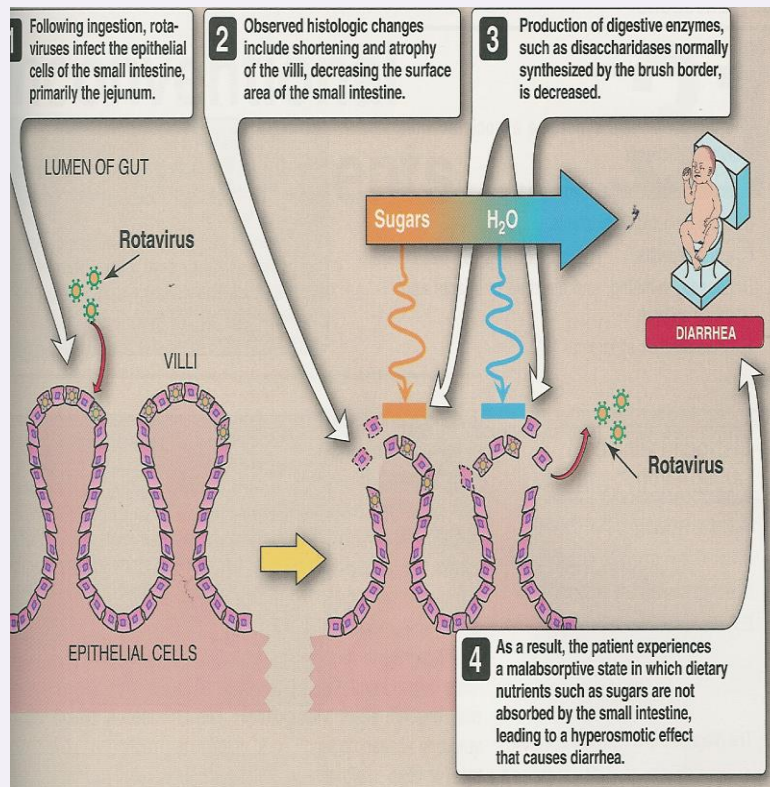
Reoviridae
[Respiratory & Enteric Orphan].



Description:

- 11 segments **dsRNA**.
 - **Double-layered** icosahedral.
 - **Wheel – like** structures
 - Nonenveloped.
 - ~ 70 nm.
 - RNA – dependent RNA polymerase.
- 7 groups [A-G]----- GpA → most common**

Pathogenesis



Epidemiology

- **Spread [mode of transmission] :**
 - **Faecal-oral route**
- **Age:** all age groups
 - Symptomatic infection
- **6 -24 months.**
- **Peak:** Winter months
- **Infection:** Endemic

Lab Diagnosis

#Sample: stool.

- **Immunoassay** → Most used.
(ELISA, **ICT** & latex agglutination)
- Electron Microscope
- Gel electrophoresis
- RT-PCR
- Cell culture



Clinical features

Intestinal infection:

1-Infants & young children → Gastroenteritis or infantile GE.

#IP = 1-2 days.

#Watery, **Non-bloody** Diarrhea, vomiting & Fever.

#Dehydration.

#Outcomes → Vary.

In **developed** countries → Mortality is **low**.

In **developing** countries → Mortality is **significant**.

~1/2 of all GE cases → Admission

#Deaths have been reported.

2- Older children + adults → Asymptomatic.

3-Low Immune hosts → Chronic diarrhea.

Extra-intestinal infection: **Encephalitis** → few cases

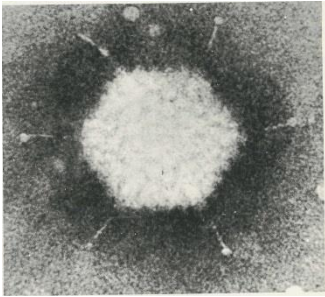
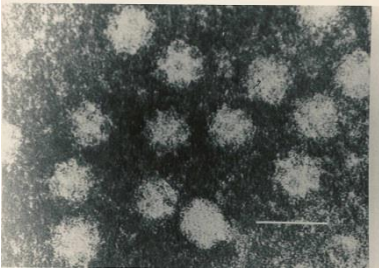

Management

❖ **Treatment:**

- Self-limiting
- Rehydration

❖ **Prevention:**

- Sanitation & hygiene measures
- Vaccine: **live attenuated vaccine, oral:**
 - ✓ Rotashield (withdrawn) "Not used any more"
 - ✓ Rotarix
 - ✓ **RotaTaq***

Virus	Enteric Adenovirus	Calicivirus	AstroVirus
Family	<p>Adenoviridae</p> 	<p>Caliciviridae [Calyx =cup] a cup like depression on its surface</p> 	<p>Astroviridae [astro= a star] 5 or 6 pointed stars on its surface</p> 
Discription	<ul style="list-style-type: none"> • Non – enveloped • Icosahedral capsid • Ds-DNA • Only one with with a fiber protruding from each of the vertices of the capsid that is for : <ul style="list-style-type: none"> ○ Attachment ○ Hemagglutinin ○ Type-specific Antigen [Ag] 	<ul style="list-style-type: none"> • Non-enveloped • Icosahedral capsid • ss-RNA with +ve polarity 	
Classificati on	<ul style="list-style-type: none"> • Adenovirus: <ul style="list-style-type: none"> ○ 7 subgenera [A – G] ○ 50 Serotypes ○ Grow in cell culture • Enteric Adenovirus <ul style="list-style-type: none"> ○ Supgenus F ○ 40 & 41 Serotypes ○ Fastedious 	<ul style="list-style-type: none"> • Two morphologic types: <ul style="list-style-type: none"> ○ Typical (Sapoviruses) ○ Small Rounded Structured Viruses (Noroviruses) 	8 Serotypes
Epidemiology	--	<p>Norovirus:</p> <ul style="list-style-type: none"> • Faecal-oral route [water, shellfish] • Outbreaks of GE in [schools, camps & cruises] • All age groups 	--
Clinical feature	<p>Compared to RotaVirus: [longer Incubation Period – less severe – prolonged illness]</p>	<p>Norovirus:</p> <ul style="list-style-type: none"> • Children → Projectile Vomiting • Adults → Diarrhea 	<ul style="list-style-type: none"> • Mild Gastroenteritis • Outbreak of diarrhea <5 ys.
Diagnosis	<p>Antigen detection in stool samples by ELISA or Immunochromatography Tech.</p>	<p>Viral Antigen in stool samples by ELISA</p>	

[All the viruses are non-enveloped]

Hey, I'm Adenovirus.
I'm from the Adenoviridae family.
I have many special talents.

In the lungs I cause Acute Respiratory
Distress Syndrome.

I hang with infants and soldiers.
In the eyes I give you a contagious
conjunctivitis.

You can also get 'swimming pool
conjunctivitis' from me.

I can cause gastroenteritis, especially
in kids.

They have fever, vomiting and
diarrhoea.

I also like the urinary tract.

I can cause acute haemorrhagic cystitis in boys.

I may play a role in coeliac disease and intersusception.

Plus I am sometimes seen in myocarditis.

Phew! I'm very busy.



ADENOVIRUS



ROTAVIRUS

Hi

My name is Rotavirus
I'm from the Reoviridae family.

I am the most common cause of
gastroenteritis in kids.

I love children under 4 four year old.

I am biggest in the colder seasons.

I cause diarrhoea.

I also give the kids fever, nausea and
vomiting.

I'm very common, but don't let that fool you.

My diarrhoea can be severe.

I can kill if I'm not looked after.

Hi there.

My name is Norovirus

I'm a caliciviridea family virus.

I used to be called Norfolk virus,
after visiting the city of Norfolk.

I cause gastroenteritis.

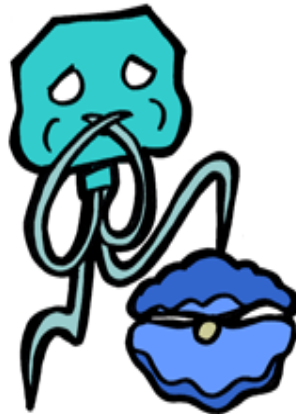
I make people nauseous and sick.

I am passed feaco-orally.

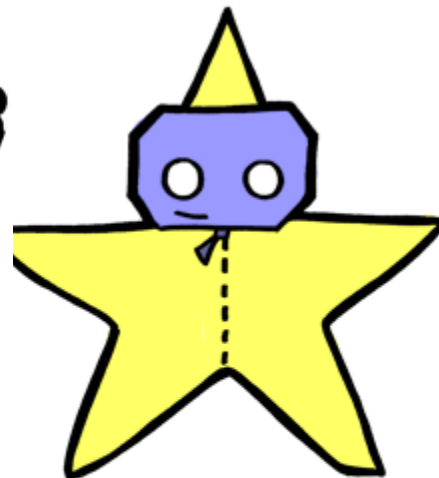
I am also carried in food, especially
seafood like oysters.

I am busiest during the winter.

I love places like schools, nursing homes and hospitals.



NOROVIRUS



ASTROVIRUS

Heyhey

My name is Astrovirus.

Astroviridae is my family.

I have star-like points that
gave me my astronomical
name.

I move around through
fecal-oral transmission.

I love kids, daycare workers
and soldiers.

I also like the elderly and
people with poor immune
systems.

I cause gastroenteritis with
diarrhoea, pain and

vomiting.

I am milder than my friends Norovirus and Rotavirus.

I won't dehydrate you as much.

MCQs:

1- In Viral Gastroenteritis, you can't prevent it with vaccination except for:

- A) Caliciviruses. B) Norovirus. C) Astroviruses D) Rotavirus.

2- Diagnosis of Enteric Adenoviruses is by:

- A) Culture C) Ag detection in stool by: ELISA, Immunochromatography Tech.
B) Immunofluorescence. D) Stool or Urine Analysis.

3- Calicivirus Important Morphological feature:

- A) Double-Shelled With Wheel-Like Structure.
B) Classical Icosahedron with fibers.
C) Cup-Like depression on its surface.
D) 5 or 6-Pointed Star on its surface.

4- Norovirus targets:

- A) All Age Groups. B) Children. C) Adult. D) Immunocompromised.

5- Astrovirus Genome:

- A) ds RNA. B) ds DNA. C) ss DNA. D) ss RNA(-). E) ss RNA(+).

1-D. 2-B. 3-C. 4-A. 5-E.

حنان محمد عبدالمنعم

نجد العمران <3

ملاك الختلان

رنا براك