

GASTROINTESTINAL INFECTION



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Shaping Lives...
Empowering Communities...

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To the intestinal infections belong
more than 25 % of all contagious diseases

Typhoid fever & paratyphoids A & B

Shigellosis

Salmonellosis

Cholera

Hepatitis A & E

Food poisoning

Botulism (sausage poisoning)

Campylobacteriosis

Escherichiosis

EPIDEMIOLOGY OF INTESTINAL INFECTIONS

Source of infection: at typhoid fever, shigellosis, paratyphoid A, some food poisonings – ill person or bacteriocarrier; at paratyphoid B, salmonellosis, botulism - more often animals.

Bacteria carrying: acute, chronic, transient.

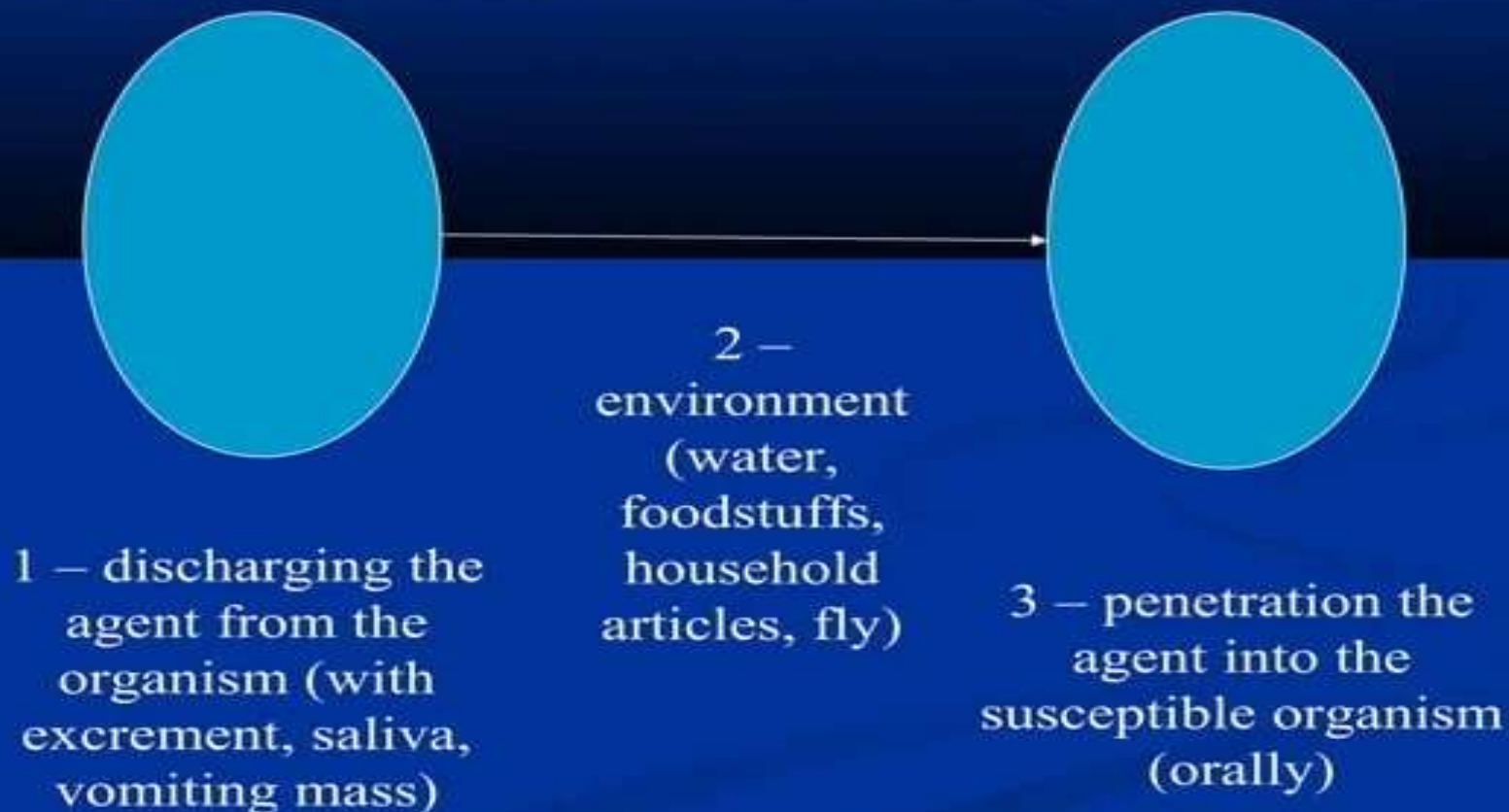
Mechanism of transmission – fecal-oral.

Ways of transmission – by the water, foods (at botulism – canned meat, mushrooms, as a rule homemade), household things, dirty arms; flies.

Epidemics – contacts, water, food borne.

Seasonality – summer-autumn.

Fecal-oral mechanism of transmission



Fecal-oral mechanism of transmission

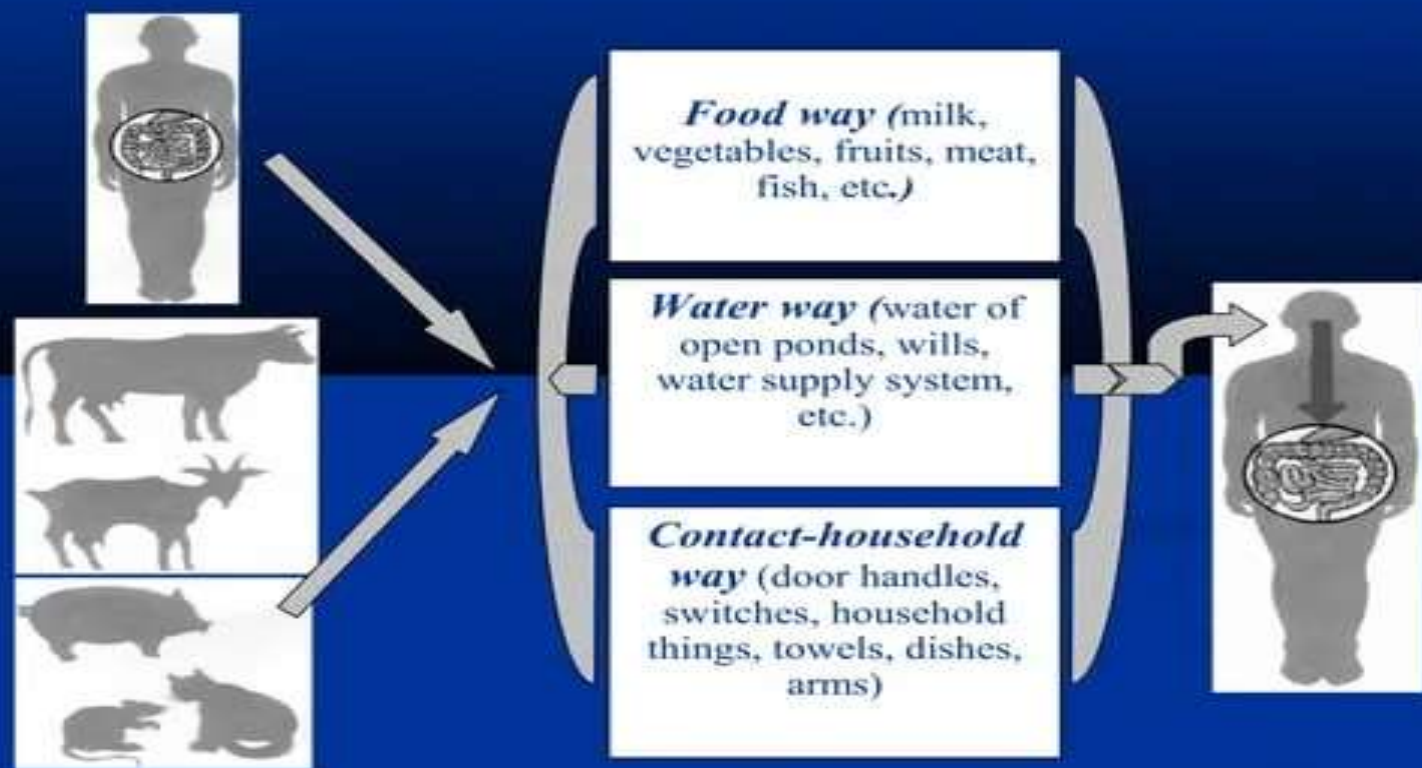
The Acute Intestinal Infections are divided on subtypes
(by L.V. Hromashevskyy)

- **Subtype I** – typical intestinal infections (the agents stay within gastrointestinal tract – *shigellosis, cholera, escherichiosis*)
- **Subtype II** – toxic infections (intensive reproduction the agent out of organism – (*food poisoning, botulism, staphylococcal toxicosis*))
- **Subtype III** – typical intestinal infections with the spreading the agent beyond the intestine (*amebiasis, ascariidiasis, echinococcosis*)
- **Subtype IV** – typical intestinal infections with the penetration the agent into blood – additional outlet of the agent in the environment with the urine, secretions (*typhoid fever, brucellosis, leptospirosis*).

Fecal-oral mechanism of transmission

The Division of Acute Intestinal Infections on subtypes (by I.I. Yelkin)

- **I anthroponosis** – the transmission from man to man (shigellosis, cholera, typhoid fever, hepatitis A)
- **II zoonosis** (salmonellosis, leptospirosis)
- **Intensity of epidemic process**
 - sporadic morbidity*
 - epidemic*
 - pandemic*



Mechanism of transmission realization at intestinal infections

Peculiarity of epidemic process

(character of infective episodes)

- **Food** – usage of dish without thermal handling, fly – simultaneity and large-scale participation, short incubation period, predominance the severe forms; rapid descent of morbidity after removal of the transmission factor; absence of seasonal prevalence
- **Home** – gradual increasing the quantity of patients, slow monotonous course, high morbidity of children
- **Water** (*acute and chronic*) – easiness of infection, duration of agent preservation, infection of open reservoirs, water supply, wells (by sewage); character of episode is local (general water source), sharp increasing of morbidity in 1-2 weeks, involvement, basically, adults (drink not boiled water); removal of the cause lead to quick stopping of the disease;
Seasonal prevalence – mainly summer-autumn



The mechanical transmitters of causative agents often are flies, if they have access to sewage and foodstuffs.

- Domestic fly,
- its eggs,
- larva
- chrysalis.

Prophylaxis of acute intestinal infections

Guaranteeing of the inhabitants with high quality water

Sanitary-hygienic control the objects of social nutrition and food marketing, children's establishments; organization of collection and moving off the sewage; maintenance the rules of personal hygiene

Detection of sick persons and bacteria carriers

Prophylactic medical examination of convalescents

Specific prophylaxis (vaccines, serums, bacteriophage)

The directions for hospitalization at intestinal infections

Epidemiological -

- Belongs the patient to the decreed group of population,
- Residence in the hostel, unsatisfactory sanitary-hygienic conditions

Clinical –

- Severity of state,
- Age (babies, advanced and old age persons),
- Presence of severe concomitant disease.

Typhoid fever

Typhoid fever is an acute disease from the group of intestinal infections. Characterized by cyclic course, bacteriemia, intoxication, rash on the skin, lesions of the lymphatic apparatus of the small intestine.

EPIDEMIOLOGY OF TYPHOID FEVER

Source of infection:— ill person or bacteriocarrier;

Bacteria carrying: acute, chronic, transient.

Infectiveness: last days of incubation period, all period of the disease

Mechanism of transmission – fecal-oral.

Ways of transmission – by the water, foodstuffs, household things, dirty arms; flies.

Epidemics – contacts, water, food borne.

Susceptibility (index of contagiousness) – 0,4

Seasonality – summer-autumn.

Incubation period – from 7 till 25 days.

Salmonella typhi





Source:

1. Patient
2. Carrier of infection

Mechanism of transmission – fecal-oral

Susceptibility – up to 40 – 50 %

Water epidemic characterized by:

1. Sudden beginning
2. Most of the patients used common water-supply
3. Mild forms of disease
4. Fast decrease of epidemic after disinfection of water

Food epidemic characterized by:

1. Acute or gradual beginning after consuming of contaminated food (milk)
 2. Most patients fall ill after consuming milk from the same source
 3. Most patients are infected after consuming of unboiled milk (family outbreaks)
- Biggest part of sick contingent are children
 - Severe forms of disease are common, because microorganisms replicates in milk and create massive infectious dose

CLINICAL SIGNS OF THE TYPHOID FEVER

1-st week:

- ▣ The beginning is gradual
- ▣ Complains: headache, tiredness, sleeplessness, anorexia, constipation or diarrhea
- ▣ Long fever 39-40 °C
- ▣ Paleness of skin
- ▣ «typhoid» tongue
- ▣ Duguet's angina
- ▣ Bradycardia, dicrotism of pulse, hypotonia
- ▣ Symptoms of bronchitis
- ▣ meteorism, positive Padalka's symptom

CLINICAL SIGNS OF THE TYPHOID FEVER

2-nd week:

- ❑ *Typhoid rash* – *typhoid maculopapular rash (roseola elevata)*, some elements, localized on the anterior abdominal wall and lateral walls («vest»), new elements can appear, sometimes is present longer than fever.
- ❑ *Hepato-splenomegalia.*
- ❑ *Status typhosus.*
- ❑ *Serologic reactions.*



Laboratory confirmation of the diagnosis

- Detection of the agent from the patient (from stool, urine, blood).
- Detection of the specific antibodies and increasing their titer in dynamic.

Method, that finally confirm the diagnosis of typhoid fever is blood culture. At the fever period make the culture of blood from vein on bile broth or Rappoport's medium in correlation 1:10. On the 1-st week of the disease is needed 10 ml of blood, and each following week increasing its quantity on 5 ml (15, 20, 25). At the late period of the disease (from 10-12 day), as for the diagnostic and for the control by convalescence, make the bacteriological investigation of feces and urine. The duodenal contents take after the 10-th day of normal temperature.

TREATMENT

Etiologic:

- Chloramphenicol, Ampicillin, Azithromycin , Ciprofloxacin, Ofloxacin, Cefotaxim , Ceftriaxone
- V_i – antigen 400 mcg 3 times subcutan. With interval 7 days

Pathogenic: diet №2, bed regime, disintoxication, proteas inhibitors, probiotics, vitamins

Antiepidemic measures:

- Examination on typhoid fever and paratyphoids all patients with fever, which last more than 5 days (once on hemoculture, and if fever continue more than 10 days - Vidal's reaction of hemagglutination or RIHA)
- Examination of all persons, who are working at the industries dealing with food, for detection of bacteriocarriers
- Obligatory hospitalization of patients and carriers into infectious hospital

- Observation of contact persons during 25 days and their separation from other people
- Every day thermometry, interrogation and medical examination
- One analyze of feces on coproculture and blood on Vi-antibodies

- Convalescents are discharged from hospital only after clinical recovery and three-time analysis of feces and urine with 5-days interval, and bile in 10 days after disappearing of clinical signs, if results are negative
- three-month observation and 2-years registration in sanitary-epidemic department with several times bacterial examination
- Current and final disinfection

Epidemiologic character of cholera

- **Infective agents** – *vibrio cholera* (classic, El-Tor)
- **Source of the infection** – sick, convalescents, vibriocarrier (1:100)
- **Mechanism of transmission** – fecal-oral
- **Seasonal prevalence** – summer-autumn

Susceptibility - high

Epidemic and pandemic spreading

Types of epidemics – water (more often); alimentary; home-contact (mixed)

Features of the 7 pandemic of cholera

- **Endemic source** – Indonesia; possibility of “implanting” on the new territories with forming secondary endemic sources
- **Isolation of *V. cholerae* from water reservoirs before beginning the epidemic**
- **More often and prolonged vibriocarriage; predominance of obliterated and atypical forms; considerably lower lethality**

Prophylaxis of Cholera

Antiepidemic measures at exposure of ill person or carrier

- Immediate isolation of sick into the extremely dangerous infections hospital and treatment
- Discharging after 3 negative results of bacteriological investigation
- Active isolation of new episodes of the disease (everyday rounds of all inhabitants of problem settlement)
- Isolation and hospitalization of persons, suspicious on cholera, into *provisory* hospital
- Isolation for 5 days into isolation ward everybody that were in contact
- Laboratory examination on Cholera
- Disinfection
- ***Quarantine***

Epidemiology of VHA

- *Viral hepatitis A - antroponosis. The source of disease is sick person in pre-jaundice period and in 15 - 20 days of acute period of the disease.*
- *Primary localization of virus is gastrointestinal tract. Mechanism of transmission is fecal-oral. Virus is excreted from the organism of sick person with feces.*
- *Specific final factors of transmission of hepatitis A virus are water and food. Spreading depends on conditions of water supply and its relation with fecal contamination. Important factors of transmission are flies, dirty arms.*
- *Susceptibility to the disease is high. Mainly children and adults up to 30 year fall sick.*

Shigellosis –

the acute intestinal infection, that has signs of intoxication and inflammation of the distal part of bowel with diarrhea.

Epidemiology of Shigellosis

Sh. dysenteriae;

Sh. flexneri;

Sh. boydii;

Sh. sonnei.

Source of infection—patients, persons in period of convalescence and bacteriocarriers. The patients with acute shigellosis are especially dangerous.

Mechanism – fecal-oral

Ways of transmission –water (*more often Sh. flexneri*), food staffs (*Sh. sonnei*), dishes, dirty hands, flies

Seasonal - summer-autumn

Immunity- type-specific

Laboratory diagnostic of Shigellosis

Etiologic diagnostic:

Detection of the agent from the feces, vomiting mass, lavage fluid

Serologic reactions (presence of antibodies to the causative agent and increasing the titer in dynamic)

Polymerase chain reaction (PCR) – detection of shigella DNA in feces and scraping of the rectum mucous

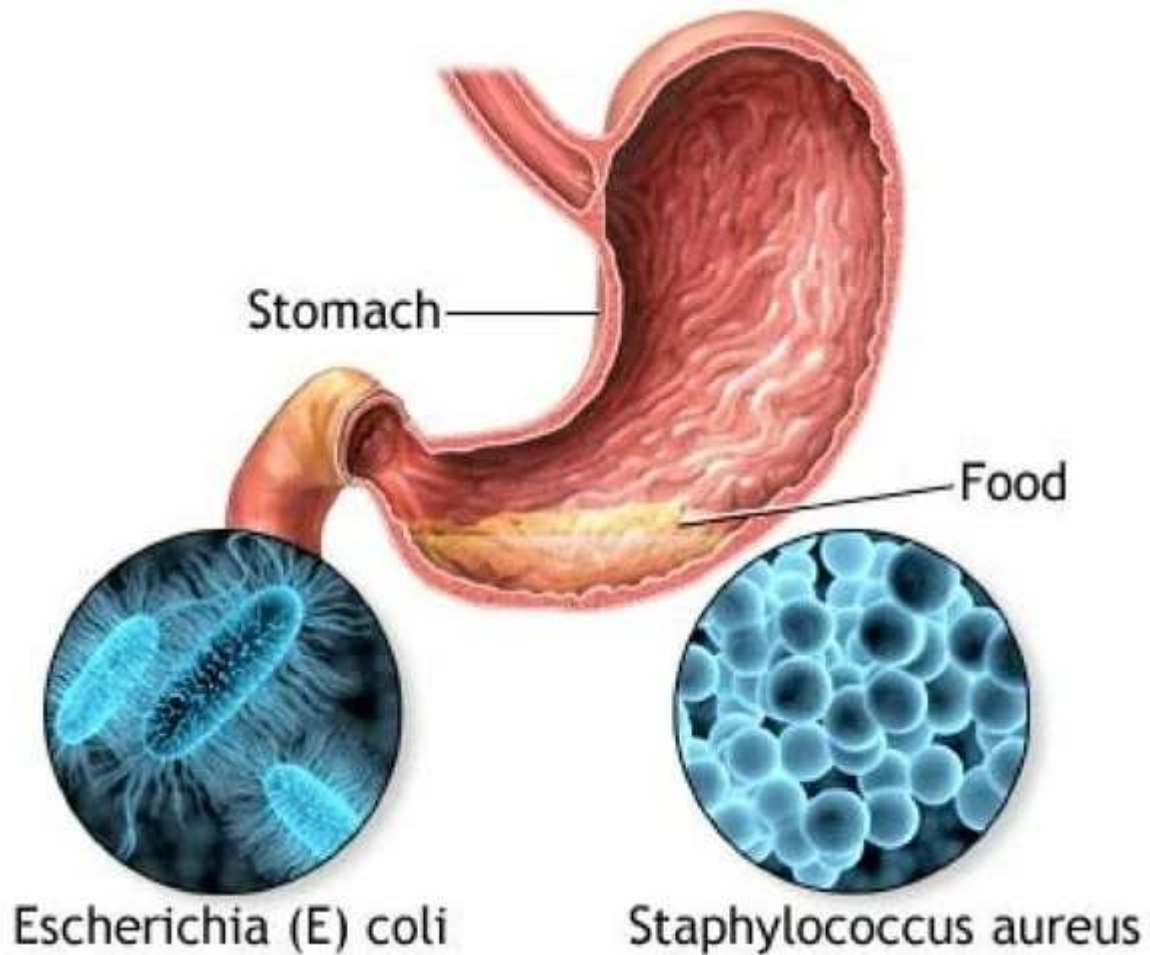
Antiepidemic measures

- **Medical supervision after contact persons** (7 *days*)
- **Bacteriological investigation of stool** (decree group only)
- **Serological investigation**
- **Desinfection** – *current, final*

Epidemiology of FTI

Source of infectious agent – mostly humans, such as cookers, sometime animals — sick or carriers.

Characteristic suddenly and massive morbidity between persons, who ate infected food. May occur in different seasons but mostly in summer and autumn.



Staphylococcus toxicosis

Incubation period, as rule, very short (till 2–6 h). Clinically disease appears with headache, nausea, severe vomiting, severe cutting like pain in upper half of abdomen, quickly development of dehydration symptoms. Diarrhea may occur or not. Fever is rarely high. In severe cases may appear cyanosis, seizures, collapse. However within a day quick improvement occurs.

THANK YOU