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MATERIALS FOR PREPARING TO LICENSE EXAMINATION «KROK-1» ON SPECIAL MICROBIOLOGY FOR ENGLISH-MEDIUM STUDENTS OF THE FACULTIES OF MEDICINE AND DENTISTRY

student _____ year _____group

Surname_____

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Teacher_____

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Kharkiv 2018

Materials for preparing to license examination “KROK-1” on special microbiology for English-medium students of the faculties of medicine and dentistry (guidelines for students) / M.M. Mishyna, Yu.A. Mozgova, N.I. Kovalenko. – Kharkiv: KNMU, 2018. – 128 p.

Introduction.

«Materials for preparing to license examination “KROK-1” on special microbiology for English-medium students of the faculties of medicine and dentistry (guidelines for students)» were prepared according to the Program on microbiology, virology and immunology for students of medical and dentistry faculties of medical universities of 3-4 accreditation levels.

These materials were made that to help students to remember tests and be prepared to “KROK-1” examination on special microbiology. This book contains tests that were in “KROK” buklets for English-medium students of medical, dentistry and pharmacy facultaties (http://testcentr.org.ua). According to tendence of last years when in “KROK-1” appear tests on infectious diseases we also add such tests.

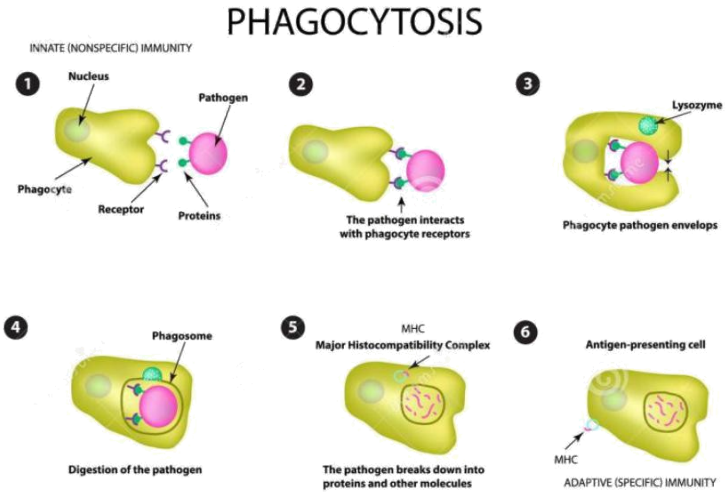
The book deals with the causative agents of infectious diseases. Prophylaxis and treatment of various infectious diseases, modern methods of laboratory diagnostics also are discussed.

The book is structured in two parts: I – especially tests with marked correct answer and free place at right side to write key words, and II – where are present schemes and schedules that make the process of answering easily and may help to remember key words for longer time.

Staphylococcus

At the laboratory experiment the leukocyte culture was mixed with staphylococci. neutrophile leukocytes engulfed and digested bacterial cells. This process is termed:

A. Phagocytosis
B. Pinocytosis C. Diffusion
D. Facilitated diffusion E. Osmosis



0 In the surgical department of a hospital there was an outbreak of hospital infection that showed itself in often postoperative wound abscesses. Bacteriological examination of pus revealed aurococcus. What examination shall be conducted to find out the source of this causative agent among the department personnel?

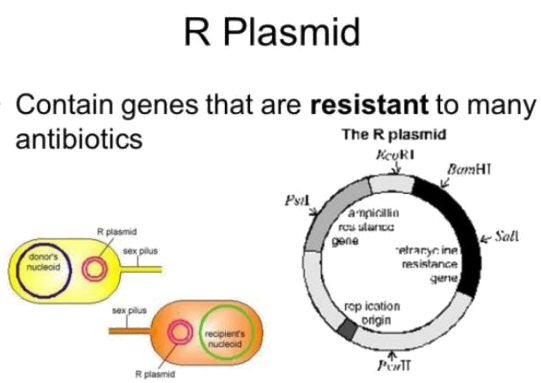
A. Phagotyping
B. Microscopical examination
C. Serological identification D. Biochemical identification
E. Estimation of antibiotic susceptibility

1 Because of suspected intrahospital infection in the neonatal department of the maternity home the inspection was carried out. In some children and on some general things Staphylococcus aureus was revealed. What properties of these cultures allow to establish their origin from one source?

A. Antibioticogramma
B. Antigenic structure
C. Biochemical activity
D. Phagotype
E. Chromogenesis

23 In the surgical department of a dental clinic cases of hospital-acquired staphylococcal infection were registered which was caused by strains with multiple drug resistance. Such feature can be identified by presence of:

A. R-plasmids
B. F-plasmids
C. Exotoxins
D. Temperate bacteriophages
E. Virulent bacteriophages



23 Staphylococci grow well in ordinary media but inoculation of blood and egg-yolk salt agar should be done to separate pure bacterial cultures from diseased

tissue. What is the purpose of those media?

23 To define disease-producing factor

24 To define tinctorial properties

25 To study antigenic properties

26 To define bacterial mobility

27 To define antibiotic susceptibility

Staphylococcus aureus

- ***S. aureus*** **has several important cell wall components & antigens - important virulence factors for *S. aureus*:**

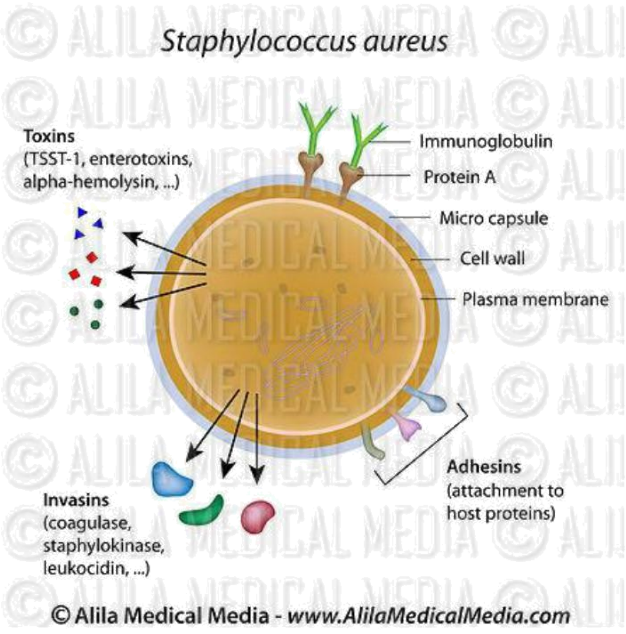
1. Structural components
- **a) Capsule or polysaccharide slime layer**
- **b) Peptidoglycan**
- **c) Teichoic acid**
- **d) Protein A**

2. Toxins
- **a) Cytotoxins**
- **b) Exfoliative toxins**
- **c) Enterotoxins**
- **d) Toxic shock syndrome toxin-1**

3. Enzymes: ***Coagulase, catalase, hyaluronidase, fibrinolysin, lipases, nucleases & penicillinase***

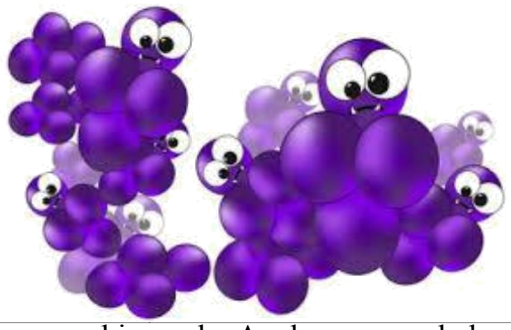
23 During inspectation of dental tools for sterility in one case gram-positive cocci were detected. They were situated in clusters and yielded positive plasma coagulation reaction; the cocci were fermenting mannitol in anaerobic conditions and exhibiting lecithinase activity. What microorganism as detected?

A. St. saprophiticus
B. St. epidermidis
C. Corynebacterium xerosis
D. Staph. aureus
E. Str. Pyogenes



23 Microbiological purity of tableted drugs had been tested at factory. Samples cultivation in mannitol salt agar resulted in growth of golden-yellow colonies, microscopic examination of colonies detected grampositive globular bacteria positioned in clusters; microorganisms had plasma coagulation properties. What pure bacterial culture was obtained?

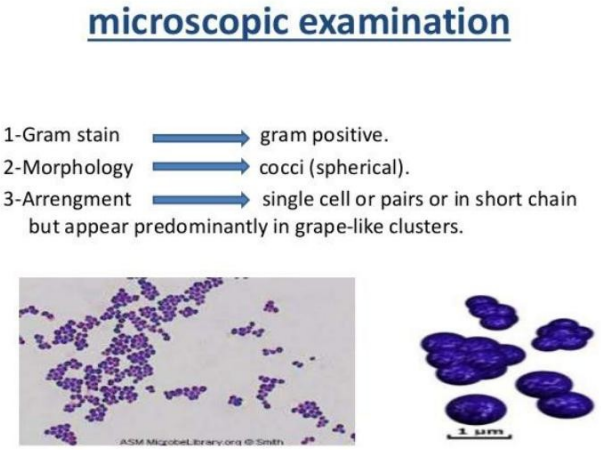
A. Staphylococcus aureus
B. Enterobacteriaceae
C. Staphylococcus epidermidis
D. Staph. saprophyticus
E. Pseudomonas aeruginosa



24 A 65-year-old man has purulent abscess on his neck. Analyses revealed a culture of gram-positive cocci with plasmocoagulase activity. This culture relates

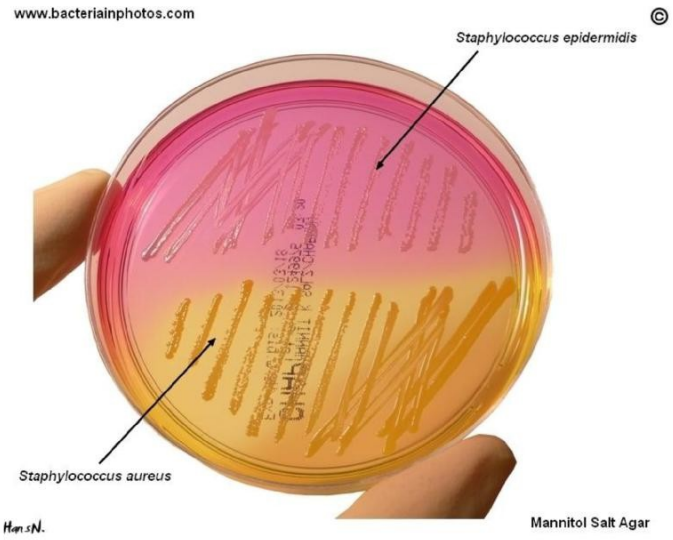
most likely to:
A. Staphylococcus aureus B. Streptococcus pyogenes
C. Staphylococcus epidermidis D. Staph. saprophyticus E. –

23 Examination of a patient with pustular skin lesions allowed to isolate a causative agent that forms in the blood agar roundish yellow middle-sized colonies surrounded by haemolysis zone. Smears from the colonies contain irregularshaped clusters of gram-positive cocci. The culture is oxidase- and catalasepositive, ferments mannitol and synthesizes plasmocoagulase. What causative agent was isolated?
A. Staphylococcus aureus
B. Streptococcus agalactiae
C. Streptococcus pyogenes
D. Staphylococcus epidermidis
E. -



24 From the purulent exudate of a patient with odontogenic phlegmon a pure culture of Gram(+) microorganisms was segregated. This culture was lecithinously active, coagulated plasma of a rabbit, decomposed mannitol under anaerobe conditions. What microorganism may have contributed to the origin of suppurative complication?
A. S.aureus
B. S.epidermidis
C. S.pyogenes
D. S.viridans E.
S.mutans

25 Purulent discharges of a patient with a mandibulofacial phlegmon contain spheroid microorganisms making S-shaped colonies with golden pigment that produce lecithinase, plasmocoagulase, hemolysin and decompose mannitol under anaerobic conditions. Specify the kind of microorganisms that had caused the suppuration:
A. S. aureus
B. Str. pyogenes
C. Str. mutans D.
S. epidermidis E.
Str. sanguis



23 A 15-year-old patient consulted a dermatologist about a painful lump in the armpit. Objectively: there is a walnut-sized node, lymphadenitis, infiltration of

the surrounding tissues. The patient has been diagnosed with hidradenitis. What is the most likely causative agent of this disease?

23 Staphylococci

24 Streptococci

25 Proteus vulgaris

26 Pseudomonas aeruginosa

27 Mixed infection

23 Microscopy of a smear obtained from a patient with acute purulent periostitis revealed gram-positive bacteria arranged in clusters resembling bunch of grapes. What microorganisms is this morphology typical for?

A. Staphylococci

B. Sarcina

C. Tetracocci

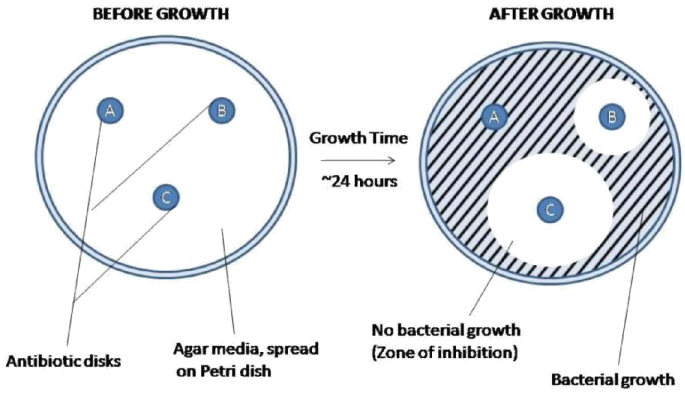
D. Candida fungi

E. Streptococci

24 Pathogenic staphylococcus was obtained from the purulent wound of the patient. Its antibiotic sensitivity was determined to be as follows: penicillin growth inhibition zone - 8 mm; oxacillin - 9 mm, ampicillin - 10 mm, gentamicin - 22 mm, lincomycin - 11 mm. What antibiotic should be chosen for treatment in this case?

A. **Gentamicin**

B. Penicillin C. Ampicillin D. Oxacillin E. Lincomycin



Streptococcus

23 Analysis of sputum taken from a patient with suspected pneumonia revealed rather elongated gram-positive diplococci with somewhat pointed opposite ends. What microorganisms were revealed in the sputum?

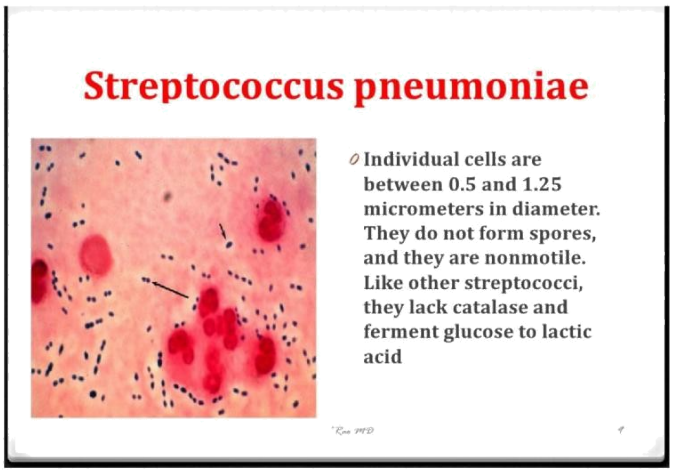
A. Streptococcus pneumoniae

B. Staphylococcus aureus

C. Klebsiella pneumoniae

D. Neisseria meningitidis

E. Neisseria Gonorrhoeae

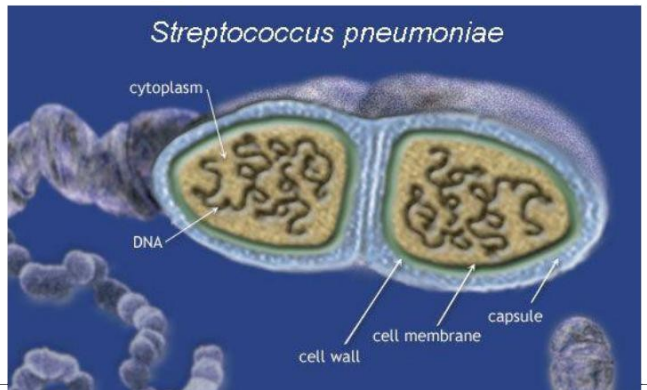


24 Analysis of sputum taken from a patient with suspected pneumonia revealed slightly elongated gram-positive diplococci with tapered opposite ends. What

microorganisms were revealed in the sputum?

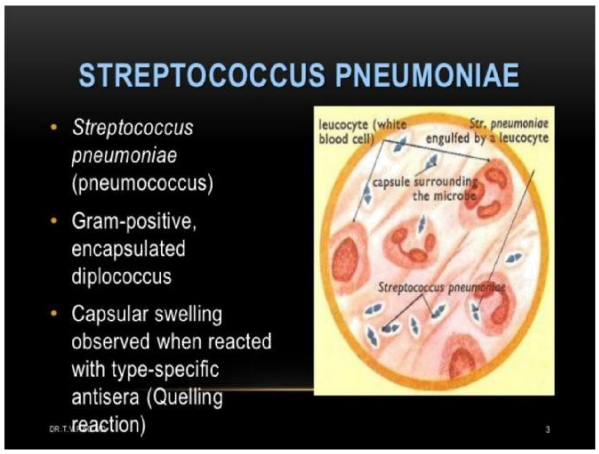
23 Stretpococcus pneumoniae

24 Neasseria gonorrhoeae
25 Neisseria meningitidis
26 Staphylococcus aureus
27 Klebsiella pneumonia



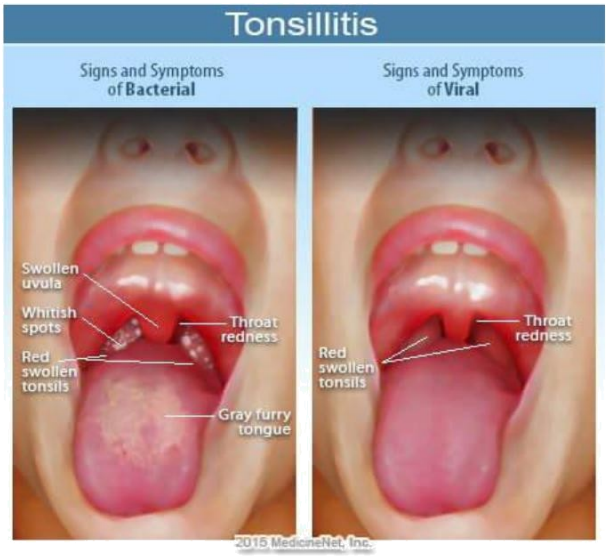
23 A patient has a suspected pneumonia. In his sputum there were revealed grampositive diplococci, prolonged with the slightly pointed opposite ands. What microorganisms are revealed in the sputum?

A. Staphylococcus aureus
B. Neisseria gonorrhoeae
C. Neisseria meningitidis
D. Klebsiella pneumoniae
E. Streptococcus pneumonia



23 A 22 y.o. man complains of acute throat pain, increasing upon swallowing during 3 days. Body temperature 38,3^0 C, neck lymph nodules are slightly enlarged and painful. Pharyngoscopically – tonsilar hyperemia, enlargement and edema, tonsils are covered by round yellow fibrinous patches around crypts openings. Beta-haemolytic streptococcus in swab analysis. What is the diagnosis?

A. Acute membranous tonsilitis
B. Acute follicular tonsilitis
C. Pharyngeal diphtheria D. Infectious mononucleosis
E. Pharyngeal candidosis



23 A 10-year-old girl was admitted to a hospital with carditis presentations. It is known from the anamnesis that two weeks ago she had exacerbation of chronic

tonsillitis. What is the most likely etiological factor in this case?

23 Streptococcus

24 Staphylococci

25 Pneumococci

26 Klebsiella

27 Proteus

Complications

1. Chronic tonsillitis – incomplete resolution of acute tonsillitis
2. Peritonsillar abscess
3. Parapharyngeal abscess
4. Acute otitis media – recurrent attacks
5. Cervical abscess due to suppuration of jugulodigastric nodes
6. Rheumatic fever – group A β-hemolytic streptococci
7. Subacute bacterial endocarditis (patients with valvular heart disease) – streptococcus viridans

23 A 40-year-old woman was diagnosed with glomerulonephritis based on her clinical symptoms and the results of urine analysis. Anamnesis states chronic tonsillitis. What microorganisms are the most likely cause for the kidney damage in this case?

A. Streptococci

B. Staphylococci

C. Escherichia

D. Mycoplasma

E. Meningococci

Complications tonsillitis

- Quinsy (peritonsillar abscess)
- Airway obstruction
- Sinusitis
- Otitis media
- Brain abscess, meningitis
- Pharyngeal/retropharyngeal abscess
- Post-strep glomerulonephritis (cola urine)
- Septic arthritis

Only tonsillectomy if >7 episodes in 1yr (SIGN guidelines)

24A 10-year-old child has painful swallowing, neck edema, temperature rise up to 39 ^{o}C, the whole body is covered with bright-red petechial rash. Back of the throat and tonsils are hyperemic, the tongue is crimsoncolored. Tonsillar surface is covered with isolated grayish-colored necrosis nidi. What disease is it?

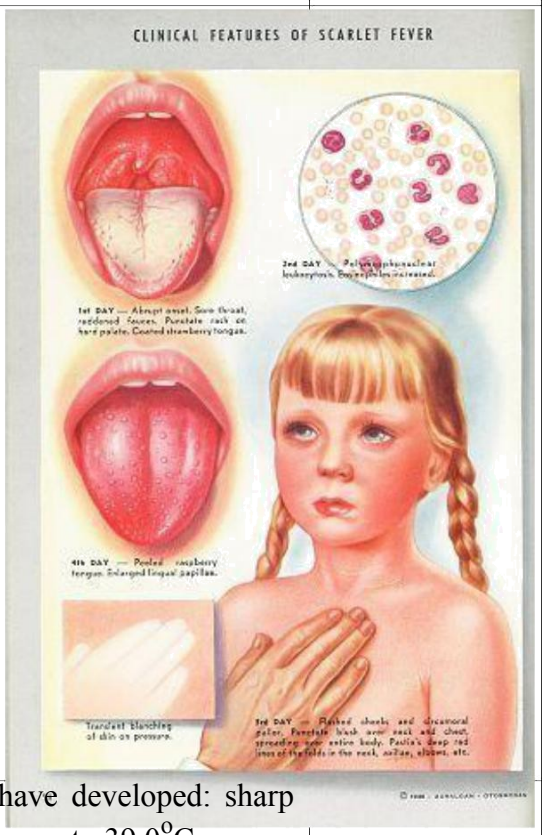
A. Scarlet fever

23 Meningococcal nasopharyngitis

24 Diphtheria

25 Influenza

26 Measles



23 A child is 10 years old. The following presentations have developed: sharp pain during swallowing, swollen neck, body temperature rise up to 39,0^{o}C,

bright-red finely papular rash all over the body. Pharynx and tonsils are sharply hyperemic ("flaming pharynx"), "crimson tongue". On the tonsils surface there are isolated greyish necrosis focuses. What disease it might be?

A. Scarlet fever

23 Meningococcal nasopharynxgitis

24 Diphtheria

25 Influenza

26 Measles

23 A boy is 7 y.o. Objectively: against the background of hyperemic skin there is knobby bright-pink rash on his forehead, neck, at the bottom of abdomen, in the popliteal spaces; nasolabial triangle is pale. Examination of oropharyngeal surface revealed localized bright-red hyperemia; tonsils are swollen, soft, lacunas contain pus, tongue is crimson. Cervical lymph nodes are enlarged, dense and painful. What is the most probable diagnosis?

A. Scarlet fever
B. Rubella
C. Whooping cough
D. Diphtheria
E. Infectious mononucleosis

24 A 9-year-old boy has acute onset of disease: sore throat, body temperature rise up to 39,5^{o}C; on the second day diffuse skin rash was detected all over his skin except for nasolabial triangle. On examination of oral cavity: crimson tongue, "flaming pharynx", necrotic tonsillitis. What diagnosis is the most likely?

A. Scarlet fever
B. Measles
C. Diphtheria
D. Influenza
E. Meningococcemia

25 A 7 y.o. girl fell ill abruptly: fever, headache, severe sore throat, vomiting. Minute bright red rash appear in her reddened skin in 3 hours. It is more intensive in axillae and groin. Mucous membrane of oropharynx is hyperemic. Greyish patches is on the tonsills. Submaxillary lymph nodes are enlarged and painful. What is your diagnosis?

A. Scarlet fever
B. Measles
C. Rubella
D. Pseudotuberculosis
E. Enteroviral infection

26 In a 2-year-old child with catarrhal presentations and skin rash a pediatrician suspected scarlet fever. The child was given intracutaneously a small dose of

serum antibody to the streptococcal erythrogenic toxin; on the site of injection the rash disappeared. What do the reaction results mean?

A. The clinical diagnosis was confirmed

B. The child has hypersensitivity to the erythrogenic toxin

C. The disease wasn't caused by haemolytic streptococcus

D. The whole serum dose may be injected intravenously

E. The child has very weak immune system

Diagnosis of Scarlet Fever

- **Schultz-Charlton Reaction**
  - In vivo neutralization test
  - I.D. injection of anti-erythrogenic toxin in erythematous area
  - Positive: Disappearance of the rash within 6-12 hours
- **Susceptibility to scarlet fever**
- This is done by the **Dick Test**
  - 0.1 ml erythrogenic toxin injected ID in one forearm (test)
  - The same dose of heated toxin in the other forearm (control)

	Dick positive	Dick negative
Test	Rash	No Rash
Control	No Rash	No Rash

23 A 2 y.o. child has catarrhal effects and skin eruption. A doctor suspected scarlet fever. The child was injected intracutaneously with some serum to the erythrogenic streptococcus toxin, on the spot of injection the eruption disappeared. What do the reaction results mean?

A. They confirm the clinical diagnosis

B. The child has hypersensitivity to the erythrogenic toxin

C. The disease was caused by non-hemolytic streptococcus

D. The complete dose of serum could be introduced intravenously

E. The child's immune system is very weakened

24 A 7 year old child often suffers from streptococcus angina. Doctor suspected development of rheumatism and administered serological examination. The provisional diagnosis will be most probably confirmed by presence of antibodies to the following streptococcus antigen:

A. O-streptolysin

B. C-carbohydrate

C. M-protein

D. Erythrogenic toxin

E. Capsular Polysaccharide

Antistreptolysin O titer (ASO)

Positive titre: >200 IU/mL

- Detects antibody to the antigen streptolysin O produced by group A streptococci. Titer rises to a peak at 4-6 weeks and may remain elevated for 1 year.

Positive in:

- Streptococcal infection (eg, upper airway infections, scarlet fever)
- post-streptococcal infection complication (eg, glomerulonephritis and rheumatic fever).

False positive in

- Some bacterial infections.

23 A male patient has been diagnosed with acute post-streptococcal glomerulonephritis. It is most likely that the lesion of the basement membrane of

renal corpuscles was caused by the following allergic reaction:

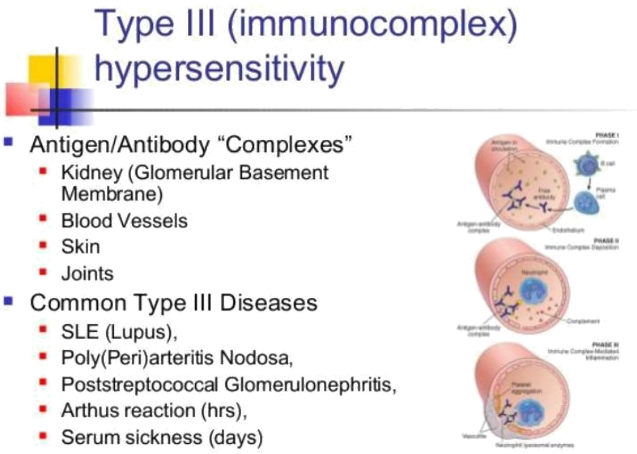
A. Immune complex

23 Anaphylactic

C.Cytotoxic

D.Delayed

E.Stimulated



23 A patient has been diagnosed with acute glomerulonephritis that developed after he had had streptococcal infection. It is most likely that the affection of basal glomerular membrane is caused by an allergic reaction of the following type:

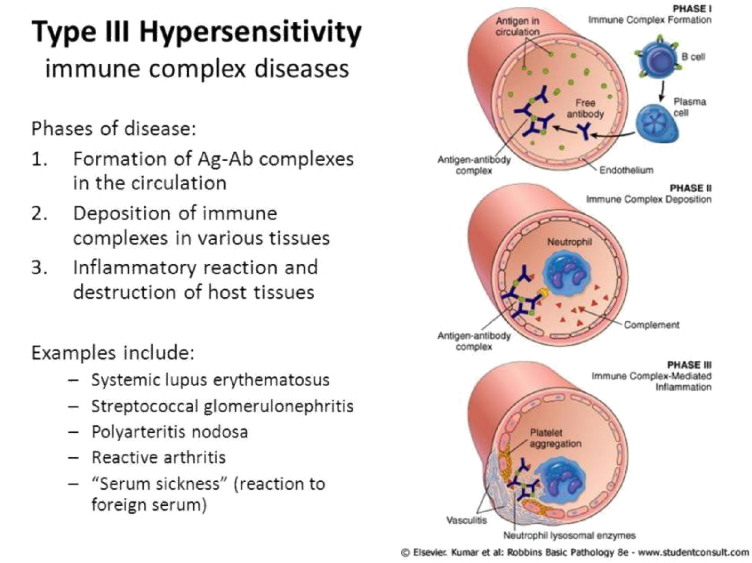
A. Immune complex

B. Anaphylactic

C.Cytotoxic

D.Delayed

E.Stimulated



23 10 days after having quinsy caused by beta-hemolytic streptococcus a 6-year-old child exhibited symptoms of glomerulonephritis. What mechanism of glomerular lesion is most likely in this case?

A. Immunocomplex

B. Anaphylaxis

C. Cellular cytotoxicity

D. Atopy

E. Antibody-dependent cell-mediated cytolysis

Type III Hypersensitivity

Antigens Associated with Immune Complex Disorders

ANTIGEN	CLINICAL MANIFESTATION
EXOGENOUS	
Infectious agents:	
Bacteria: *Y. enterocolitica*	Arthritis
Streptococci	GN, Infective endocarditis
T. pallidum	Glomerulonephritis
Viruses: Hep. B, CMV	Polyarteritis nodosa
Parasites: *Plasmodium*	Glomerulonephritis
Schistosoma	
Fungi: *Actinomycetes*	Farmer's lung
ENDOGENOUS	
Nuclear antigens	SLE
Immunoglobulins	Rheumatoid arthritis
Tumor antigens	Glomerulonephritis

23 Blood of a patient with presumable sepsis was inoculated into sugar broth. There appeared bottom sediment. Repeated inoculation into blood agar caused

growth of small transparent round colonies surrounded by hemolysis zone. Examination of a smear from the sediment revealed gram-positive cocci in form of long chains. What microorganisms are present in blood of this patient?

23 Streptococci

24 Micrococci

C.Staphylococci

D.Tetracocci

E.Sarcina

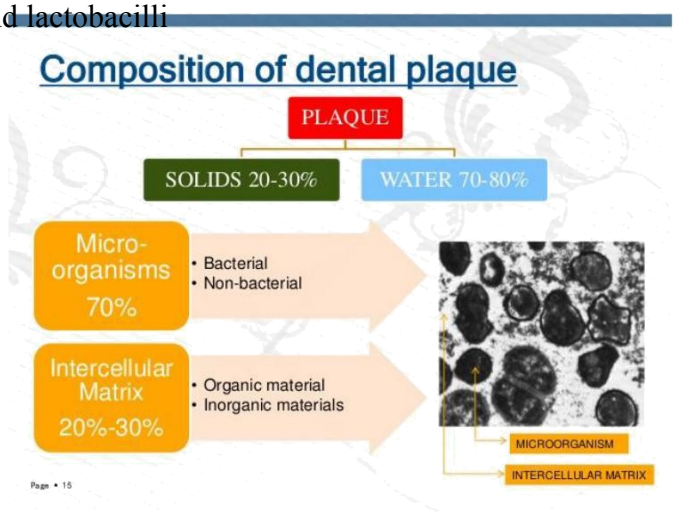
23 Microscopy of a dental plaque revealed a large number of cocci arranged in pairs and strings, as well as Gram-positive bacilli which were likely to be the cause of cariogenesis. What microorganism associations are involved in the development of dental caries?

A. S.mutans, streptococci and lactobacilli

B. S.salyvarius, streptococci and lactobacilli

C. S.mutans, streptococci and corynebacteria D. S.aureus and lactobacilli

E. S.salyvarius, streptococci and enterococci



23 A patient with streptococcal gingival infection was prescribed a medication that contains beta lactam ring in its structure. What preparation belongs to this group?

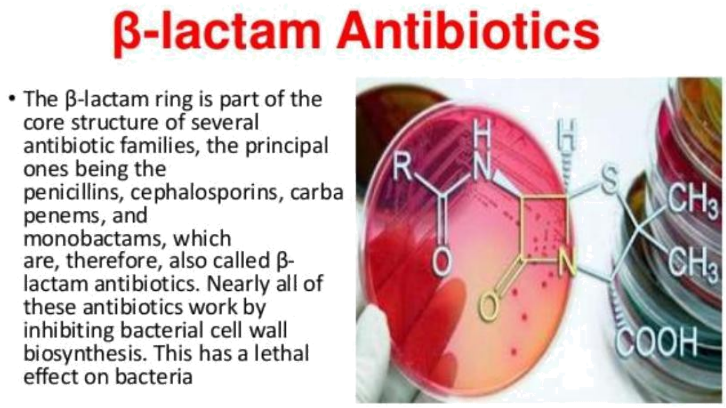
A. Benzylpenicillin

B. Rifampicin

C. Erythromycin

D. Streptomicin sulfate

E. Chloramphenicol

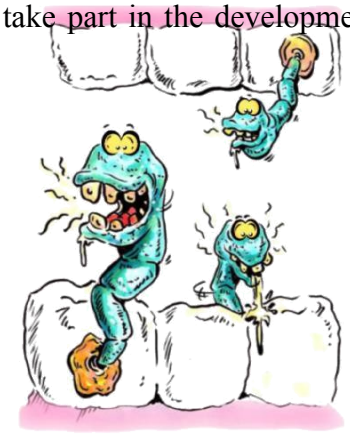


23 A patient with streptococcal infection of gums was prescribed a drug that contained beta-lactam ring in its structure. Which drug relates to this group?

A. Benzylpenicillin B. Rifampicin C. Erythromycin
D. Streptomycin sulfate E. Chloramphenicol

23 During examination of a patient a dentist revealed a lot of "white spots zones of enamel demineralization. What microorganisms take part in the development of this process?

A. Streptococcus mutans
B. Streptococcus salivarius
C. Streptococcus pyogenes
D. Veilonella parvula
E. Staphylococcus epidermidis



Streptococcus mutans

Gonococci

23 Bacteriological examination of purulent discharges from the urethra revealed gram-negative bacteria looking like coffee beans. They were localized in the leukocytes and could decompose glucose and maltose to acid. These are the causative agents of the following disease:

A. Gonorrhoea
B. Syphilis C. Melioidosis
D. Soft chancre E. Veneral lymphogranulomatosis

***Neisseria gonorrhoeae* (the gonococcus)**

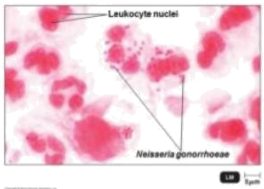
- Gram-negative diplococcus
- Oxidase positive
- Can ferment glucose but not maltose

23 Gramnegative bin-shaped diplococcus inside and outside of leucocytes were detected on bacteriological examination of the purulent exudates from the cervix of the uterus. Name the causative agent of purulent inflammation of the cervix of the uterus.

A. Haemophilus vaginalis
B. Chlamidia trachomatis
C. Calymmatobacterium granulomatis
D. Neisseria gonorrhoeae
E. Trichomonas vaginalis

Neisseria gonorrhoeae (gonococcus)
causes gonorrhea – bacterial STD

- **In men** - usually symptomatic
- **It involves**
- inflammation of the urethra
- painful urination
- purulent discharge



24 Bacteriological analysis of purulent discharges from urethra revealed presence of gram-negative bacteria resembling of coffee beans, which were able to

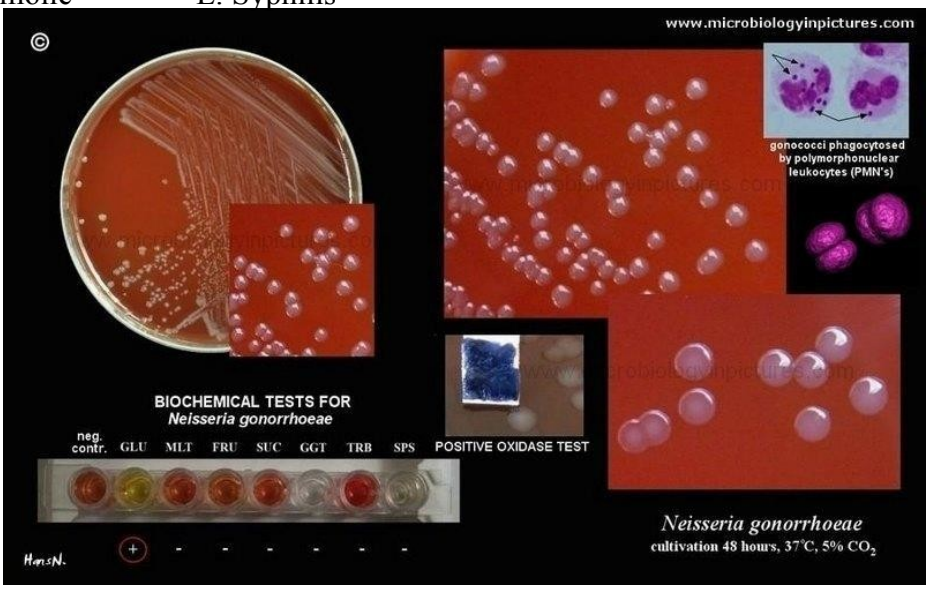
decompose glucose and maltose into acid. They were found in the leukocytes. These bacteria are causative agents of the following disease:

23 Gonorrhoea

24 Venereal lymphogranulomatosis

25 Melioidosis

D. Ulcul molle E. Syphilis

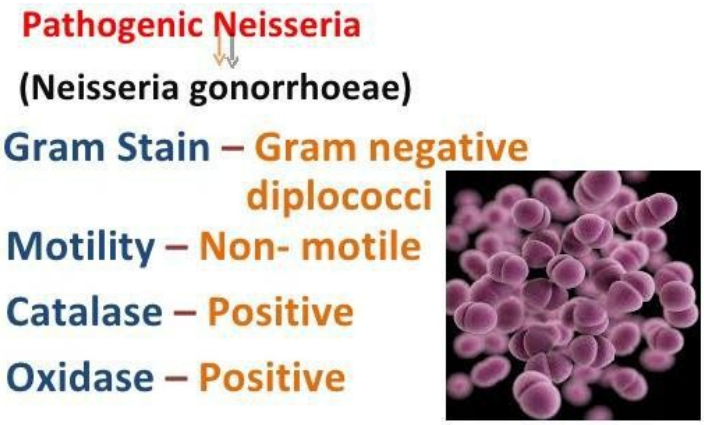


23 Bacteriological examination of purulent discharges from urethra revealed some bacteria that had negative Gram's stain, resembled of coffee corns, decomposed glucose and maltose up to acid. They were located in leukocutes. What disease do they cause?

A. Gonorrhea

B. Syphilis

C. Pseudocholera D. Soft chancre E. Venereal lymphogranulomatosis



24 Microscopy of a female patient's swabs made from vaginal secretion revealed gramnegative bean-shaped diplococci. What provisional diagnosis can be made?

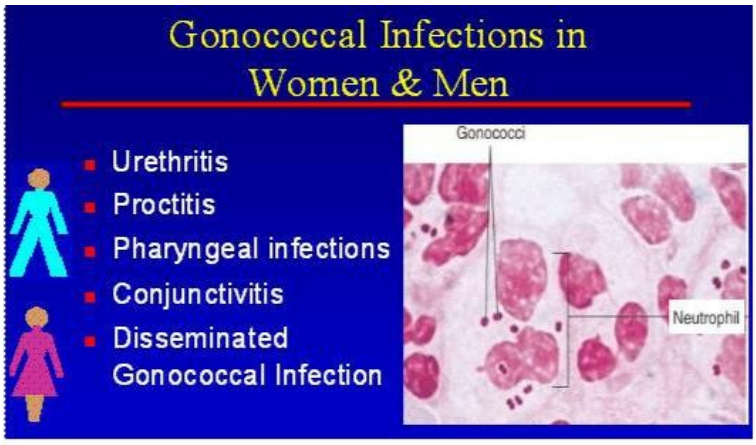
A. Gonorrhoea

B. Syphilis

C. Clamidiosis

D. Mycoplasma

E. Toxoplasma



23 Microscopic study of discharges from urethra of a patient suffering from acute urethritis revealed bean-shaped microorganisms up to 1 micrometer in diameter

arranged in pairs and placed inside the leukocytes. What microorganisms are these?

23 Gonococci

24 Meningococci

25 Tetracocci

26 Streptococci

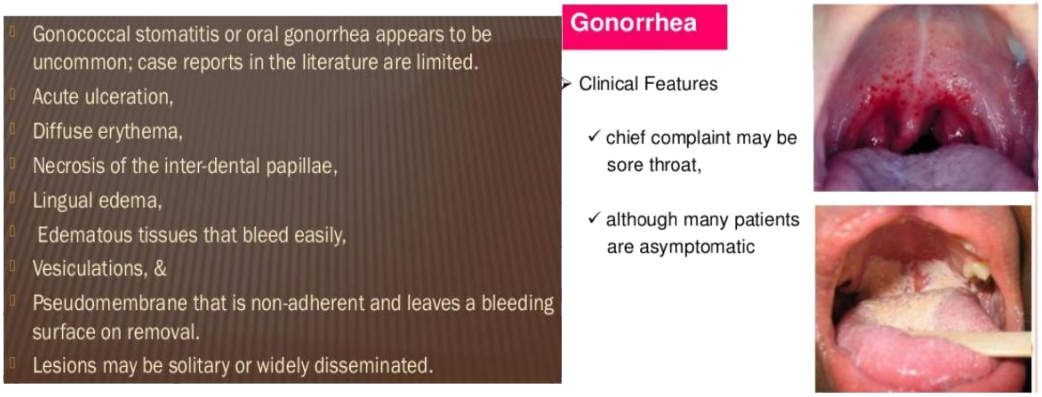
27 Staphylococci

23 A newborn child has hyperemia, edema of mouth mucous membrane, small erosions with viscous muco-purulent discharge. Examination of muco-pus smears reveals a great number of leukocytes containing gram-negative diplococci. The same microorganisms can be found outside the leukocytes. What is the most probable diagnosis?

A. Gonococcal stomatitis

B. Toxoplasmosis C. Prenatal syphilis

D. Staphylococcal stomatitis E. Blennorrhea



23 An 18 year old woman consulted a gynecologist about the pain in the lower part of abdomen, fever up to 37,5°C, considerable mucopurulent discharges from the genital tracts, painful urination. Vaginal and speculum examination results: the urethra is infiltrated, cervix of the uterus is hyperemic, erosive. The uterus is painful, ovaries are painful, thickened; fornixes are free. Bacterioscopy test revealed diplococcus. What diagnosis is the most probable?

A. Recent acute ascending gonorrhea

B. Trichomoniasis C. Candydomycosis D. Chronic gonorrhea E. Chlamydiosis

24 On the fifth day after a casual sexual contact a 25-year-old female patient consulted a doctor about purulent discharges from the genital tracts and itch.

Vaginal examination showed that vaginal part of uterine cervix was hyperemic and edematic. There was an erosive area around the external orifice of uterus. There were mucopurulent profuse discharges from the cervical canal, uterine body and appendages exhibited no changes. Bacterioscopic examination revealed bean-shaped diplococci that became red after Gram's staining. What is the most likely diagnosis?

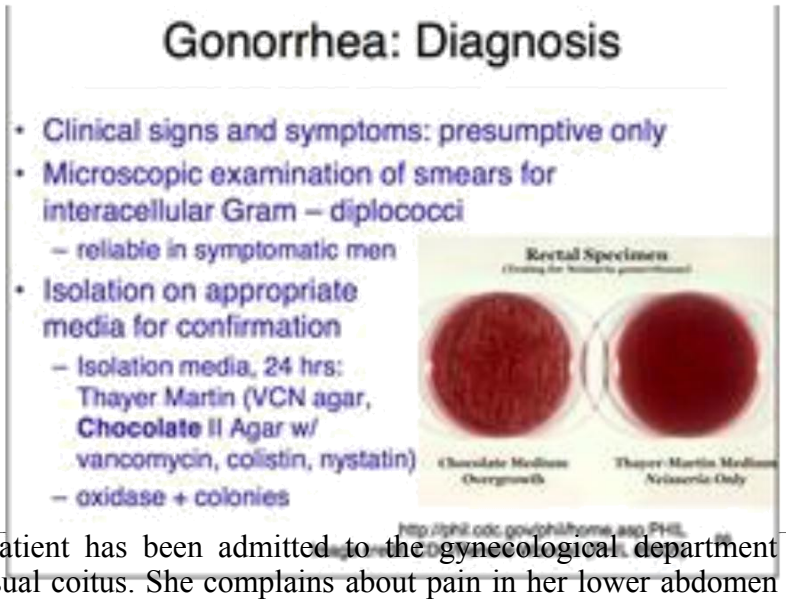
A. Acute gonorrheal endocervicitis

23 Trichomonal colpitis

C.Candidal vulvovaginitis

D. Bacterial vaginism

E. Clamydial endocervicitis



23 A 28-year-old patient has been admitted to the gynecological department three days after a casual coitus. She complains about pain in her lower abdomen and during urination, profuse purulent discharges from the vagina, body temperature rise up to 37,8°C. The patient was diagnosed with acute bilateral adnexitis. Supplemental examination revealed: the 4th degree of purity of the vaginal secretion, leukocytes within the whole visual field, diplococcal bacteria located both intra- and extracellularly. What is the etiology of acute adnexitis in this patient?

A. Gonorrheal B. Colibacterial C. Chlamydial

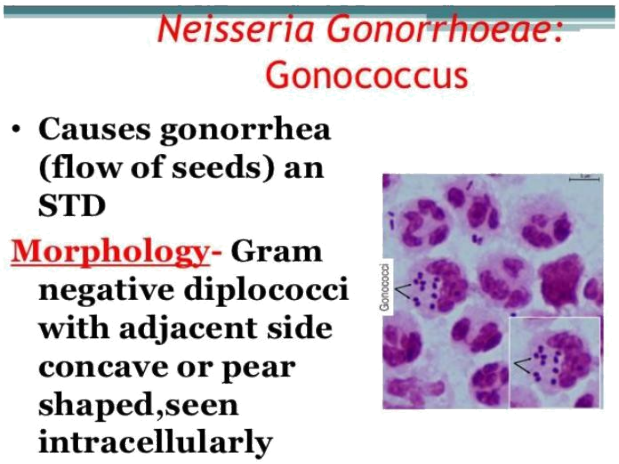
D. Trichomonadal E. Staphylococcal

23 A patient consulted a venereologist about painful urination, reddening of the external opening of urethra, profuse purulent discharges from the urethra. He considers himself to be ill for 3 days. He also associates the disease with a casual sexual contact that took place for about a week ago. If provisional diagnosis "acute gonorrheal urethritis" will be confirmed, then bacteriological study of urethral discharges will reveal:

A. Gram-negative diplococci B. Gram-positive diplococci C. Spirochaete

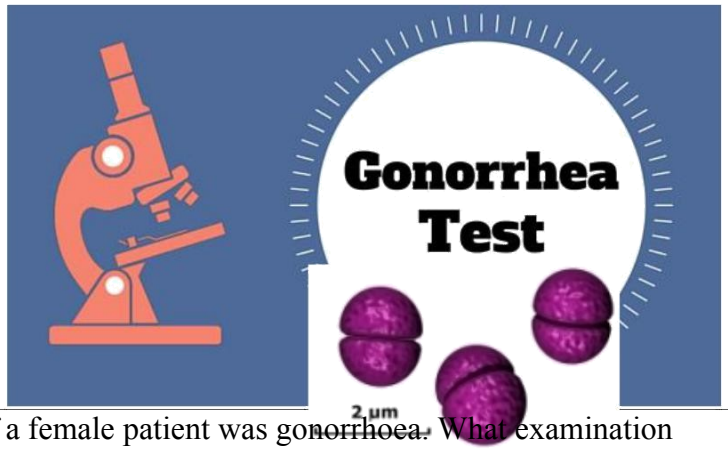
D. Proteus vulgaris

E. Mycoplasma



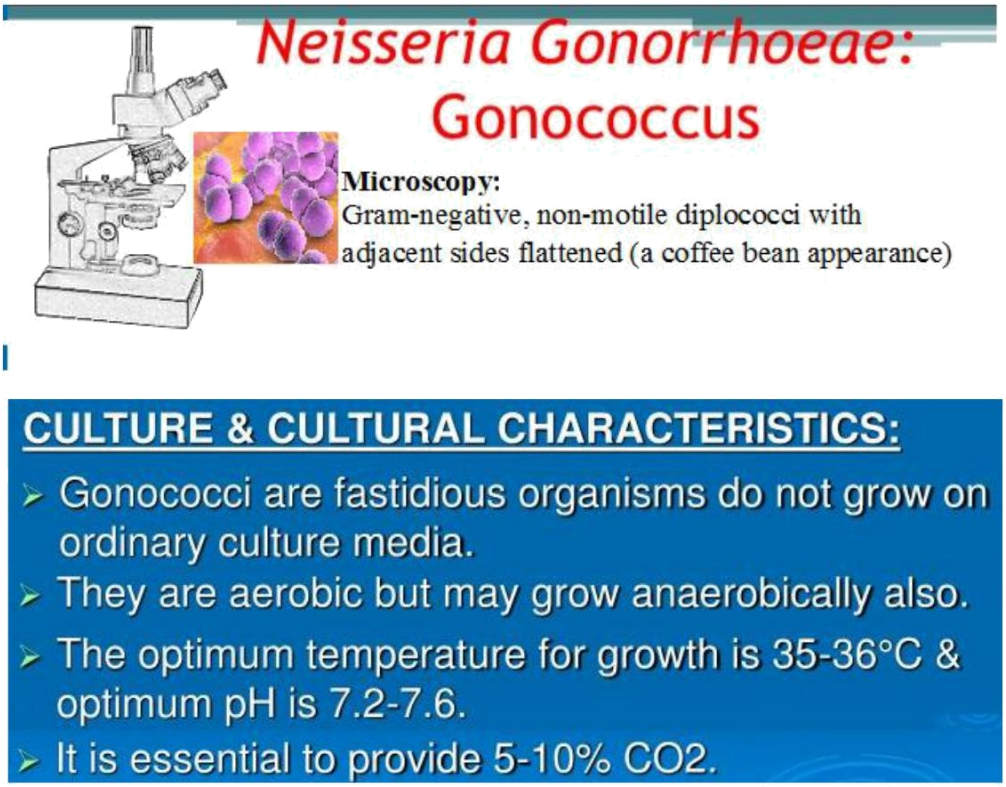
24 A female woman has been clinically diagnosed with gonorrhea. Which of the following studies can be used to confirm the diagnosis?

A. Microscopy of the pathological material
B. Disinfection of laboratory animals C. Bacteriophage test
23 Hemagglutination reaction
24 Immobilization test



23 Clinical diagnosis of a female patient was gonorrhoea. What examination method can be applied for confirmation of this diagnosis?
A. Microscopy of pathological material
B. Infection of laboratory animalsC. Test with bacteriophage
D. Hemagglutination reaction E. Immobilization reaction

23 A 30-year-old female patient has been delivered to the gynaecological department with complaints of acute pain in the lower abdomen and body temperature 38,8°C. In history: sexual life out of wedlock and two artificial abortions. Gynaecological examination reveals no changes of uterine. The appendages are enlarged and painful on both sides. Vaginal discharges are purulent and profuse. What study is required to confirm a diagnosis?
A. Bacteriological and bacterioscopic analysis B. Hysteroscopy
C. Curettage of uterine cavity D. Colposcopy
E. Laparoscopy



23 On admission a 35-year-old female reports acute abdominal pain, fever up to 38,8°C, mucopurulent discharges. The patient is nulliparous, has a history of 2

artificial abortions. The patient is unmarried, has sexual contacts. Gynecological examination reveals no uterus changes. Appendages are enlarged, bilaterally painful. There is profuse purulent vaginal discharge. What study is required to confirm the diagnosis?

23 Bacteriologic and bacteriascopic studies
24 Hysteroscopy
25 Curettage of uterine cavity
26 Vaginoscopy
27 Laparoscopy

Neisseria gonorrhea

Specimen:

- In females: cervical swab in acute and chronic infection.
- In males: urethral discharge in acute infection and morning drops in chronic infection.
- Other specimens that may be used:

i- throat swab.
ii- anorectal swab
iii- conjunctival swab in case of neonatal conjunctivitis.

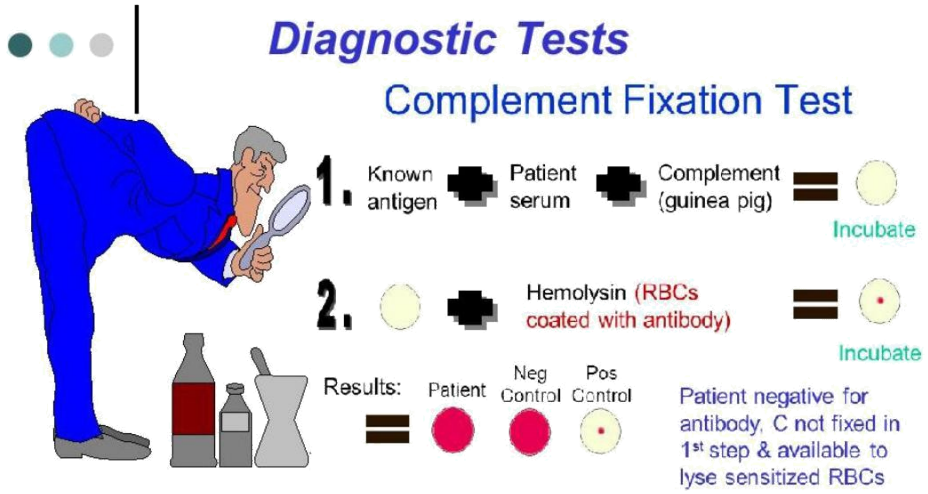
1- gram stain: gm-ve kidney-shaped diplococci that are seen extracellularly and intracellularly inside PNL.
2- Culture on Thayer-Marten agar (chocolate agar that contains vancomycin, nystatin, colistin and trimethoprim) to suppress normal flora.

23 An ophthalmologist suspects blennorrhea (gonococcal conjunctivitis) in a child with signs of suppurative keratocojunctivitis. What laboratory diagnostics should be conducted to confirm the diagnosis?

A. Microscopy and bacteriological analysis.
B. Serum diagnostics and allergy test.
C. Biological analysis and phagodiagnostics.
D. Biological analysis and allergy test.
E. Microscopy and serum diagnostics.

24 A patient who came to the doctor because of his infertility was administered to make tests for toxoplasmosis and chronic gonorrhoea. Which reaction should be performed to reveal latent toxoplasmosis and chronic gonorrhoea in this patient?

A. RIHA - Reverse indirect hemagglutination assay
B. RDHA - Reverse direct hemagglutination assay
C. IFA - Immunofluorescence assay D. Immunoblot analysis
E. (R)CFT- Reiter's complement fixation test

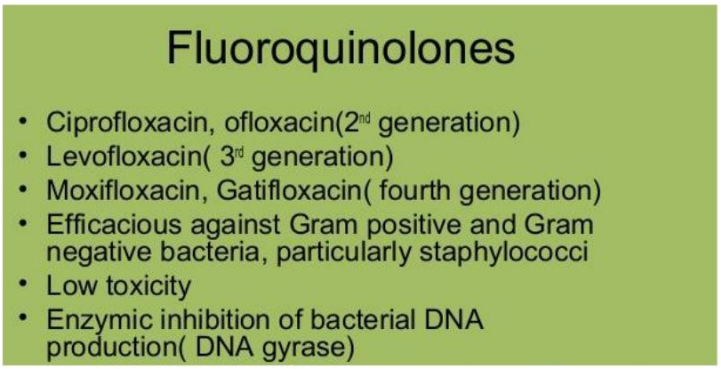


23 A doctor made the diagnosis of gonorrhoea. It was known from the anamnesis that a patient had had gonorrhoea before and he had been treated completely.

What type of infection can this new disease be attributed to?
23 Superinfection
24 Reinfection
25 Secondary infection
26 Relapse
27 Autoinfection

23 Gonorrhoea was [illegible] urethra. Taking into account that medecines for gonorrhoea are fluorquinolones, patient should be prescribed:
A. Ciprofloxacin
B. Fluorouracil C. Cefazoline D. Urosulfan
E. Furazolidone

24 A patient has been diagnosed with gonorrhea. As fluoroquinolones are the drugs of choice for treatment of gonorrhea the patient should be prescribed:
A. Ciprofloxacin
B. Furazolidone
C. Fluorouracil D. Sulfacarbamide (Urosulfanum)
E. Cefazolin



Meningococci

23 While studying blood and mucus samples from the nasopharynx, a bacteriologist took certain measures to conserve the pathogens in the material. Bacterioscopic study revealed the presence of gram-negative cocci looking like coffee beans and arranged in pairs or tetrads. Name the pathogen that was isolated by the bacteriologist:
A. Neisseria meningitidis B. Staphilococcus aureus
C. Neisseria gonorrhoeae
D. Moraxella lacunata
E. Acinetobacter calcoaceticus

DIFFERENCES BETWEEN GONOCOCCUS AND MENINGOCOCCUS
1. Gonococcus grow more slowly, forms smaller colonies.
2.Gonococcus produces acid in glucose only, while meningococcus produces acid in both glucose and maltose.
3. Gonococcus is less toxic to mice and guinea pigs than meningococcus.

SIMILARITIES BETWEEN GONOCOCCUS AND MENINGOCOCCUS
1. Both are strict parasite and causes diseases only for man
2. They may show little differences in resistance to injurious agents.
3. Their distribution in the inflammatory exudates is the same.
4. They grow on artificial media with a little differences.

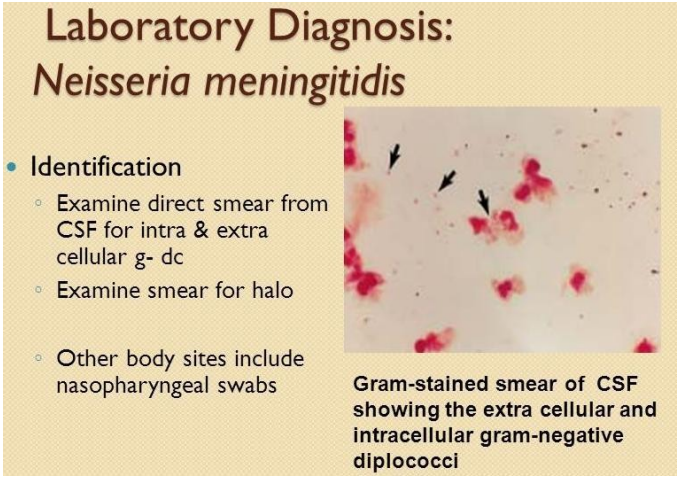
24 Bacterioscopy of nasopharyngeal mucus taken from a 2,5 year old child with nasopharyngitis revealed gram-

negative diplococci looking like coffee grains. What organs of the child are most likely to be affected if these microorganisms penetrate the blood?

A. Brain tunics
B. Cardiac valves
C. Renal glomeruli
D. Urogenital tracts
E. Lymph nodes

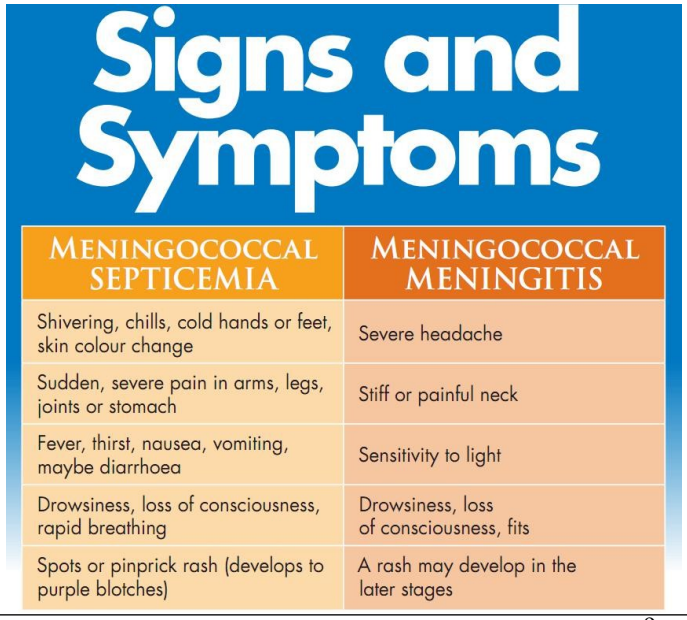
23 A young woman suddenly developed fever up to 39°C accompanied by a strong headache. Examination revealed marked nuchal rigidity. Spinal puncture was performed. Gram-stained smear of cerebrospinal fluid contained many neutrophils and Gram-negative diplococci. What bacteria could be the cause of this disease?

A. Neisseria meningitidis
B. Streptococcus pneumoniae
C. Haemophilus influenza
D. Staphylococcus aureus E. Pseudomonas aeruginosa



24 A 5 y.o. child had a temperature rise up to 40°C, acute headache, vomiting, anxiety, chill. 4 days later there appeared hemorrhagic skin eruption, oliguria and adrenal insufficiency that caused death. Bacteriological examination of smears from the child's pharynx revealed meningococcus. What disease form was revealed?

A. Meningococcemia
B. Meningococcal meningitis
C. Meningoencephalitis
D. Meningicoccal nasopharyngitis
E. –



23 A 5 year old child has the following symptoms: body temperature up to 40°C, acute headache, vomiting, anxiety, shiver. 4 days later there appeared

hemorrhagic skin rash, oliguria and adrenal insufficiency that caused death. Bacteriological examination of pharyngeal smears revealed meningococcus. What form of meningococcal infection was it?

23 Meningococcemia

24 Meningococcal meningitis

25 Meningoencephalitis

26 Meningococcal nasopharyngitis

27 –

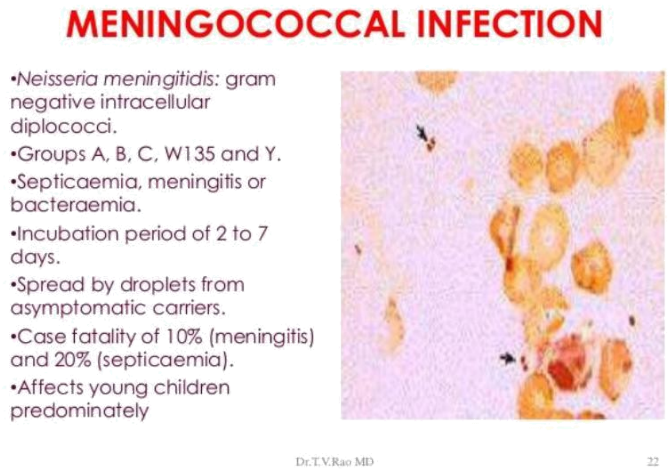
23 In winter a 3-year-old child has sharp rise of body temperature up to 40°C. Hemorrhagic rash is observed on the skin and mucosa. Bean-shaped gram-negative microorganisms situated in pairs are detected in the blood. What provisional diagnosis can be made?

A. Meningococcosis

B. Gonorrhea

C. Scarlet fever

D. Influenza E. Diphtheria



23 A 4 month old child fell seriously ill: body temperature rose up to 38,5°C, the child became inert and had a single vomiting. 10 hours later there appeared rash over the buttocks and lower limbs in form of petechiae, spots and papules. Some haemorrhagic elements have necrosis in the center. What is the most probable disease?

A. Meningococcemia

B. Rubella

C. Influenza

D. Haemorrhagic vasculitis

E. Scarlet Fever

23 The disease of a 21 y.o. patient began with raise of temperature up to 39,0 °C, headache, chill, repeated vomiting. Rigidity of occipital muscles is determined.

The analysis of liquor revealed: cytosis - 1237 in 1 ml, including: 84% of neutrophils, 16 % of lymphocytes. On bacterioscopy: gram-negative cocci are found in liquor. What is the most probable disease?

A. Meningococcal infection: purulent meningitis

B. Meningococcal infection: serous meningitis

C. Secondary purulent meningitis

D. Serous meningitis

E. Infectious mononucleosis

23 A 1,5 y.o. child fell seriously ill: chill, body temperature rise up to 40,1^0 C, then rapid dropping to 36, 2^0 C, skin is covered with voluminous hemorrhagic rash and purple cyanotic spots. Extremities are cold, face features are sharpened. Diagnosis: meningococcosis, fulminant form, infection-toxic shock. What antibiotic must be used at the pre-admission stage?

A. Soluble Levomycetine succinate B. Penicillin

C. Lincomycin

D. Gentamycin E. Sulfamonometoxin

Chloramphenicol – levomycetin

Indications:

meningitis, typhoid fever, paratyphoid fever, brucellosis, tularemia

Side effects:

- Hypochrome and aplastic anemia
- Granulocytopenia, thrombocytopenia
- «Grey syndrome of a featus»
- Disbacteriosis and superinfection

TREATMENT

- The treatment is as that for meningococcal infection, fulminant meningococcemia is a medical emergency and needs to be treated with adequate antibiotics as fast as possible.
- Ceftriaxone is an antibiotic commonly employed today. Ceftriaxone is a third-generation cephalosporin antibiotic. Like other third-generation cephalosporins, it has broad spectrum activity against Gram-positive and Gram-negative bacteria. In most cases, it is considered to be equivalent to cefotaxime in terms of safety and efficacy.
- Benzylpenicillin was once the drug of choice with chloramphenicol as a good alternative in allergic patients.

Escherichia

23 A child with suspected colienteritis was delivered to the infectious disease hospital. Colibacillus was obtained from the child's feces. How to determine whether this bacillus is of pathogenic variety?

A. By means of bacteriophage typing

B. Agglutination reaction with serum O

C. Microscopy of stained smears

D. Based on the nature of its growth in Endo medium

E. Based on its biochemical properties

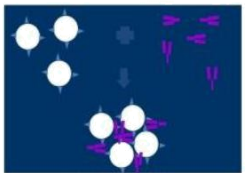
Direct agglutination

Principle

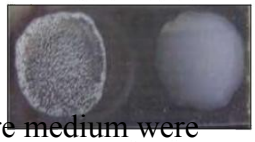
- combination of an insoluble particulate antigen with its soluble antibody
  - – forms antigen-antibody complex
  - – particles clump/agglutinate
- used for antigen detection

Examples

- – bacterial agglutination tests for sero-typing and sero-grouping

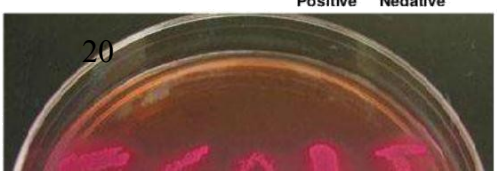


Ag-Ab complex



Positive Negative

24 Red colonies spread in the large quantity in the Endo culture medium were



revealed on bacteriological stool examination of a 4-month-old baby with the symptoms of acute bowel infection. What microorganism can it be? **5888 Escherichia** 5889 Salmonella 5890 Staphylococcus 5891 Streptococcus 5892 Shigella	
0 On bacteriological examination of the defecation of a 4-months-old baby with the symptoms of acute bowel infection there were revealed red colonies spread in the large quantity in the Endo environment. What microorganism can it be? A. Staphylococcus B. Streptococcus C. Shigella D. Salmonella **E. Escherichia** 	
1 From the defecation of a 6-year-old ill child, who has artificial feeding, the intestinal bacillus with antigen structure 0-111 is excreted. What is the diagnosis? A. Food poisoning B. Dysentery-like disease C. Gastroenteritis **D. Coli-enteritis** E. Cholera-like disease **Antigens:** # the O or cell wall antigen # the H or flagellar antigen # the K or capsular antigen. . @ There are more than 150 (O), 50 (H), and 90 (K) antigens @ Various combinations of these result in about 1000 antigenic types of E coli. @ Specific serotypes are associated with certain diseases: O55 and O 111 cause outbreaks of neonatal diarrhoea.	
2 Stool culture test of a 6-month-old bottlefed baby revealed a strain of intestinal rod-shaped bacteria of antigen structure 0-111.What diagnosis can be made? **A. Colienteritis** B. Gastroenteritis C. Choleriform disease D. Food poisoning E. Dysentery-like disease	
3 12 year old child has the ulcer disease of stomach. What is the etiology of this disease? **A. Intestinal bacillus** B. Helicobacter pylori C. Salmonella D. Lambliosis E. Influenza	
4 Among junior children of an orphanage an outbreak of intestinal infection with	

signs of coli-enteritis was registered. In order to identify isolated causative agent it is necessary to:

A. To study biochemical properties of the causative agent

B. To determine sensitivity to antibiotics

C. To study sensitivity to bacteriophages D. Study antigenic properties of the causative agent E. To study virulence of the causative agent

Laboratory Diagnosis:

Specimens:

@ stool, urine, blood, swabs, CSF, etc.

Culture:

@ On blood, EMB, Mac Conkey agar.
@ E coli fermenting lactose (pink colonies), E coli not fermenting lactose (colorless).
@ EMB agar shows green sheen colonies.

0 A 12-year-old boy has been hospitalized for suspected food poisoning. The fecal samples were inoculated on the Endo agar, which resulted in growth of a large number of colorless colonies. What microorganism is most likely to be EXCLUDED from the list of possible causative agents of the disease?

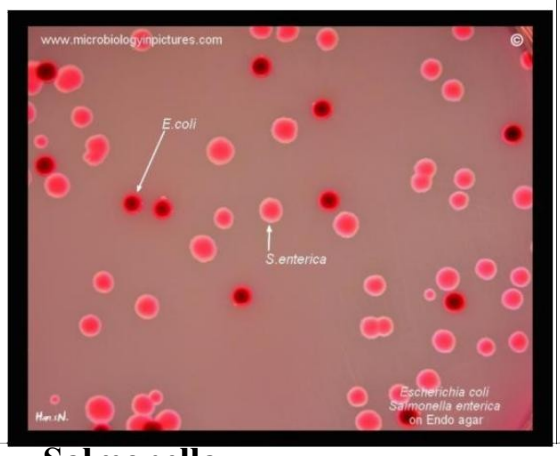
A. Escherichia coli

B. Salmonella enteritidis

C. Proteus vulgaris

D. Pseudomonas aeruginosa

E. Yersinia enterocolitica

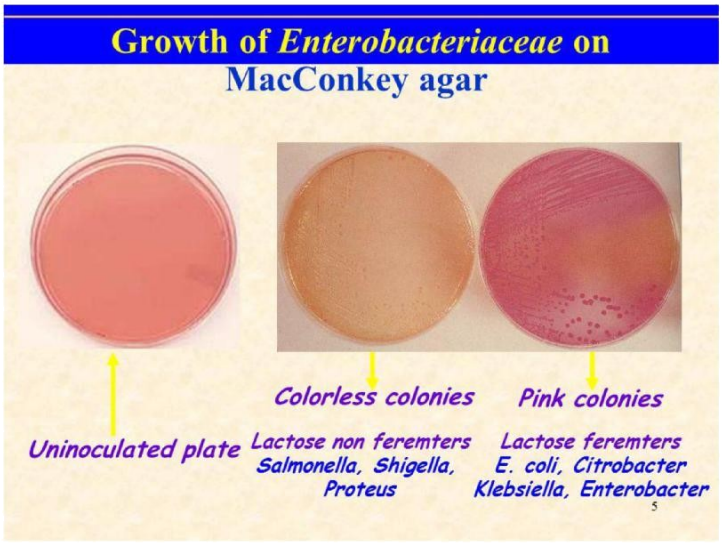


Salmonella

Bacteriological examination of a patient with food poisoning required inoculation of a pure culture of bacteria with the following properties: gramnegative movable bacillus that grows in the Endo's medium in form of colourless colonies. A representative of which species caused this disease?

A. Salmonella

B. Shigella C. Yersinia D. Esherichia E. Citrobacter



0 On bacteriological study of rinsing water of the patient with food poisoning, the pure bacterial culture was inoculated with the following properties: gram-negative motile bacillus in the Endo environment grows like achromic colony. Representative of what genus has caused the illness?

A. Yersinia B. Citrobacter

C. Salmonella

D. Shigella E. Escherichia

0 It was reported an outbreak of food poisoning connected with consumption of pastry that had been stored at a room temperature and had duck eggs as one of the ingredients. What microorganisms might have caused this disease?

A. Salmonella

B. Colon bacilli

C. Staphylococci

D. Legionella E. Comma bacilli

0 A 10 month old boy has been ill for 5 days after consumption of unboiled milk. Body temperature is 38 − 39^{o}C, there is vomiting, liquid stool. The child is pale and inert. His tongue is covered with white deposition. Heart sounds are muffled. Abdomen is swollen, there is borborygmus in the region of ubbilicus, liver is enlarged by 3 cm. Stool is liquid, dark-green, with admixtures of mucus, 5 times a day. What is the most probable diagnosis?

A. Salmonellosis

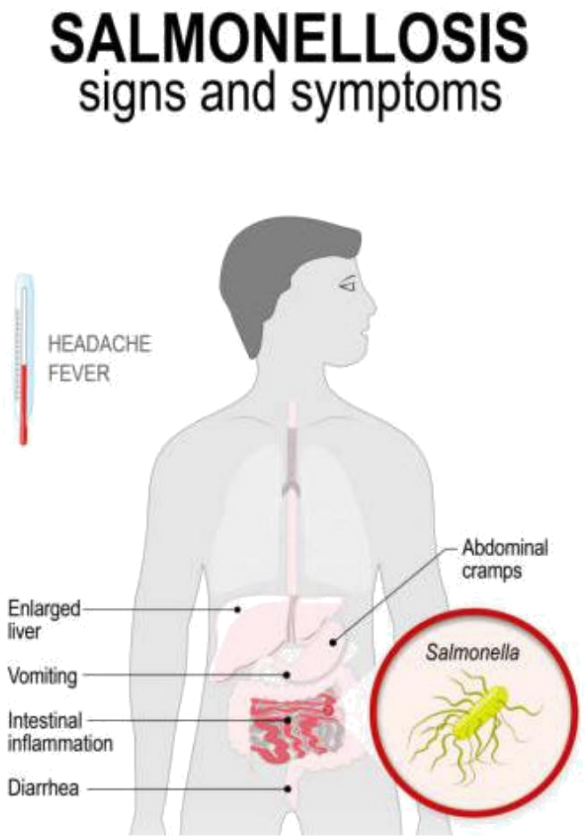
B. Staphylococcal enteric infection C. Escherichiosis

D. Acute shigellosis

E. Rotaviral infection

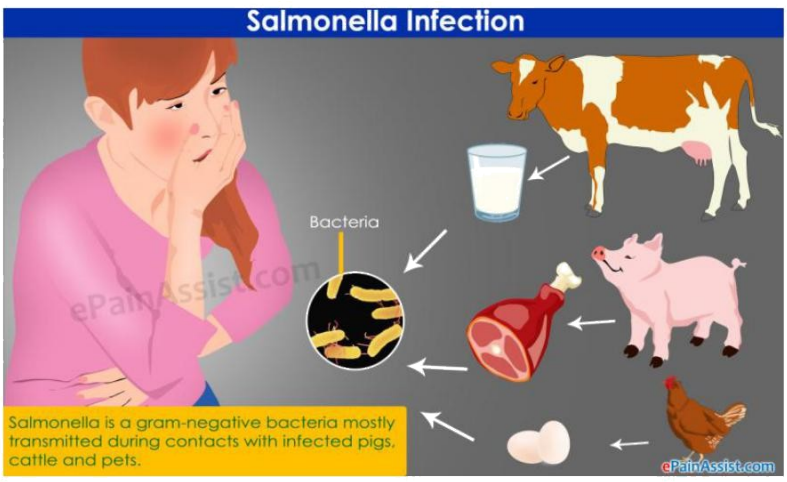
0 A nurse of the kindergarten was taken to the hospital with complaints of acute pain in parumbilical region, convulsions of lower limbs, multiple bile vomiting, frequent watery foul feces of green color in huge amounts. At the same time all the staff in the kindergarden got ill. Two days ago all of them ate cottage cheese with sour cream. General condition of patients is of moderate severity. Temperature 38,2°C. Heart tones: rhythmic and muted. Heart rate 95/min, arterial pressure: 160 mm/Hg. Abdomen is slightly swollen, painful. Liver +2 cm. What is the most likely diagnosis?

A. Salmonellosis
B. Dysentery
C. Cholera
D. Food toxic infection
E. Enterovirus infection



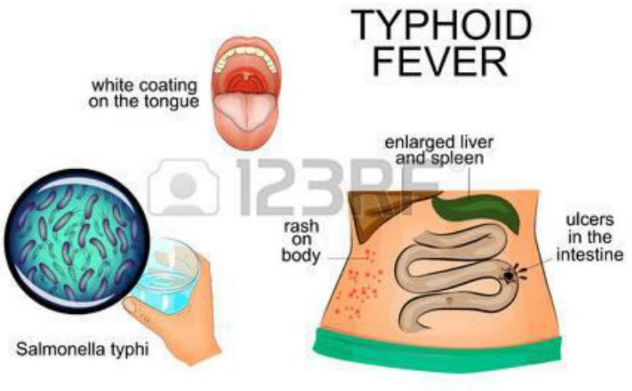
0 A 33-year-old male patient developed a condition that had a stormy clinical course: chills, fever up to 39°C, vomiting, epigastric pain, diarrhea with watery smelly feces. 6 hours before, he ate a raw egg, fried potatoes with stewed meat, drank some juice. What pathogen is likely to have caused this condition?

A. Salmonella B.
Colibacillus C.
Campylobacter
D. Shigella
E. Vibrio cholera



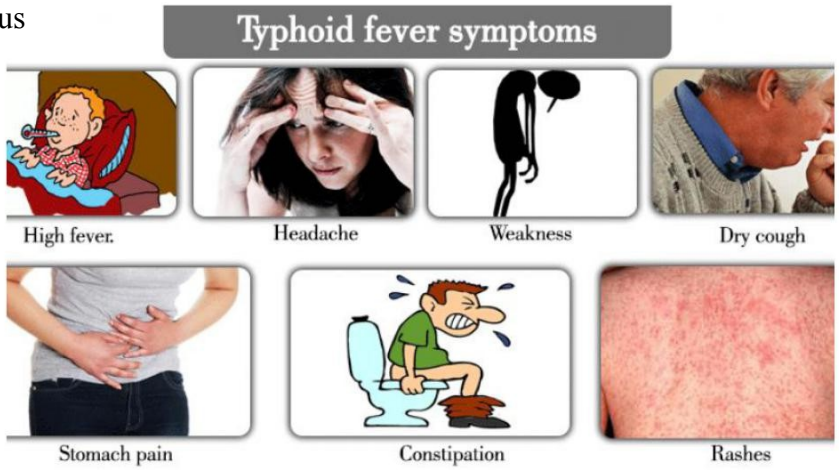
0 A 28 year old patient was admitted to the clinic with complaints of the temperature rise up to 39,0^{o}C, headache, weakness, constipation on the 9th day of the disease. On examination: single roseolas on the skin of the abdomen are present. The pulse rate is 78 bpm. The liver is enlarged by cm. What is the most probable diagnosis?

A. Typhoid fever
B. Leptospirosis
C. Brucellosis D. Sepsis
E. Malaria



0 A 28 y.o. male patient was admitted to the hospital because of high temperature 39^{0}C, headache, generalized fatigue, constipation, sleep disorder for 0 days. There are sporadic roseolas on the abdomen, pulse- 78 bpm, liver is enlarged for 2 cm. What is the most probable diagnosis?

A. Abdominal typhoid B. Typhus
C. Sepsis
D. Brucellosis
E. Leptospirosis



0 A patient with complaints of 3-daylong fever, general weakness, loss of appetite came to visit the infectionist. The doctor suspected enteric fever. Which method of laboratory diagnosis is the best to confirm the diagnosis?

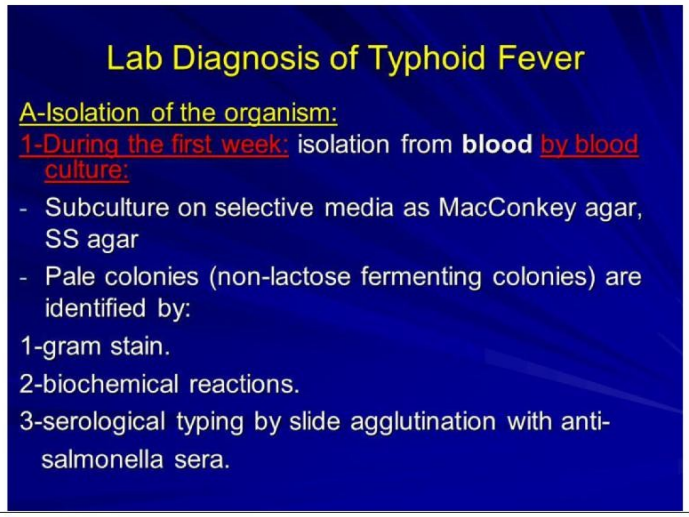
A. Detachment of blood culture
B. Detachment of myeloculture C. Detachment of feces culture
D. Detachment of urine culture
E. Detachment of pure culture

DIAGNOSIS

- Laboratory diagnosis of Typhoid fever
  - Blood culture or BM culture : Week 1
  - PCR : Week 1
  - Serological Methods (e.g. Widal Test) : Week 2
  - Stool culture : Week 3
  - Urine culture : Week 4

0 A patient was hospitalized into the infectious diseases unit on the 11th day since the disease onset and provisionally diagnosed with typhoid fever. What biological material should be collected from the patient for the analyzes at this stage?

A. Roseola secretion
B. Blood serum
C. Bile
D. Feces
E. Urine



0 A 50 year old locksmith was diagnosed with typhoid fever. The patient lives in a separate apartment with all facilities. Apart of him there are also 2 adults in his family. What actions should be taken about persons communicating with the patient?

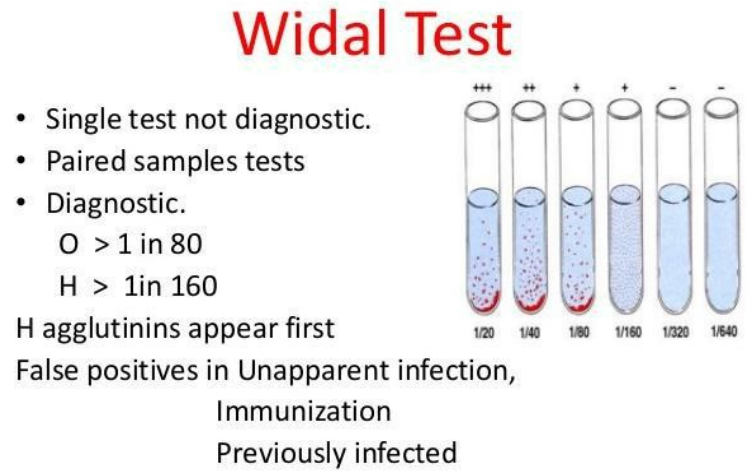
A. Bacteriological study B. Antibiotic prophylaxis
C. Dispensary observation D. Isolation E. Vaccination

1 During the repeated Widal's agglutination test it was noticed that the ratio of antibody titers and O-antigens S.typhi in the patient's serum had increased from 1:100 to 1:400. How would you interpret these results?

A. The patient has typhoid fever
B. The patient is an acute carrier of typhoid microbes
C. The patient is a chronic carrier of typhoid microbes D. The patient previously had typhoid fever
E. The patient was previously vaccinated against typhoid fever

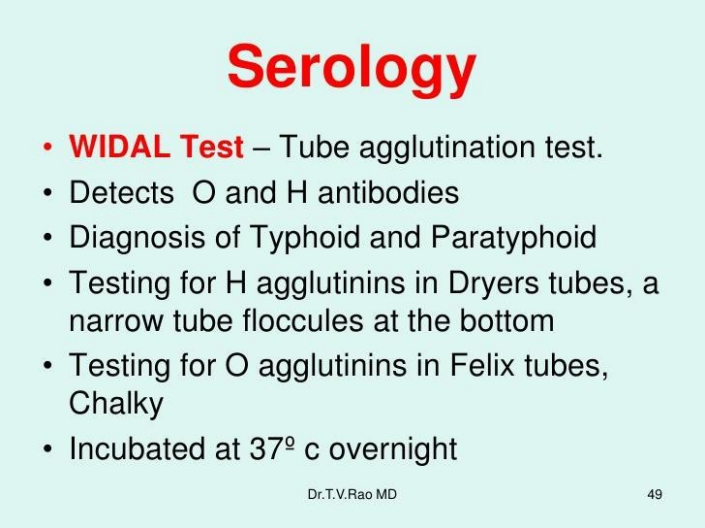
0 A patient was brought into the infectional diseases hospital on the 8th day since the disease onset. The patient complains of headache, malaise, and weakness. A sample of blood was taken for the serological test. Widal agglutination test results with blood sample diluted 1:200 and typhoid fever O-diagnosticum were positive. What diagnosis can be made based on the results of this test?

A. Typhoid fever
B. Leptospirosis
C. Tuberculosis D. Dysentery
E. Cholera



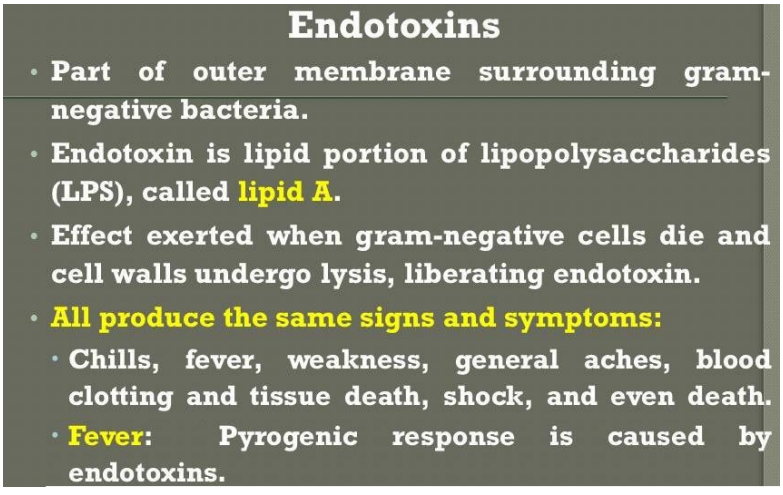
0 To conduct serum diagnostics of typhoid fever a test is carried out, when diagnosticums of three types of microorganisms are being added into different solutions of patient's serum; then agglutinate formation is checked. Name the author of that test.

A. Widal
B. Wassermann
C. Ouchterlony
D. Wright
E. Sachs-Witebsky



A 50-year-old patient with typhoid fever was treated with Levomycetin, the next day his condition became worse, temperature rised to 39,6^{0}C. What caused worthening?

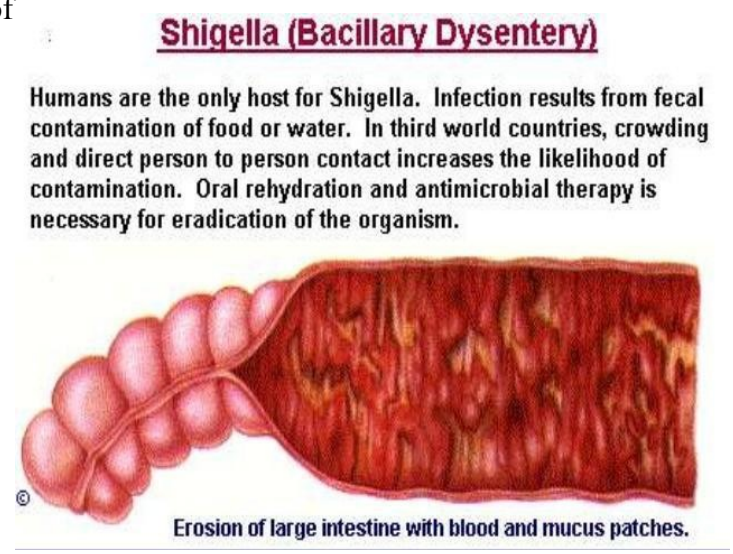
A. Reinfection
B. Irresponsiveness of an agent to the levomycetin
C. Allergic reaction
D. The effect of endotoxin agent
E. Secondary infection addition



Shigella

0 Autopsy of a 46-year-old man revealed multiple brown-and-green layers and hemmorhages on the mucous membrane of rectum and sigmoid colon; slime and some blood in colon lumen; histologically - fibrinous colitis. In course of bacteriological analysis of colon contents S.sonne were found. What is the most probable diagnosis?

A. Dysentery
B. Cholera
C. Salmonellosis
D. Yersiniosis
E. Crohn's disease



1 A patient has been suffering from diarrhea for 5 day. On the fifth day colonoscopy revealed that membrane of rectum was inflamed, there were greyish-green films closely adhering to the subjacent tissue. What is the most probable diagnosis?

A. Dysentery B. Nonspecific ulcerous colitis
C. Typhoid fever
D. Salmonellosis
E. Crohn's disease

0 A 71-year-old man had been presenting with diarrhea for 10 days. The feces had admixtures of blood and mucus. He was delivered to a hospital in grave condition and died 2 days later. Bacteriological analysis revealed Shigella. What was the main disease?

A. Dysentery B. Typhoid fever
C. Salmonellosis
D. Nonspecific ulcerous colitis E. Yersiniosis

Shigellosis (Bacillary Dysentery)

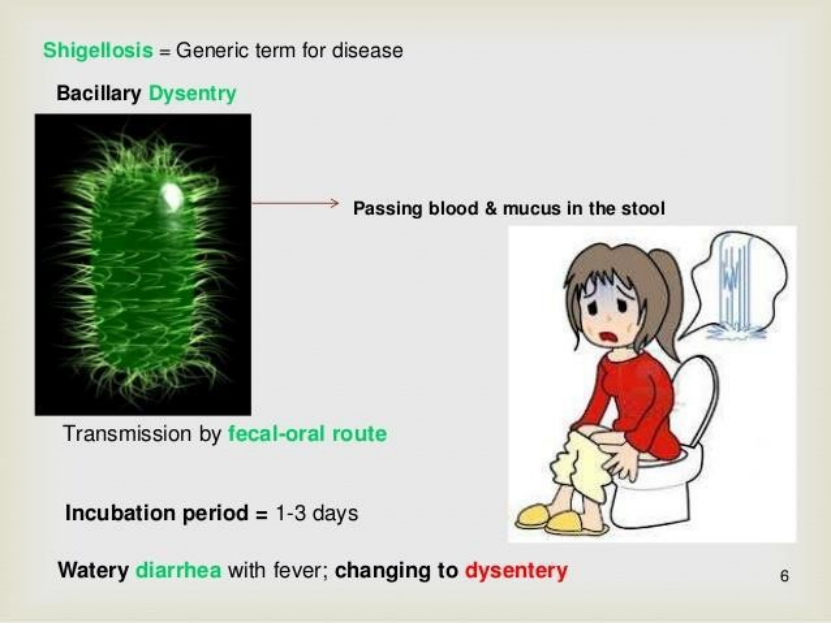
Pathogen	*Shigella* spp.
Symptoms	20 BM/day, diarrhea is often bloody, cramps, fever
Intoxication/Infection	Infection Endotoxin and Shiga exotoxin
Diagnosis	Isolation of bacteria
Treatment	Oral rehydration, Fluoroquinolones

0 A 28 y.o. man fell seriously ill, he feels chill, has got a fever, body temperature raised up to 38,5^{0}C, paroxysmal pain in the left iliac region, frequent defecation in form of fluid bloody and mucous mass. Abdomen palpation reveals painfulness in its left half, sigmoid colon is spasmed. What is the most probable diagnosis?

A. Acute dysentery
B. Amebiasis
C. Colibacillosis
D. Nonspecific ulcerative colitis
E. Malignant tumors of large intestine

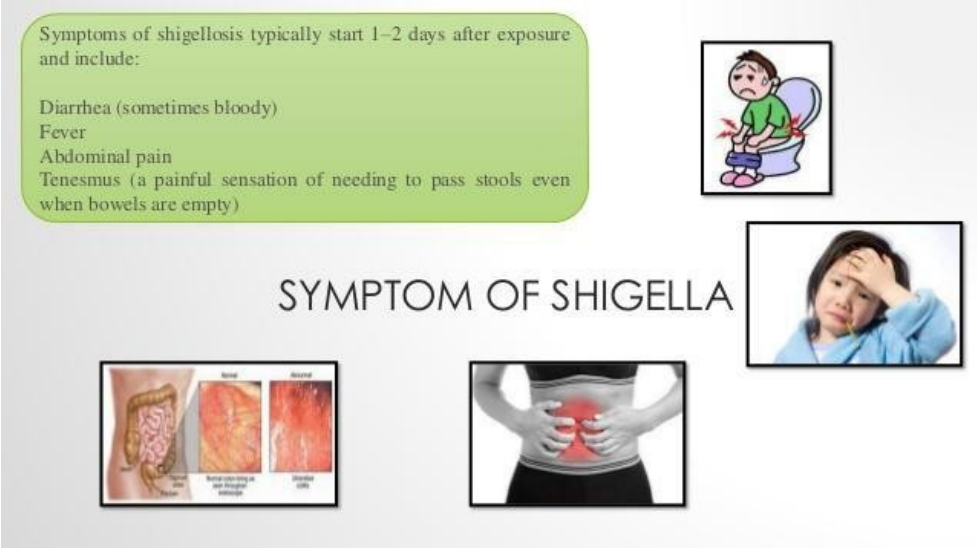
0 A 30-year-old patient complains of paroxysmal abdominal pain, frequent liquid stools up to 10 times a day. Throughout the first 3 days he had a fever, since the 2nd day of disease there were scant liquid stools mixed with mucus. On palpation: tenderness of all colon segments. Sigmoid colon was found spastic. What is your provisional diagnosis?

A. Acute dysentery B.
Intestinal amebiasis C.
Salmonellosis
D. Cholera
E. Balantidiasis



0 A 6-year-old child complains of frequent liquid stool and vomiting. On the 2nd day of disease the child presented with inertness, temperature rise up to 38,2°C, Ps- 150 bpm, scaphoid abdomen, palpatory painful sigmoid colon, defecation 10 times a day with liquid, scarce stool with mucus and streaks of green. What is a provisional diagnosis?

A. Shigellosis B.
Salmonellosis C.
Escherichiosis
D. Intestinal amebiasis
E. Yersiniosis

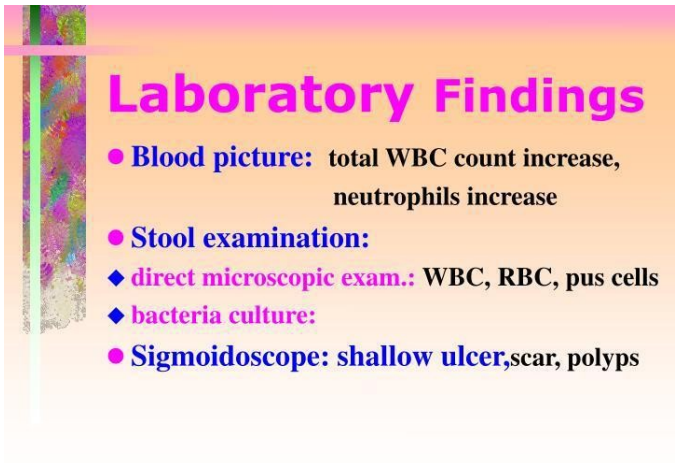


An 8-year-old boy fell ill acutely: he presents with fever, weakness, headache, abdominal pain, recurrent vomiting, then diarrhea and tenesmus. Stools occur 12 times daily, are scanty, contain a lot of mucus, pus, streaks of blood. His sigmoid gut is tender and hardened. What is your diagnosis?

A. Dysentery B.
Salmonellosis
C. Cholera
D. Staphylococcal gastroenteritis
E. Escherichiosis

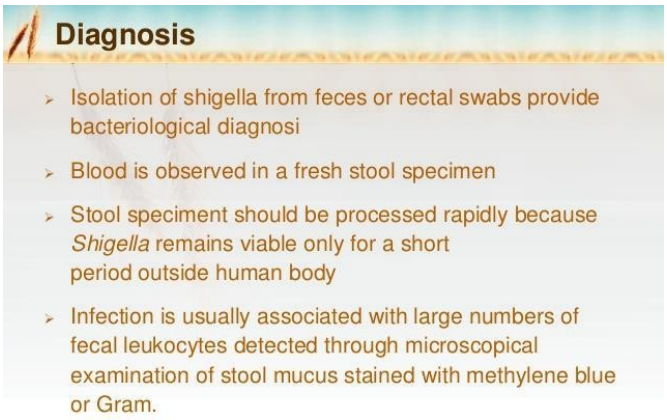
A patient with suspected dysentery has been admitted to the infectious diseases hospital. Which basic method of laboratory diagnosis must be applied in the first place?

A. Bacteriological
B. Serological
C. Allergic D.
Biological E.
Microscopic



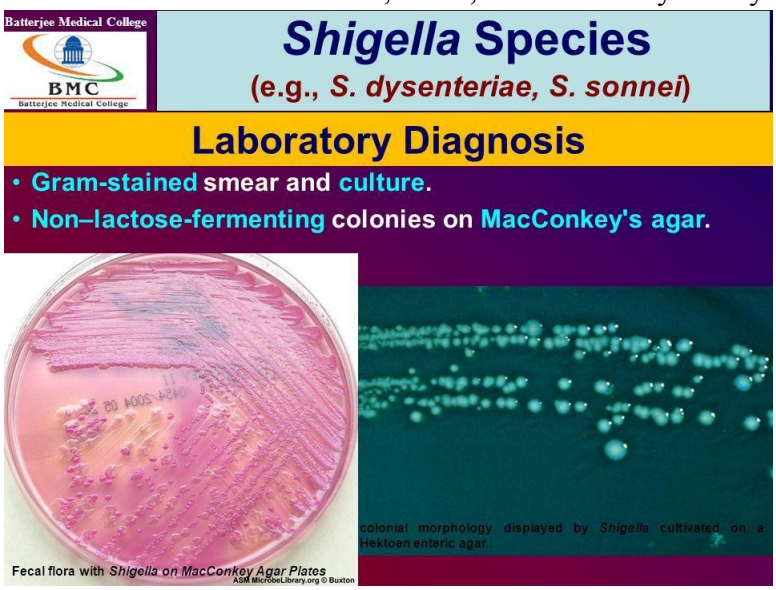
0 A patient was taken to the hospital with complaints of headache, high temperature, frequent stool, stomach pain with tenesmus. Doctor made a clinical diagnosis dysentery and sent the material (excrements) to the bacteriological laboratory for analysis. What diagnostic method should the laboratory doctor use to confirm or to disprove the clinical diagnosis?

A. Bacteriological
B. Biological
C. Bacterioscopic
D. Serological E. Allergic



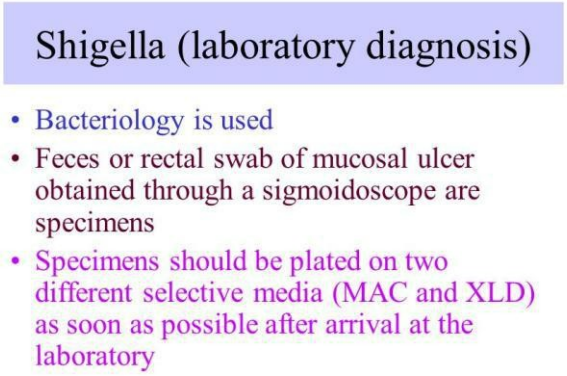
0 The infectious diseases department of a hospital admitted a patient with nausea, liquid stool with mucus and blood streaks, fever, weakness. Dysentery was suspected. What method of laboratory diagnostics should be applied to confirm the diagnosis?

A. Bacteriological
B. Serological
C. Mycological
D. Microscopic E. Protozoological



1 A patient diagnosed with acute dysentery has been treated for 3 days in an infectious diseases hospital. On admission there were complaints of high temperature, stomachache and fluid excrements with mucus as often as 8-10 times a day. What sample should be taken for analysis?

A. Feces
B. Urine
C. Bile D. Liquor E. Blood



ÀrÃ↓Ã↓Ã↓Ã↓Ã↓Ã↓Ã↓Ã↓ÃÀrÃ↓Ã↓Ã↓Ã↓Ã↓Ã↓Ã↓Ã0 A patient recovered from Sonne dysentery and was once more infected with the same causative agent. What is such infection form called?

A. Reinfection

B. Recidivation C. Superinfection D. Persisting infection

E. Chronic infection

ÀrÃ↓Ã↓Ã↓Ã↓Ã↓Ã↓Ã↓Ã↓ÃÀrÃ↓Ã↓Ã↓Ã↓Ã↓Ã↓Ã↓Ã1 From the fecal sample of a patient Shigella sonne were isolated. What additional studies are required to identify the source of infection?

A. Phage-typing of the isolated pure culture B. Antibiogram

C. Precipitation reaction

D. Complement-fixation reaction

E. Neutralization reaction

Bacteriophage Typing

- The plate is incubated for 24 hrs then observed for plaques.
- The phage type is reported as a specific **genus and species** followed by **the types** that can infect the bacterium.
- E.g. 10/16/24 means that the bacteria is sensitive to phages 10, 16 and 24.
- Phage tying remain a **tool for research** and **reference labs**.

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23 For the purpose of retrospective diagnostics of recent bacterial dysentery it was decided to perform serological examination of blood serum in order to determine antibody titer towards Shiga bacilli. What of the following reactions should be applied?

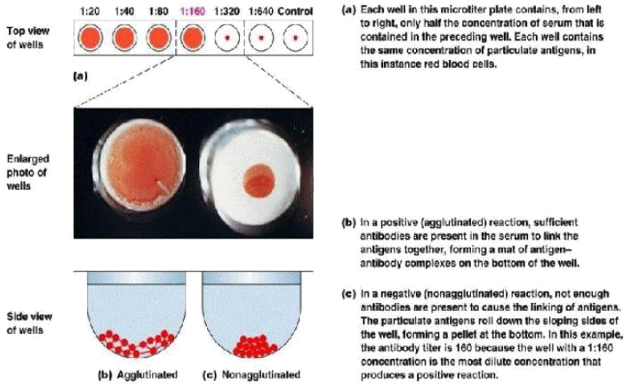
A. Passive hemagglutination B. Bordet-Gengou test

C. Precipitation

D. Hemolysis

E. Bacteriolysis

Passive Hemagglutination Test



23 Retrospective diagnostics of bacterial dysentery involved serological analysis of blood serum intended for determination of Shigella antibody titer. Which of the following reactions should be applied for this purpose?

A. Passive haemagglutination B. Complement binding

C. Precipitation

D. Haemolysis

E. Bacteriolysis

Indirect or passive hemagglutination

- Hemagglutination or agglutination of red blood cells, and tests for antibody detection.
- In the indirect or passive hemagglutination technique, erythrocytes are coated with substances such as extracts of bacterial cells, protozoa or purified polysaccharides or proteins.
- For example, Erythrocyte of animals such as sheep or rabbits, or from group "O" humans, function as carrier for detecting and titrating the corresponding antibodies by agglutination.
- This technique is called indirect or passive hemagglutination testing because it is not the antigen of the erythrocytes themselves but the passively attached antigens that are bound by antibody .

23 Retrospective diagnostics of old bacillary dysentery required serologic examination of blood serum in order to determine blood titer to the shigella. What reaction should be applied for this purpose?

A. Reaction of passive hemagglutination

B. Bordet-Gengou test C. Precipitation reaction

D. Hemolysis reaction E. Bacteriolysis reaction

23 Antigens of Sonne shigella placed on the objects of outdoor environment and foodstuffs can be revealed by means of a certain test with application of a diagnostic test system that includes a polystyrene tray with adsorbed specific antibodies. What reaction is it?

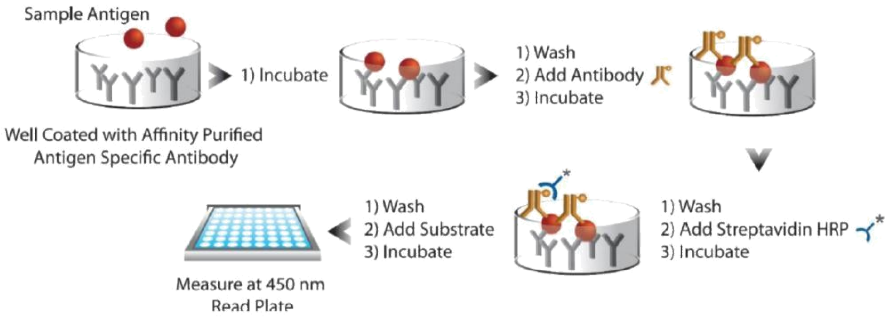
A. Immune-enzyme assay

B. Immunofluorescence test

C. Passive inverse hemagglutination test

D. Direct hemagglutination test

E. Immunoelectrophoresis



24 A patient has been diagnosed with bacillary dysentery. What drug of those listed below should be prescribed?

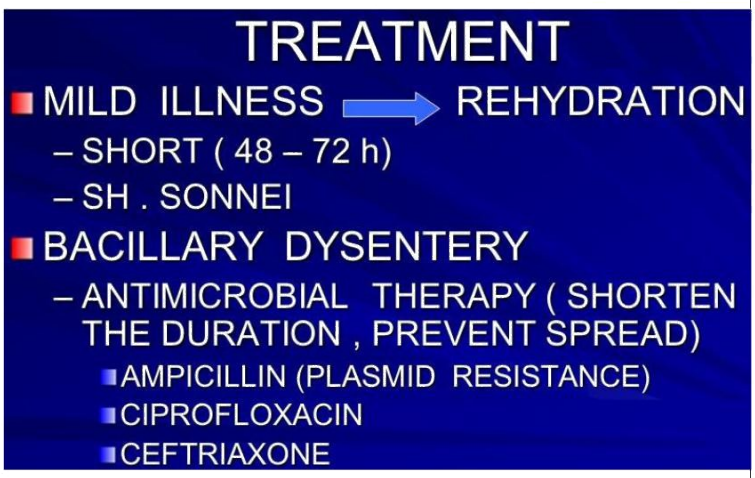
A. Amoxicillin

B. Isonicotinic acid hydrazide (Isoniazid)

C. Benzylpenicillin sodium salt

D. Itraconazole

E. Acyclovir



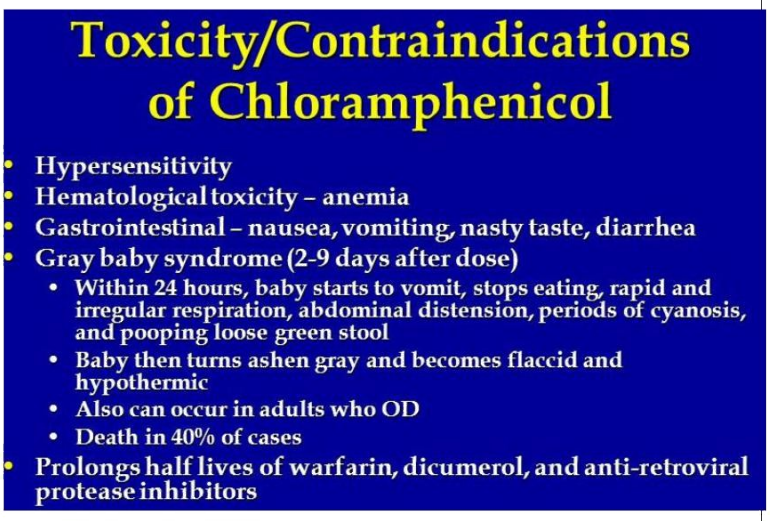
25 Patient was admitted to the infection unit with diagnosis of bacterial dysentery. On laboratory studies it was revealed that causative element is sensitive to the many antimicrobial medicines, but patient has anemia. What medicine is contra-indicated to the patient?

A. Enteroseptol

B. Phthalazol

C. Levomycetin

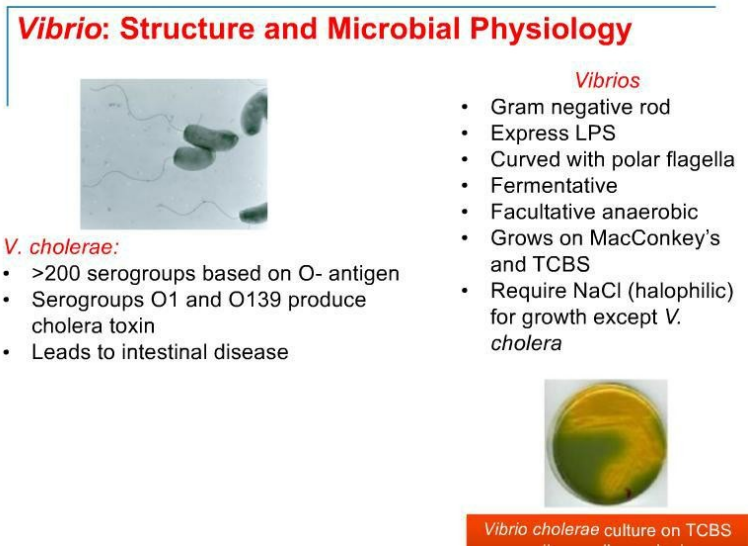
D. Ampicillin E. Furazolidone



Cholera

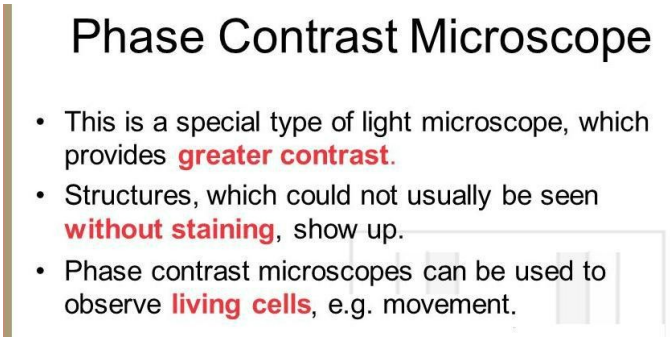
23Microscopy of a smear taken from the film that appeared on the peptone water 23 hours after seeding and culturing of a fecal sample in a thermostat revealed mobile gram-negative bacteria curved in form of a comma that didn't make spores or capsules. What microorganisms were revealed?

A. Vibrios
B. Spirochetes
C. Clostridia
D. Corynebacteria
E. Spirilla



23Vomiting matters of a patient suspected of having cholera were delivered to the bacteriological laboratory. The material was used for preparing a "hanging drop" specimen. What type of microscopy will be applied for identification of the causative agent by its mobility?

A. Phase-contrast microscopy
B. Electron microscopy
C. Immune and electron microscopy
D. Fluorescence microscopy
E. Immersion microscopy

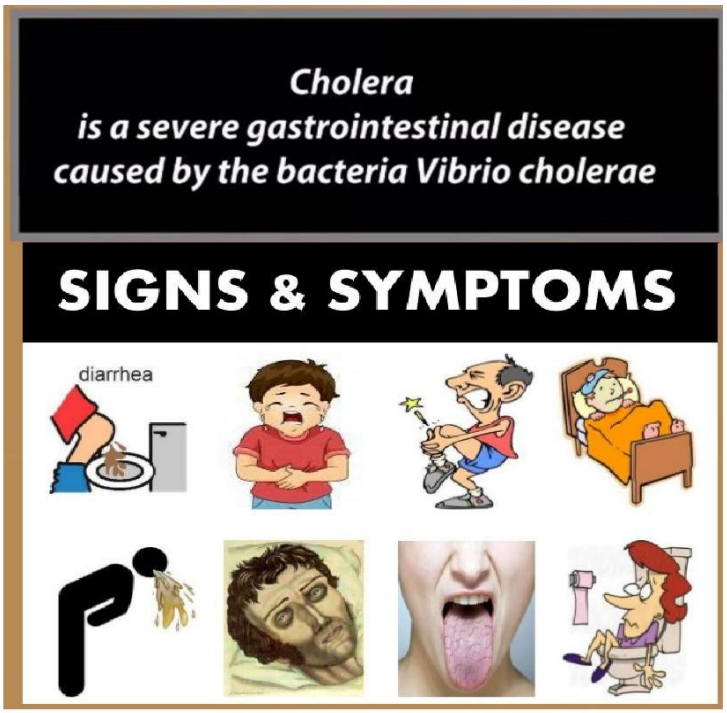


24 Bacilli were extracted from investigated sample. The bacilli are curved, extremely mobile, gram-negative, form no spores or capsules, have anaerobic form of respiration. They form transparent smooth colonies in alkaline agar, ferment saccharose and mannose into acid, produce exotoxin, fibrinolysin, collagenase, and hyaluronidase. What agent was extracted?

A. Comma bacillus B. Proteus
C. Dysentery bacillus
D. Blue pus bacillus
E. Colibacillus

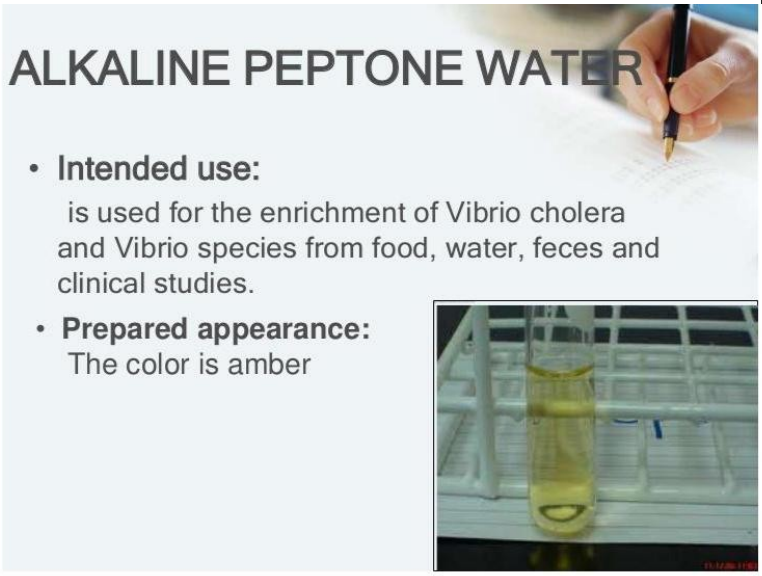
23 Patient with diarrhoea was admitted to the infection unit. Gramnegative curved rod-like bacteria were founded on bacterioscopic examination of faecal masses. What is the most likely disease in this patient?

A. Typhoid fever
B. Cholera
C. Diphtheria
D. Intestinal form of plague
E. Salmonellosis gastroenteritis



236 hours after the initial inoculation of water sample into 1% peptone water, the growth of a culture in form of a thin pellicle on the medium surface was registered. Such cultural properties are typical for the causative agent of the following disease:

A. Cholera
B. Plague
C. Tuberculosis
D. Dysentery
E. Pseudotuberculosis



23 From the feces of a patient with acute gastroenteritis a pure culture of microorganisms was obtained. The microorganisms are small mobile slightly curved gram-negative bacilli that within 6 hours grow into a light blue film on the 1% alkaline peptone water. Such properties are characteristic of the following microorganism:

A. Bacillus
B. Clostridium
C. Spirochete
D. Spirillum
E. Vibrio

23 Initial inoculation of water in 1% peptone water resulted in growth of a thin film on the medium surface in 6 hours. Such cultural properties are characteristic of causative agent of the following disease:

A. Cholera
B. Plague
C. Tuberculosis
D. Dysentery
E. Pseudotuberculosis

Alkaline peptone water

- Alkaline Peptone Water is an enrichment medium used for the cultivation of *Vibrio* species from feces and other infected materials.
- Peptones provide nitrogen, vitamins, minerals and amino acids essential for growth.
- Sodium chloride supplies essential electrolytes for transport and osmotic balance and encourages the growth of ***Vibrio cholerae***.

24 After inoculation of feces sample into the 1% alkaline peptonic water and 8-hour incubation in the thermostat at a temperature of 37°C a culture in form of a tender bluish film has grown. Such cultural properties are typical for the causative agent of the following disease:

A. Cholera
B. Plague
C. Typhoid fever
D. Paratyphoid fever A
E. Dysentery

25 A man is suffering from diarrhea. In summer he spent his vacation in the south at the sea coast. Bacteria with the following properties were detected in his feces: gram-negative curved mobile monotrichous bacilli that do not produce spores or capsules. They are undemanding to nutrient medium but require alkaline reaction (pH 8,5-9,5). Described are the agents of the following enteric infection:

A. Cholera B.
Shigellosis C.
Typhoid fever
D. Colienteritis
E. Pseudotuberculosis

26 A patient had been suffering from profuse diarrhea and vomiting for 2 days. He died from acute dehydration. Autopsy revealed that the intestinal wall was edematic and hyperemic, with multiple haemorrhages in the mucous membrane. Intestine lumen contains whitish fluid resembling of rice water. What disease caused death?

A. Cholera B.
Dysentery C.
Salmonellosis D.
Typhoid fever E.
Enterocolitis

23 A patient with marked manifestations of exsicosis died in the infectious disease hospital. Postmortem examination results: the corpse with contracted muscles, dry skin and mucous membranes, thick and dark blood in veins, edematous plethoric mucosa, distended bowel loops, the lumen contains about 4 liters of rice-water fluid. What is the most likely diagnosis?

A. Cholera

B. Enteric fever C. Dysentery

D. Anthrax, intestinal form E. Yersiniosis

23 Autopsy of a 42-year-old man revealed a distinctly dilated lumen of small intestine filled with rice-water-like liquid. The intestine wall was edematic with lots of petechial haemorrhages on the mucosa. What infectious disease is the described enteritis typical for?

A. Cholera

B. Dysentery C. Salmonellosis

D. Amebiasis E. Typhoid fever

23 The disease began acutely. The frequent watery stool developed 6 hours ago. The body's temperature is normal. Then the vomiting was joined. On examination: his voice is hoarse, eyes are deeply sunken in the orbits. The pulse is frequent. Blood pressure is low. There is no urine. What is the preliminary diagnosis?

A. Cholera

B. Toxic food-borne infection

C. Salmonellosis D. Dysentery E. Typhoid fever

23 A man in grave condition was delivered to the admission ward of a hospital on the 2nd day of illness. Examination revealed body temperature of 36,1^{o}C, sharpened features of face, dry skin that makes a fold, aphonia, convulsive twitching of some muscle groups. Acrocyanosis is present. Heart sounds are muffled, Ps is 102 bpm, AP is 50/20mm Hg. Abdomen is soft, drawn-in, painless. Anuria is present. Stool is liquid in form of rice water. What is the most probable diagnosis?

A. Cholera

B. Acute dysentery C. Salmonellosis

D. Escherichiosis E. Intestinal amebiasis

Diphtheria

23 A child is presumably ill with diphtheria. A specimen of affected mucous membrane of his pharynx was taken for analysis. The smear was stained and microscopic examination revealed yellow rods with dark blue thickenings on their ends. What structural element of a germ cell was revealed in the detected microorganisms?

A. Volutin granules

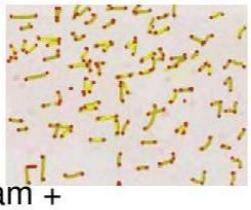
B. Plasmids

C. Capsule

D. Spores

E. Flagella

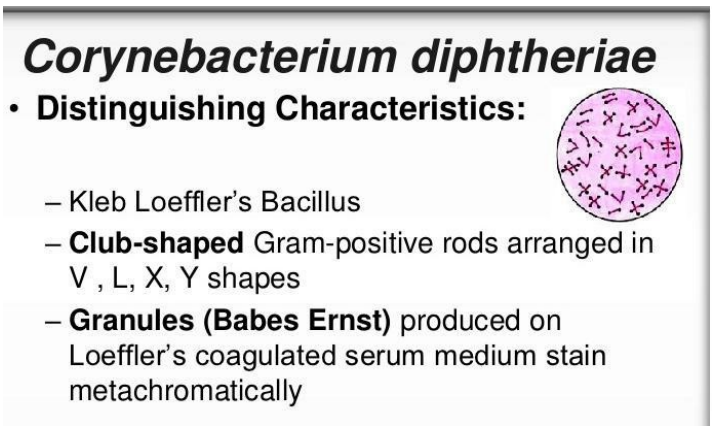
Corynebacterium diphtheriae



- Slender rods
- Clubbing at both ends
- Pleomorphic
- Non capsulate / Acid fast Gram +
- Granules are composed of polymetapohosphate
- Staining with Loeffler's methylene blue show bluish purple metachromatic granules. with polar bodies,

23 On examination of a 6-year-old child the doctor noticed greyish film on the child's tonsils. Microscopy of the smear stained by Neisser method detected there Corynebacterium diphtheria. What morphologic feature was the most indicative for determining the type of the agent?
A. Fence-like position of the agent's cells
B. Spores that exceed cells in diameter
C. Localization of the causative agent within macrophages
D. Polar placement of volutin granules E. Presence of the capsule

24 A smear from the tonsillar coating of a patient with suspected diphtheria was found to contain blue bacilli with a thickening at the poles. What method of smear staining was used?
A. Leffler
B. Burri
C. Hins D.
Gram E.
Neisser



23 Microscopy of smear preparation stained with methylene blue revealed bacilli with clublike expansions on their ends similar to C.diphtheriae. What additional method of staining should be used to verify this assumption?
A. Neisser B.
Kozlovsky C.
Ziehl-Neelsen
D. Zdrodovsky
E. Aujeszky

5888 There are several cases of children from boarding school suffering from sore throat. Microscopy of tonsil smears stained according to Neisser method has revealed thin yellow bacilli with dark brown grains on their ends placed in the shape of Roman numeral five. What infection can be suspected in this case?
A. Diphtheria
B. Infectious mononucleosis
C. Listeriosis
D. Tonsillitis E.
Scarlet fever

0 A sample taken from the pharynx of a patient with angina was inoculated on the blood-tellurite agar. This resulted in growth of grey, radially striated (in form of rosettes) colonies up to 4-5 mm in diameter. Microscopically there can be seen gram-positive rods with club-shaped ends arranged in form of spread fingers. What microorganisms are these? **A. Corynebacteria diphtheriae** B. Clostr. botulinum C. Diphtheroids D. Streptococci E. Streptobacilli	

Classification

3 morphological types of *C. diphtheriae* are found on tellurite containing media:

- **Mitis ['maitɪs]– black colonies with a gray periphery**
- **Gravis – large, gray colonies**
- **Intermedius – small, dull gray to black.**

All produce an immunologically identical toxin

Mitis **Gravis** **Intermedius**

0 After inoculation of the material obtained from the pharynx of an angina patient onto the blood-tellurite agar, grey colonies could be observed. They were 4-5 mm in diameter, radially striated (in form of rosettes). Microscopical examination revealed gram-positive bacilli with clavate swollen ends arranged in form of wide-spread fingers. Identify these microorganisms: **A. Diphtheria corynebacteriae** B. Clostr. botulinum C. Diphtheroids D. Streptococci E. Streptobacilli	
1 Inoculum from pharynx of a patient ill with angina was inoculated into bloodtellurite agar. It resulted in growth of grey, radially striated (in form of rosettes) colonies 4-5 mm in diameter. Grampositive bacilli with clublike thickenings on their ends placed in form of spread wide apart fingers are visible by microscope. What microorganisms are these? **A. Diphtheria corynebacteriae** B. Botulism clostridia C. Diphtheroids D. Streptococci E. Streptobacilli	

0 A 4-year-old child presents with general weakness, sore throat and deglutitive problem. After his examination a doctor suspected diphtheria and sent the material to the bacteriological laboratory. In order to determine the diphtheria causative agent the material should be inoculated into the following differential diagnostic medium:

A. Blood tellurite agar B. Levenshtein-Yessen agar
C. Ploskyrev's agar
D. Sabouraud's agar
E. Endo's agar

LABORATORY DIAGNOSIS : CULTURE

- If the swabs can not be inoculated promptly, they should be kept moistened with serum;
- Inoculate on :
  - **Loeffler's serum slope**
  - **Tellurite blood agar or Tinsdale medium**
  - **Blood agar (for differentiating Staphylococcal or Streptococcal pharyngitis that simulate diphtheria);**
- *Tellurite medium is particulary useful for isolating the organism from – convalescents, contacts or carriers;*

0 From the nasopharynx of a 5-year-old child it was excreted a microorganism which is identical to Corynebacterium diphtheriae dose according to morphological and biochemical signs. Microorganism does not produce exotoxin. As a result of what process can this microorganism become toxigenic?

A. Cultivation in the telluric media B. Chromosome mutation
C. Passing through the organism of the sensative animals D. Phage conversion
E. Growing with antiserum

Laboratory Diagnosis

- Specific treatment is more important than Laboratory Diagnosis.

1 Isolation of Diphtheria bacilli.

2. Testing for toxigenicity,

Dr.T.V.Rao MD 49

0 Autopsy of a dead 6-year-old child revealed a marked edema of the soft tissues of neck and enlarged tonsils. Pharyngeal mucosa was covered with numerous dense whitish-yellow pellicles exposing deep ulcers after their removal. What infectious disease caused the death of the child?

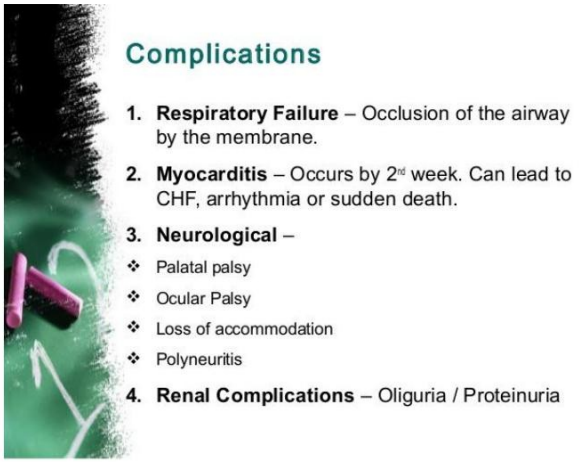
A. Diphtheria
B. Parainfluenza
C. Scarlet fever
D. Whooping cough E. –

0 While examining a patient an otolaryngologist noticed hyperaemia and significantly edematous tonsils with a grayish film upon them. Microscopical examination of this film revealed some gram-positive bacilli placed at an angle with each other. What disease might be suspected?

A. Diphtheria B. Angina C. Scarlet fever
D. Meningococcal nasopharyngitis E. Epidemic parotitis

0 During examination of a 6-yearold child a doctor revealed greyish films on the pharyngeal tonsils. Their removal provoked moderate haemorrhage. Bacterioscopy revealed gram-positive clublike bacteria. What symptoms will in this child within the next few days if no specific treatment is provided?

A. Toxic lesions of myocard, liver and kidney
B. Pulmonary edema
C. Strong paroxysmal cough D. Papulous skinrash
E. Intermittent fever



1 A diseased child has a high fever, sore throat, swelling of submandibular lymph nodes. Objectively: pharyngeal mucosa is edematous, moderately hyperemic, the tonsils are enlarged, covered with grayish membrane tightly adhering to the tissues above. Attempts to remove the membrane produce the bleeding defects. What disease are these presentations typical for?

A. Diphtheria
B. Catarrhal tonsillitis C. Scarlet fever
D. Meningitis E. Measles

0 A 5 y.o. girl has high temperature and sore throat. Objectively: soft palate edema, tonsills are covered with grey films that can be hardly removed and leave deep bleeding tissue injuries. What disease is the most probable?

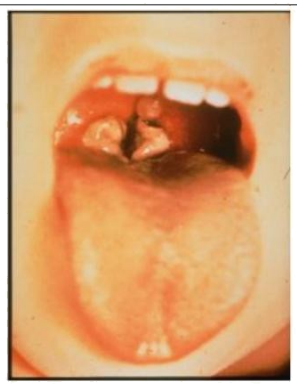
A. Pharyngeal diphtheria
B. Vincent's angina
C. Lacunar angina
D. Infectious mononucleosis
E. Necrotic angina

Pharyngeal diphtheria

1 A woman complains of high temperature to 38^0C, mild pain in the throat during 3 days. On examination: angle lymphatic nodes of the jaw are 3 cm enlarged, palatinel tonsils are enlarged and coated with grey plaque which spreads to the uvula and frontal palatinel arches. What is the most probable diagnosis?

A. Larynx diphtheria
B. Infectious mononucleosis
C. Vincent's angina
D. Agranulocytosis
E. Oropharyngeal candidosis

Laryngeal diphtheria

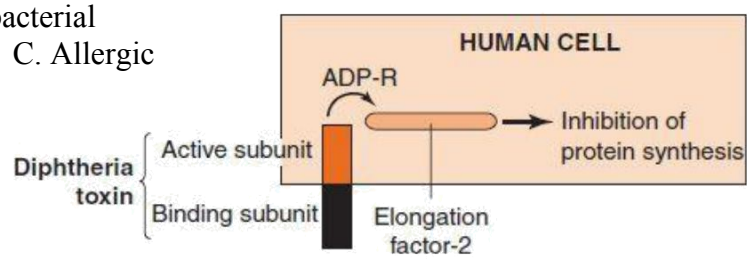


2 A 4-year-old boy had untimely vaccination. He complains of painful swallowing, headache, inertness, fever. Objectively: the child is pale, has enlarged anterior cervical lymph nodes, swollen tonsils with cyanotic hyperemia, tonsils are covered with gray-white pellicles which cannot be easily removed. When the pellicles are forcibly removed, the tonsils bleed. What is the most likely diagnosis?

A. Oropharyngeal diphtheria B. Lacunar tonsillitis
C. Pseudomembranous tonsillitis
D. Infectious mononucleosisE. Follicular tonsillitis

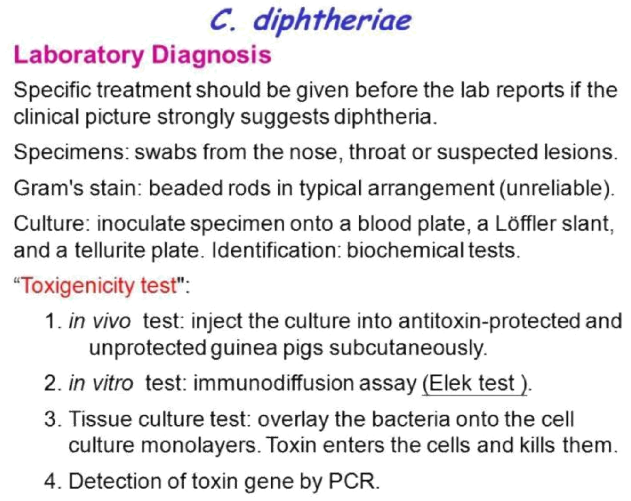
3 A 24 year old patient complains about general weakness, dizziness, body temperature rise up to $37,5^o$C, sore throat, neck edema, enlargement of submaxillary lymph nodes. Objectively: mucous membrane of oropharynx is edematic and cyanotic, tonsils are enlarged and covered with films that spread beyond the tonsils and cannot be easily removed. What is the leading mechanism of this illness' development?

A. Action of bacterial exotoxin B. Action of bacterial endotoxin C. Allergic
D. Accumulation of suboxidated products
E. Bacteriemia



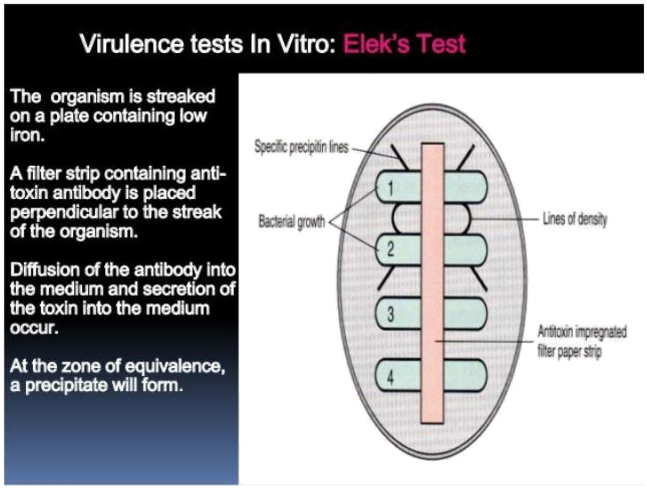
0 From pharynx of a child with suspected diphtheria a pure culture of microorganisms was isolated. Their morphological, tinctorial, cultural and biochemical properties appeared to be typical for diphtheria causative agents. What study should be conducted in order to make a conclusion that this is a pathogenic diphtheria bacillus?

A. Estimation of toxigenic properties
B. Estimation of proteolytic properties
C. Estimation of urease activity
D. Estimation of cystinase activity
E. Estimation of ability to decompose starch



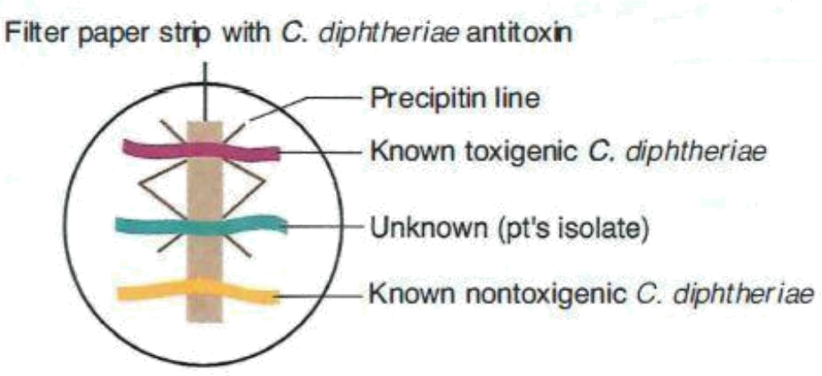
1 Pure culture of microorganisms was obtained from pharynx of a child with suspected diphtheria. Morphologic, tinctorial, cultural, and biochemical properties of the microorganisms were studied and revealed to be characteristic of diphtheria agents. What investigation should be additionally performed to make a conclusion, that these microorganisms are pathogenic diphtheria bacilli?

A. Determine toxigenic properties
B. Determine proteolytic properties
C. Determine urease activity
D. Determine cystinase activity
E. Determine amylolytic activity



2 In order to determine toxigenicity of diphtheria bacilli a strip of filter paper impregnated with antitoxic diphtheria serum was put on the dense nutrient medium. There were also inoculated a microbial culture under examination and a strain that is known to be toxigenic. If the microbial culture under examination produces exotoxin, this will result in formation of:

A. Precipitin lines B. Precipitin ring C. Haemolysis zones D.Zones of diffuse opacification E. Zones of lecithovitellase activity



0 In order to estimate toxogenicity of diphtheria agents obtained from patients the cultures were inoculated on Petri dish with nutrient agar on either side of a filter paper strip that was put into the centre and moistened with antidiphtheric antitoxic serum. After incubation of inoculations in agar the strip-like areas of medium turbidity were found between separate cultures and the strip of filter paper. What immunological reaction was conducted?

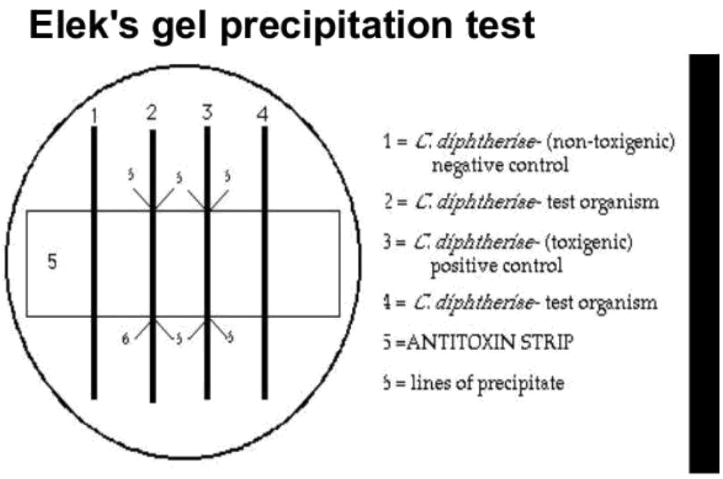
A. Precipitation gel reaction

B. Rings precipitation reaction

C. Opsonization

D. Coomb's test

E. Agglutination reaction



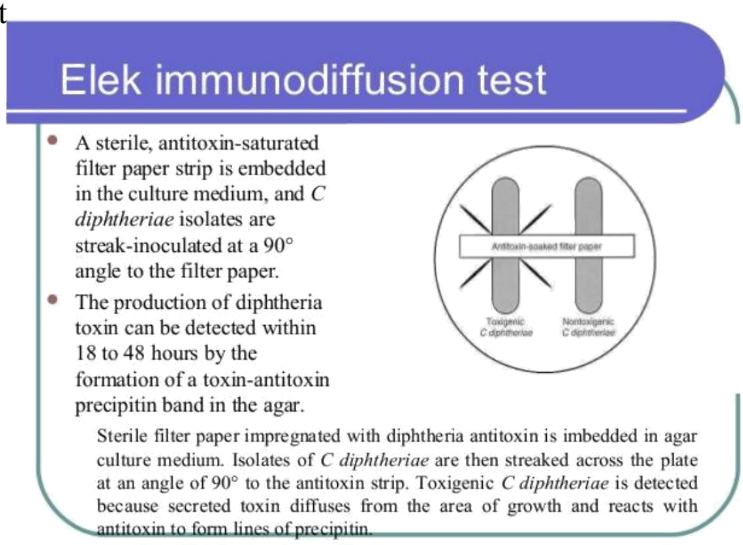
When examining a child the dentist found the deposit on both tonsils and suspected atypical form of diphtheria. A smear was taken, and after the nutrient media inoculation the toxicity of the isolated pure culture was determined. What reaction was used to determine the toxigenicity of the isolated strain of diphtheria bacillus?

A. Gel precipitation reaction

B. Agglutination reaction on a glass slide C. Complement binding reaction

D. Hemolysis reaction

E. Ring precipitation reaction



A 7 year old girl was taken to an infectious diseases hospital. She had complaints of high temperature, sore throat, general weakness. A doctor assumed diphtheria. What will be crucial proof of diagnosis after defining pure culture of pathogenic organism?

A. Toxigenity test B. Detection of volutine granules C. Hemolytic ability of pathogenic orhanism

D. Cystinase test E. Phagolysability

A 7 y.o. girl was admitted to the infectious diseases hospital with fever, sore throat, common weakness. A doctor suspected diphtheria. What would be crucial for diagnosis confirmation after pure culture of causative agent had been singled out?
A. Toxigenity test B. Detection of volutine granules
C. Hemolytic ability of a causative agent
D. Cystinase test E. Phagolysability

A patient has pure culture of diphtheria corynebacteria. What immunological reaction should be used in order to determine bacteria toxigenity?
A. Precipitation in agar B. Agglutination
C. Complement binding D. Inhibition of hemagglutination
E. Indirect hemagglutination

In a closed community it is necessary to determine community members immunity to diphtheria and verify the need for their vaccination. What investigation is necessary in this case?
A. Check medical records for vaccination.
B. Test community members for diphtheria bacillus carriage.
C. Determine antitoxin titer by means of indirect hemagglutination assay. D. Determine diphtheria antibody titer.
E. Determine community members immunity to diphtheria bacillus.

Passive (indirect) agglutination

Principle

- precipitation reaction converted into agglutination - coating antigen onto the surface of carrier particles like red blood cells, latex, gelatin, bentonite
  - background clears

Examples of types

- latex agglutination
- co-agglutination
- passive hemagglutination (treated red blood cells made resistant)

In order to establish the level of antidiphtheritic immunity in a child it was decided to use a passive hemagglutination test. This task can be completed by the sensibilization of erythrocytes by:
A. Diphtheria anatoxin
B. Diphtheria antitoxin
C. Diphtheria bacillus antigens
D. Antidiphtheric serum E. -

A patient with suspected diphtheria went through bacterioscopic examination. Examination of throat swab revealed rod-shaped bacteria with volutin granules. What etiotropic preparation should be chosen in this case?
A. Antidiphtheric antitoxic serum B. Bacteriophage
C. Diphtheria antitoxin
D. Eubiotic
E. Interferon

Diphtheria Antitoxin

- **First used in 1891**
- **Produced in horses**
- **Used only for treatment of diphtheria**
- **Neutralizes only unbound toxin**

Bacterioscopic examination of a smear from the pharynx of a diphtheria suspect revealed bacilli with volutine granules. What etiotropic drug should be chosen in this case?

A. Antidiphtheritic antitoxic serum B. Bacteriophage C. Interferon D. Eubiotic E. Diphtheritic anatoxin

Treatment

Diphtheria antitoxin must be given early, since the antitoxin neutralizes only toxin not yet bound to cells!

Caution: ***Diphtheria antitoxin is derived from horses; hence, a skin test to rule out sensitivity should always precede administration***

- The first doze must be given 0,1 ml intraskin in solution 1:100
- After 20 minutes, you must meter erythema and papule
- If it smaller then 10 mm in diameter you must 0,1 ml antitoxin subdermaly

What drugs are used for specific treatment of diphtheria? A. Placental gamma globulin.
B. Anatoxin.
C. Native plasma.
D. Antitoxic serum.
E. Antibiotics.

A child with diphtheria 10 days after injection of antitoxic antidiphtherial serum has developed skin rash, accompanied by severe itch, rising temperature up to 38^0C and joints pain. What is the cause of these symptoms?
A. Delayed type of hypersensitivity
B. Anaphylacsis
C. Contact allergy D. Atopia
E. Serum sickness

Serum Sickness

* A systemic immune complex phenomenon
* Injection of large doses of foreign serum
* Antigen is slowly cleared from circulation
* Immune complexes are deposited in various sites

* **10 days after injection** → fever, urticaria, arthralgia, lymphadenopathy, splenomegaly, glomerulonephritis

e.g. treatment with → Antitoxin, Penicillin, Sulphonamides

A 16-year-old adolescent was vaccinated with DTP. In eight days there was stiffness and pain in the joints, subfebrile temperature, urticarial skin eruption, enlargement of inguinal, cervical lymph nodes and spleen. What kind of allergic reaction is observed?

A. Immunocomplex

B. Hypersensitivity of immediate type C. Cytoxic

D. Hypersensitivity of delayed type E. –

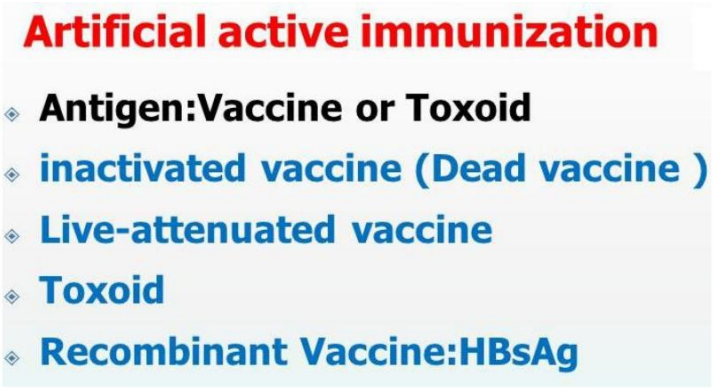
It is necessary to carry out preventive vaccination of a student group because of an occurrence of diphtheria. Which preparation should be used for the creation of the artificial active immunity?

A. Diphtheria anatoxin B. Specific immunoglobulin

C. DTP vaccine

D. Inactivated bacteria vaccine

E. Anti-diphtheria serum



Vaccination is done by means of a toxin that has been neutralized by a formaldehyde (0,4%) at a temperature 37 – 40^0C for four weeks. Ramond was the first to apply this preparation for diphtheria prophylaxis. What preparation is it?

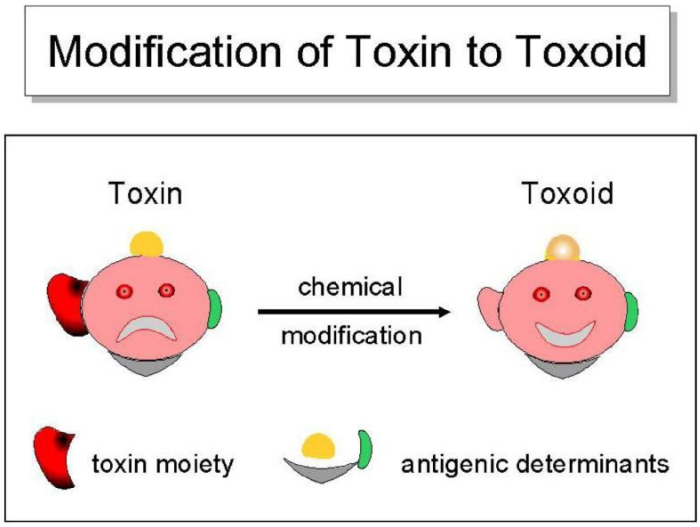
A. Anatoxin

B. Immunoglobulin

C. Antitoxic serum

D. Adjuvant

E. Inactivated vaccine



Diphtheria exotoxin had been treated with 0,3-0,4% formalin and kept in a thermostat for 30 days at a temperature of 40^oC.What preparation was obtained as a result of these manipulations?

A. Anatoxin

B. Antitoxin C. Diagnosticum

D. Therapeutic serum E. Diagnostic serum

A toxin neutralized with 0.4% formaldehyde under 37-40°C for 4 weeks is used for vaccination. This preparation was first used by Gaston Ramon for diphtheria prevention. Name this preparation:

A. Immunoglobulin

B. Anatoxin

C. Antitoxic serum

D. Inactivated vaccine E. Adjuvant

An 11-year-old girl has been immunized according to her age and in compliance with the calendar dates. What vaccinations should the children receive at this age?

A. Diphtheria and tetanus

B. TB C. Polio

D. Hepatitis B E. Pertussis

In an inhabited locality there is an increase of diphtheria during the last 3 years with separate outbursts in families. What measure can effectively influence the epidemic process of diphtheria and reduce the morbidity rate to single cases?

A. Immunization of the population

B. Hospitalization of patients

C. Detection of carriers

D. Early diagnostics

E. Disinfection in disease focus

Tuberculosis

A bacteriological laboratory received sputum sample of a patient suffering from tuberculosis. Bacterioscopic examination of smears and detection of tuberculosis bacillus can be realized by one of enrichment methods that involves processing of sputum only with solution of caustic soda. What is this method called?

A. Homogenization

B. Inactivation

C. Flotation

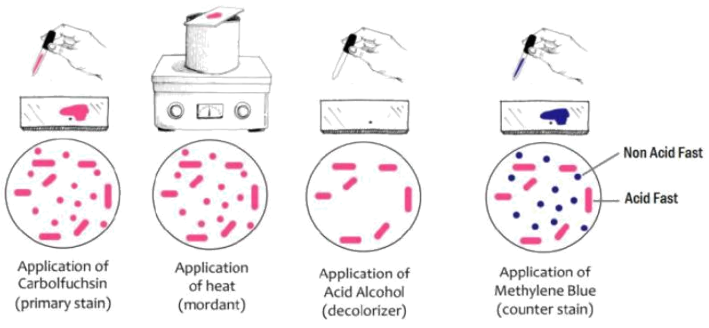
D. Filtration

E. Neutralization

Homogenization of sputum samples:

- The purulent part of the sputum containing most of the relevant pathogens is usually embedded in clear mucoid secretions.
- Homogenization helps in separating out the purulent portion for filming and culture and also used for quantitative examinations.
- To homogenize, mix and incubate equal volumes of the sputum and a solution of dithiothreitol or buffered pancreatin.mix the sample with either of them and incubate for 30 min at 37^0 c with continuous shaking or occasional shaking.

Specimen of a patient's sputum was stained with the following dyes and reagents: Ziehl's solution, methylene blue solution, 5% solutoin of sulfuric acid. What staining method was applied?

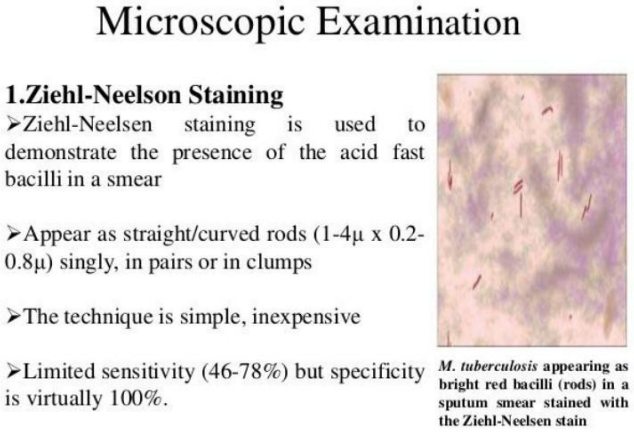


A. Ziehl-Neelsen

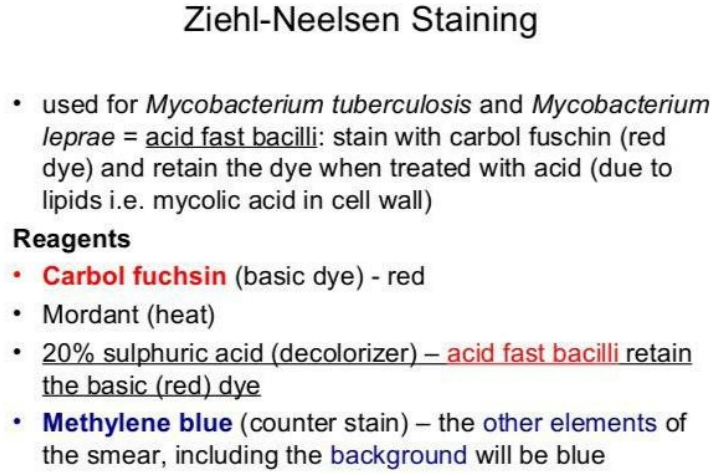
B. Burri's C. Gram's D. Peshkov's E. Neisser's

A consumptive patient has an open pulmonary form of disease. Choose what sputum staining should be selected for finding out the tubercle (Koch's) bacillus?
A. Method of Ziel-Neelsen B. Method of Romanowsky-Giemsa
C. Method of Gram D. Method of Neisser
E. Method of Burry-Gins

Study of bacteriological sputum specimens stained by the Ziel-Neelsen method revealed some bright-red acid-resistant bacilli that were found in groups or singularly. When inoculated onto the nutrient media, the signs of their growth show up on the 10-15 day. These bacteria relate to the following family:
A. Micobacterium tuberculosis B. Yersinia pseudotuberculosis
C. Histoplasma dubrosii D. Klebsiella rhinoscleromatis
E. Coxiella burnettii



Microscopy of stained (Ziehl-Neelsen staining) smears taken from the sputum of a patient with chronic pulmonary disease revealed red bacilli. What property of tuberculous bacillus was shown up?
A. Acid resistance B. Alkali resistance
C. Alcohol resistance
D. Capsule formation
E. Sporification



A bacteriological laboratory has received smears from the sputum of a patient with a chronic pulmonary disease. Microscopical examination of the smears stained by the Ziehl-Neelsen technique revealed red bacilli. What property of the tuberculosis bacillus has shown itself?
A. Acid resistance
B. Alkali resistance C. Alcohol resistance
D. Capsule formation E. Spore formation

Sputum smears of a patient with chronic pulmonary disease were stained by Ziehl-Neelsen method and analyzed in the bacteriological laboratory. Microscopy revealed red bacillus. What property of tuberculosis myobacteria was found?

A. Acid resistance

B. Alkali resistance C. Alcohol resistance

D. Encapsulation E. Spore-formation

During the skill-building session in microbiology the students need to stain the prepared and fixed sputum smears obtained from a tuberculosis patient. What staining technique should be used in this case?

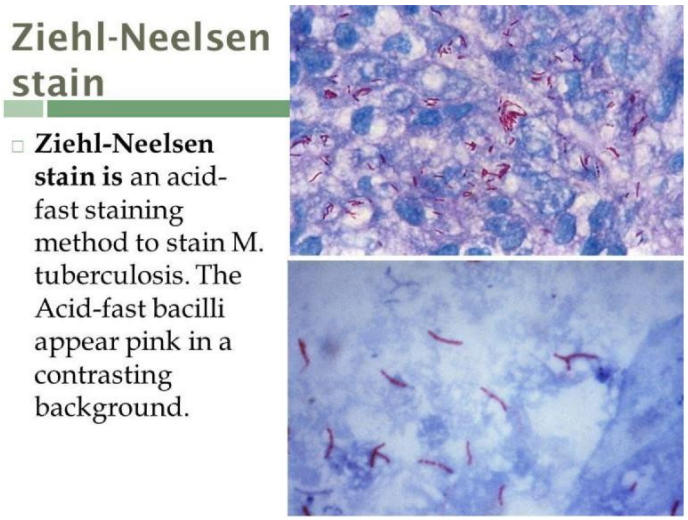
A. Gram

B. Giemsa

C. Ziehl-Neelsen

D. Burry

E. Gins



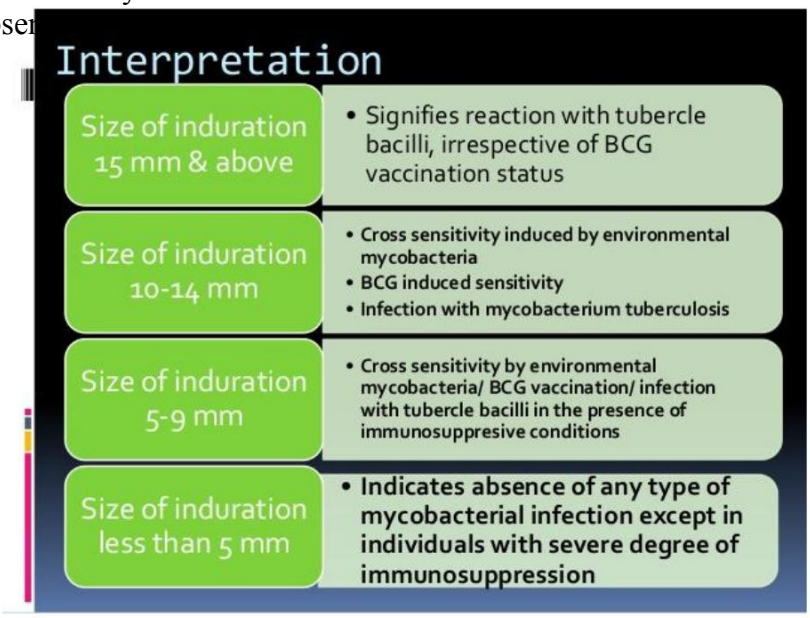
While registering the child to the school Mantoux's test was made to define whether revaccination was needed test result is negative. What does this result of the test mean?

A. Absence of antitoxic immunity to the tuberculosis

B. Presence of antibodies for tubercle bacillus

C. Absence of antibodies for tubercle bacillus

D. Presence of cell immunity to the tuberculosis E. Absen cell immunity to the tuberculosis



A child entering the school for the first time was given Mantoux test in order to determine if there was a need for revaccination. The reaction was negative. What is the meaning of this test result?

A. No cell-mediated immunity to tuberculosis

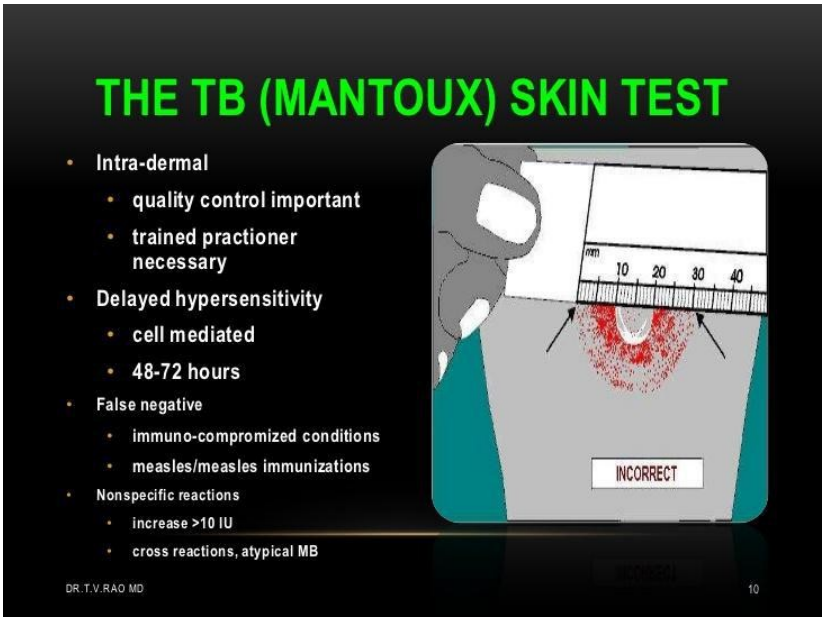
B. Availability of cell-mediated immunity to tuberculosis C. No antibodies to the tuberculosis bacteria

D. No anti-toxic immunity to tuberculosis

E. Presence of antibodies to the tuberculosis bacteria

A 45 year old male died from disseminated tuberculosis. On autopsy the symptoms of tuberculosis were confirmed by both microscopical and histological analyses. What kind of hypersensitivity reaction underlies the process of granuloma development?

A. Delayed
B. Antibody-dependent cytotoxicity
C. Complement-dependent cytotoxicity
D. Anaphylactic
E. Immune Complex



48 hours after performing tuberculin test (Mantoux test) to a child a 10 mm papule appeared on the spot of tuberculin introduction. What hypersensitivity mechanism underlies these changes?

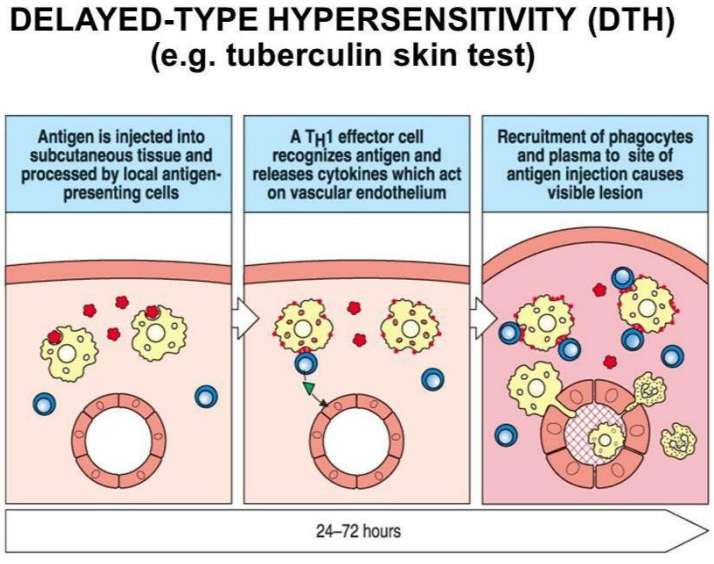
A. Cellular cytotoxicity B. Anaphylaxis
C. Antibody-dependent cytotoxicity
D. Immune complex cytotoxicity E. Granulomatosis

Tuberculine was injected intracutaneously to the child for tuberculin test. Marked hyperemia, tissue infiltration developed on the place of injection in 24 hours. What mechanism caused these modifications?

A. Cells cytotoxity
B. Reagin type cytotoxity C. Granuloma formation
D. Immunocomplex cytotoxity E. Antibody cytotoxity

A 4 year old child had Mantoux test. 60 hours after tuberculin introduction a focal skin hardening and redness 15 mm in diameter appeared. It was regarded as positive test. What type of hypersensitivity reaction is this test based upon?

A. Delayed-type hypersensitivity
B. Immune complex-mediated hypersensitivity C. Complement-mediated cytotoxic hypersensitivity D. Immediate hypersensitivity E. –



A 10-year-old child had the mantoux tuberculin test administered. 48 hours later a papule up to 8 mm in diameter appeared on the site of the injection. What type of hypersensitivity reaction developed after the tuberculin injection?

A. Type IV hypersensitivity reaction

B. Arthus phenomenon C. Seroreaction

D. Type II hypersensitivity reaction E. Atopic reaction

A 10 year old child was subjected to Mantoux test (with tuberculin). 48 hours later a papule up to 8 mm in diameter appeared on the site of tuberculin injection. What type of hyperesponsiveness reaction has developed after tuberculin injection?

A. Hyperresponsiveness reaction type

IV B. Reaction of Arthus phenomenon

type C. Reaction of serum sickness type

D. Atopic reaction E. Hyperresponsiveness reaction type II

A child suspected for tuberculosis underwent Mantoux test. 24 hours after allergen injection there appeared a swelling, hyperaemia and tenderness. What are the main components in the development of this reaction?

A. Mononuclears, T-lymphocytes and lymphokines

B. Granulocytes, T-lymphocytes and IgG

C. Plasmatic cells, T-lymphocytes and lymphokines D. B-lymphocytes, IgM

E. Macrophages, B-lymphocytes and monocytes

A patient was diagnosed with active focal pulmonary tuberculosis. What drug should be prescribed in the first place?

A. Isoniazid

B. Sulfalen C. Cyclocerine

D. Ethionamiden

E. Ethoxide

Tuberculosis Treatment:

If you forget your TB drugs, you'll die and might need a **PRIEST.**

- **P**yrazinamide
- **R**ifampin
- **I**soniazid
- **E**thambutol
- **ST**reptomycin

A patient suffers from pulmonary tuberculosis. During treatment neuritis of visual nerve arose. What drug has caused this by-effect?

A. Isoniazid B. Ethambutol C. Kanamycin D. Rifampicin E. Streptomycin

After 4 months of treatment for tuberculosis the patient began complaining of toes and fingers numbness, sensation of creeps. He was diagnosed with polyneuritis. What antituberculous drug might have caused these complications?

A. Isoniazid B. Rifampicin C. Ciprofloxacin

D. Sodium salt of benzylpenicillin E. Iodine solution

A patient suffering form tuberculosis was treated with rifampicin, which caused drug resistance of tuberculosis mycobacteria. In order to reduce mycobacteria resistance, rifampicin should be combined with the following drug:

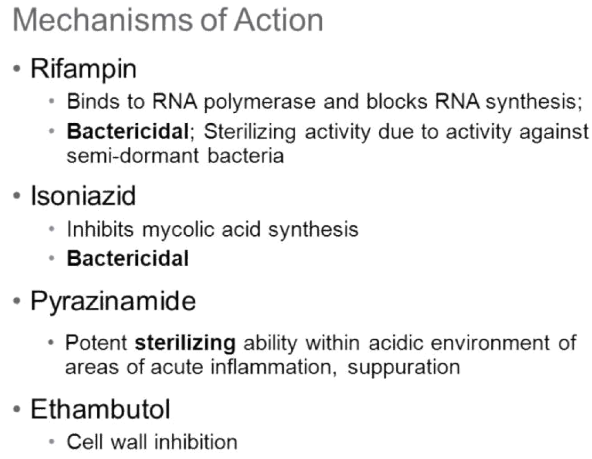
A. Isoniazid B.Acyclovir

C.Intraconazole

D.Metronidazole E.Amoxicillin

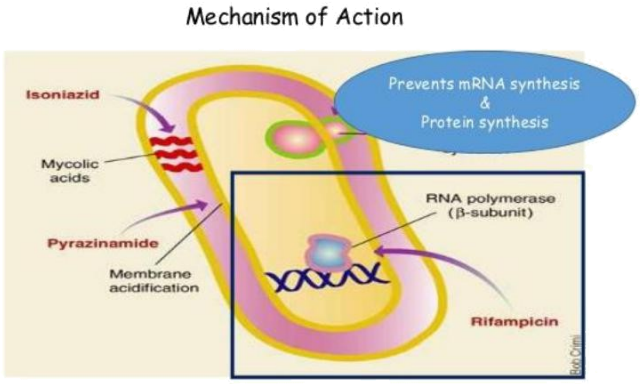
Tuberculosis can be treated by means of combined chemotherapy that includes substances with different mechanisms of action. What antituberculous medication inhibits transcription of RNA into DNA in mycobacteria?

A. Rifampicin
B. Isoniazid
C. Streptomycin
D. Ethionamide
E. Para-aminosalicylic acid



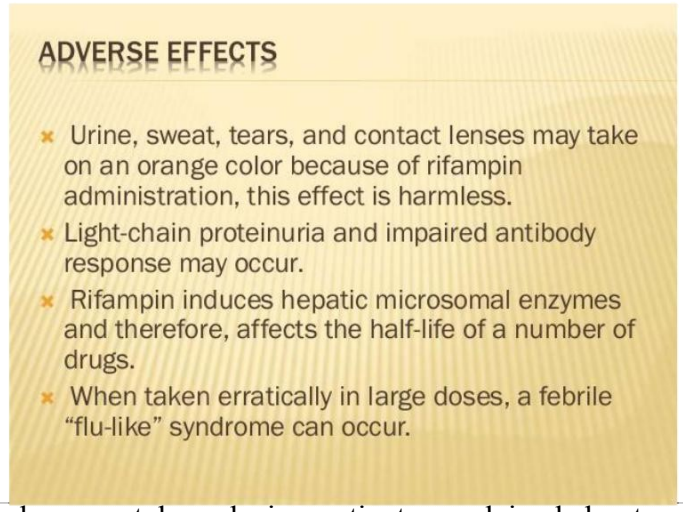
A patient with pulmonary tuberculosis is prescribed the most effective antituberculosis antibiotic. Name this drug:

A. Tetracycline
B. Furasolidone
C. Rifampicin
D. Bactrim (Co-trimoxazole) E. Streptocide



The 32-year-old patient has been taking antituberculosis drugs. Later he noticed that his urine had become redorange in color. What drug is conductive to this phenomenon?

A. Rifampicin
B. Isoniazid
C. Pyrazinamide
D. Ethambutol
E. Streptomycin sulphate



After starting treatment for pulmonary tuberculosis a patient complained about red tears and urine. What drug could cause such changes?

A. Rifampicin
B. Benzylpenicillin sodium salt
C. Benzylpenicillin potassium salt
D. Biseptol-480
E. Cefazolin

To treat tuberculosis, an antibiotic that colors urine red is prescribed. Name the antibiotic:

A. Amoxicillin
B. Rifampicin
C. Nitroxoline
D. Erythromycin
E. Cefotaxime

Following treatment with a highly efficient anti-tuberculosis drug a 48-yearold female developed optic nerve neuritis, memory impairment, cramps. Which of these anti-TB drugs had the patient taken?

A. Isoniazid
B. PASA
C.Rifampicin
D.Ethambutol
E. Kanamycin

Isoniazid

- Isoniazid-induced hepatitis-most common major toxic effect
- Peripheral neuropathy
- CNS toxicity-memory loss, psychosis,seizures
- Fever and skin rashes
- Drug-induced SLE
- Hematologic abnormalities
- Provocation of pyridoxine deficiency anemia
- Tinnitus
- Gastrointestinal discomfort

A patient being treated for tuberculosis is suffering from hearing deterioration. What drug causes this complication?

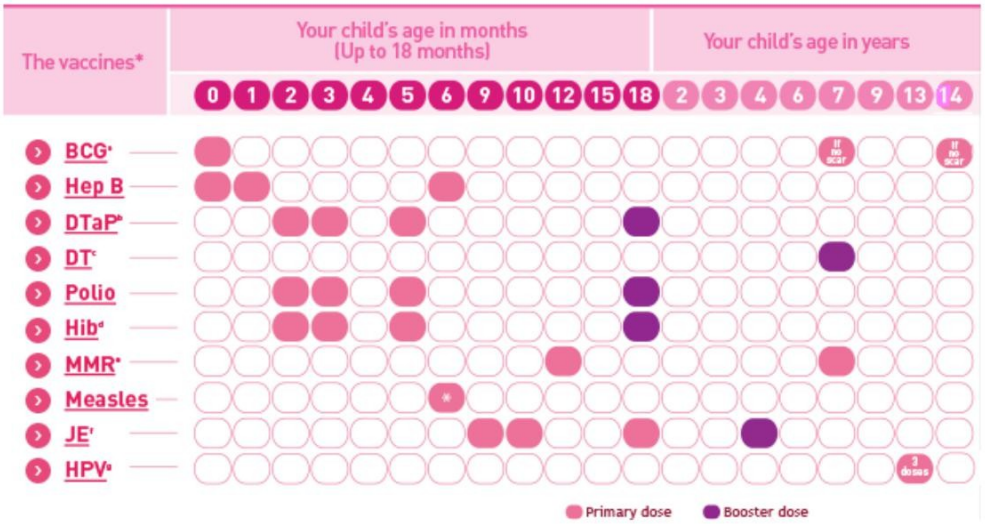
A. Streptomycin B. Isonicotinic acid hydrazide (Isoniazid)
C. Rifampicin
D. Ethionamide
E. Kanamycin sulphate

Side effects of Streptomycin

- Ototoxicity: Vertigo,ataxia, hearing loss
  Ototoxic to fetus
- Nephrotoxicity
- Electrolyte abnormalities
- Fever and rash
- Hypersensitivity reactions, anaphylaxia

A 16 y.o. boy from a countryside entered an educational establishment. Scheduled Manteux test revealed that the boy had negative reaction. What are the most reasonable actions in this case?

A. To perform BCG vaccination B. To repeat the reaction in a month
C. To perform serodiagnostics of tuberculosis
D. To isolate the boy temporarily from his mates E. To perform rapid Price diagnostics



Medical examination of the first-year pupils included Mantoux test. 15 pupils out of 35 had negative reaction. What actions should be taken against children with negative reaction?
A. BCG vaccination B. Examination of blood serum
C. Rabies vaccination D. Repeat Mantoux test E. Antitoxin vaccination

Planned mass vaccination of all newborn 5-7 day old children against tuberulosis plays an important role in tuberculosis prevention. In this case the following vaccine is applied:
A. BCG
B. Diphteria and tetanus toxoids and pertussis vaccine
C. Diphtheria and tetanus anatoxin vaccine
D. Adsorbed diphtheria vaccine E. –

For tuberculosis prevention the newborns got an injection of a vaccine. What vaccine was used?
A. BCG
B. Mantoux
C. DTaP vaccine
D. Anatoxin
E. Oral polio vaccine (Sabin vaccine)

Organon

BCG VACCINE U.S.P.

(FOR PERCUTANEOUS USE)

BCG VACCINE

DESCRIPTION

BCG VACCINE for percutaneous use, is an attenuated, live culture preparation of the Bacillus of Calmette and Guerin (BCG) strain of *Mycobacterium bovis*.[1] The TICE® strain used in this BCG VACCINE preparation was developed at the University of Illinois from a strain originated at the Pasteur Institute.

The medium in which the TICE® BCG organism is grown for preparation of the freeze-dried cake is composed of the following ingredients: glycerin, asparagine, citric acid, potassium phosphate, magnesium sulfate, and iron ammonium citrate. The final preparation prior to freeze drying also contains lactose. The freeze-dried BCG preparation is delivered in vials, each containing 1 to 8 x 10^8 colony forming units (CFU) of BCG which is equivalent to approximately 50 mg wet weight. Determination of *in-vitro* potency is achieved through colony counts derived from a serial dilution assay. Intradermal guinea pig testing is also used as an indirect measure of potency.

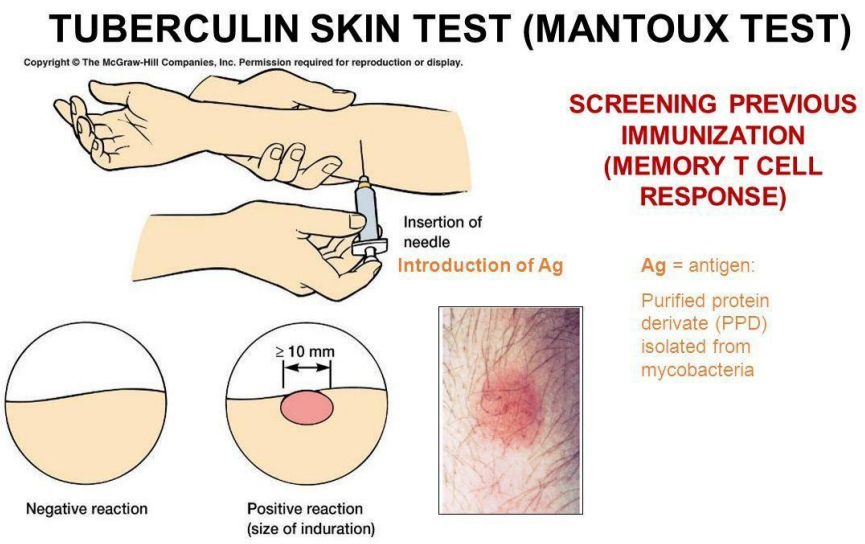
In a maternity hospital a newborn should receive vaccination against tuberculosis. What vaccine should be chosen?
A. BCG vaccine
B. STI vaccine
C. EV vaccine D.
DPT vaccine E.
Tuberculin

There is a suspicion of active tuberculosis development in patient. The doctor has appointed Mantoux test to make a diagnosis. What immunobiological agent has to be administered?
A. Tuberculine
B. BCG vaccine C. DPT vaccine
D. Tularin test E. DT vaccine

A 6-year-old child with suspected active tuberculosis process has undergone diagnostic Mantoux test. What immunobiological preparation was injected?
A. Tuberculin
B. BCG vaccine C. DTP vaccine
D. Tularinum E. Td vaccine

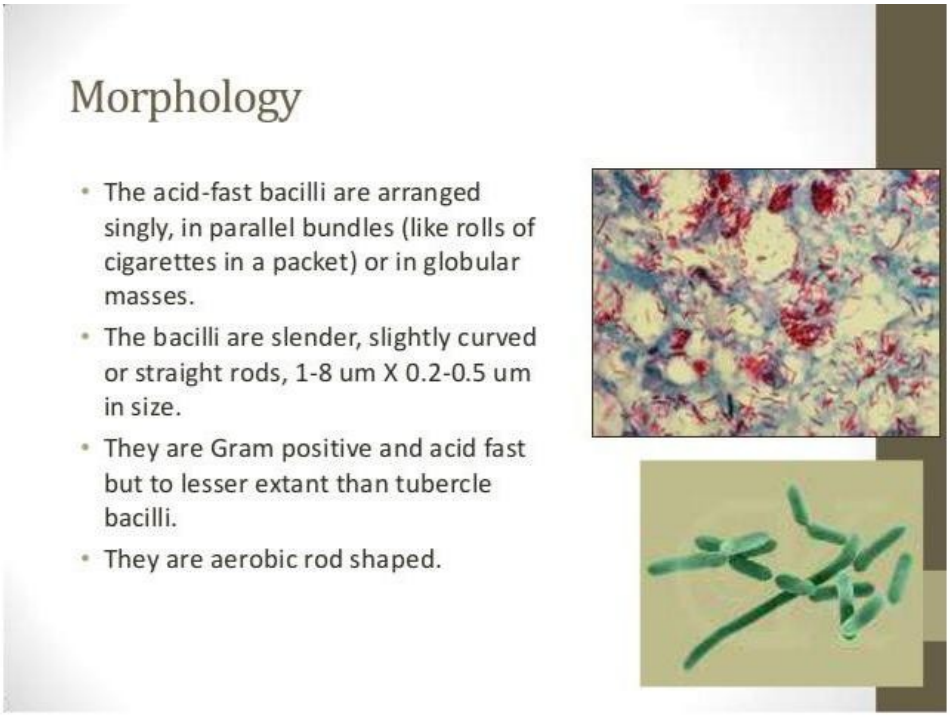
The first grade pupils were examined in order to sort out children for tuberculosis revaccination. What test was applied for this purpose?
A. Mantoux test
B. Schick test C. Anthraxine test
D. Burnet test E. Supracutaneous tularin test

First-year schoolchildren have received tuberculin skin test (Mantoux test) at the school nurse's office. The purpose of this test was:
A. To detect parotitis in schoolchildren
B. To measure allergization rate toward rickettsia
C. To measure immune stress toward diphtheria
D. To determine the children that need to receive BCG vaccination E. To preventively vaccinate against tuberculosis



Lepra

Microscopic analysis of tissue sampling from affected area of mucous membrane of oral cavity revealed bacillus in form of accumulations that looked like a pack of cigarettes. Ziehl-Neelsen staining gives them red colour. What kind of pathogenic organism was most likely revealed in tissue sampling?
A. M.leprae
B. M. tuberculosis
C. A. bovis
D. A. israilii
E. M. avium



Granulomas containing lymphocytes and macrophages were detected during analysis of skin biopsy material. Among macrophages there are large cells with fat inclusions, which contain microorganisms in spheric packages (Virchow's cells). The following disease is based on the described type of hypersensitivity:

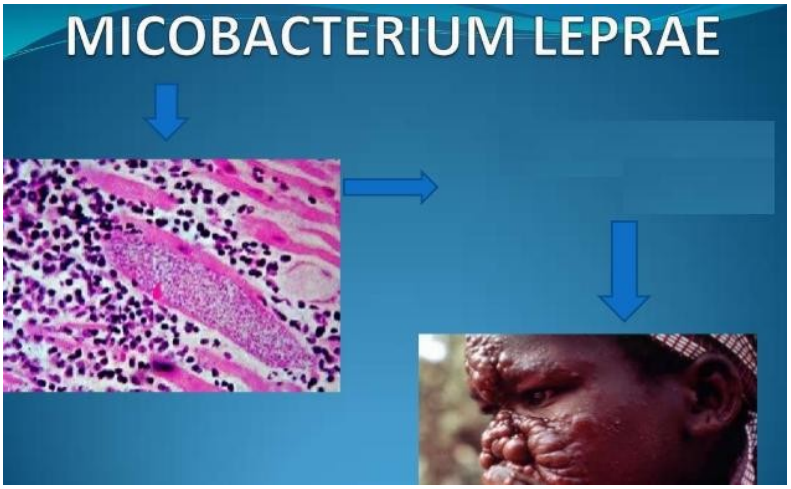
A. Leprosy

B. Syphilis

C. Tuberculosis D.

Rhinoscleroma E.

Epidemic typhus



Plague

A patient presents with fever, chill and cough. From his sputum the ovoid Gram-negative bipolar-stained bacilli with a delicate capsule were secured. What is the most likely diagnosis?

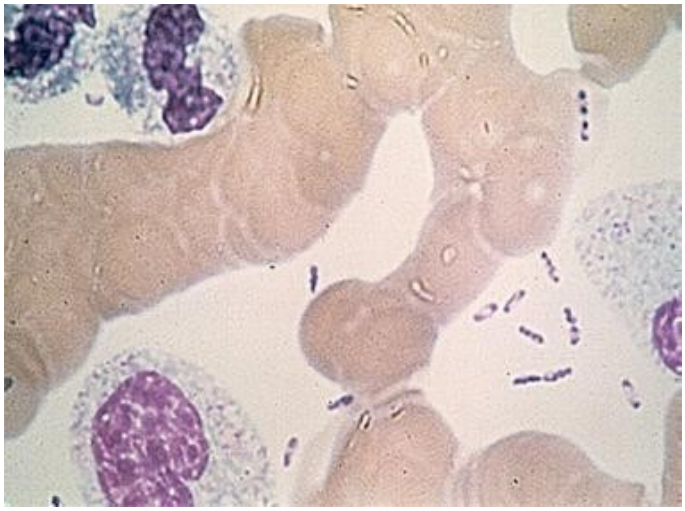
A. Plague

B. Tuberculosis

C. Leptospirosis

D. Brucellosis E.

Toxoplasmosis



2 days after a hunter cut a ground squirrel's body, he developed fever up to ^{0}C, his lymph nodes enlarged. Later he developed pneumonia with serohemorrhagic exudate that contained egg-shaped microorganisms with bipolar staining. What provisional diagnosis can be made in this case?

A. Brucellosis.

B. Anthrax. C.

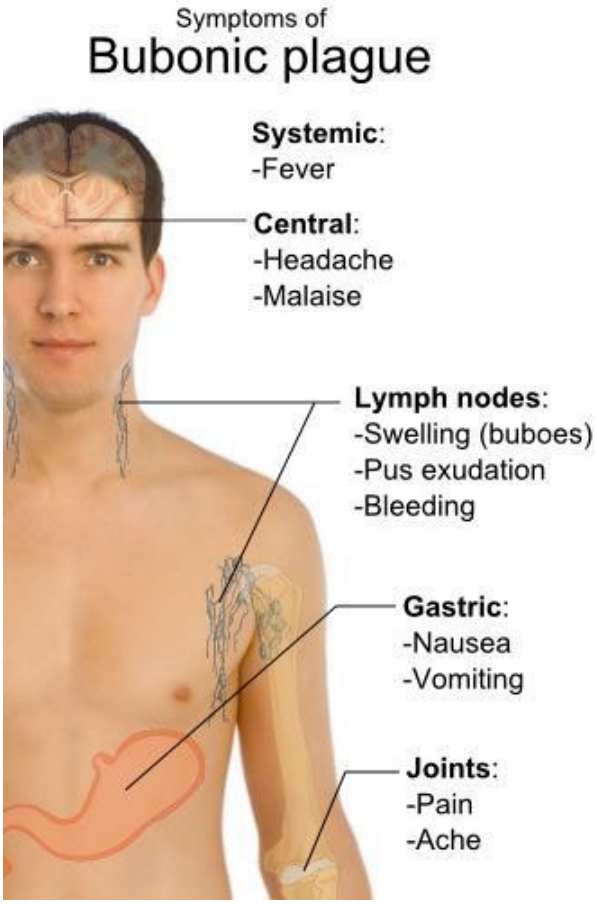
Tetanus.

D. Plague.

E. Pseudotuberculosis.

During the examination of a patient, who had been to the mountain pasture and had been hospitalized in a bad condition with fever, the doctor found out the enlargement of inguinal lymph nodes to 8 cm, which were attached to the surrounding tissues, immovable, the skin above them was red and tender. The microscopic examination of the node revealed acute serohemorrhagic inflammation. What disease is it typical for?

A. Brucellosis
B. Syphilis C.
Anthrax D.
Tularemia
E. Plague



The patient has developed pain in the axillary area, rise of temperature developed 10 hours ago. On examination: shaky gait is marked, the tongue is coated by white coating. The pulse is frequent. The painful lymphatic nodules are determined in the axillary area. The skin is erythematous and glistering over the lymphatic nodules. What is the most probable diagnosis?

A. Bubonic plague
B. Acute purulent lymphadenitis C. Tularemia
D. Anthrax E. Lymphogranulomatosis

A patient has got pain in the axillary area, rise of temperature developed 10 hours ago. On examination: shaky gait is evident, the tongue is coated with white deposit. The pulse is frequent. The painful lymphatic nodes are revealed in the axillary area. The skin over the lymph nodes is erythematous and glistering.What is the most probable diagnosis?

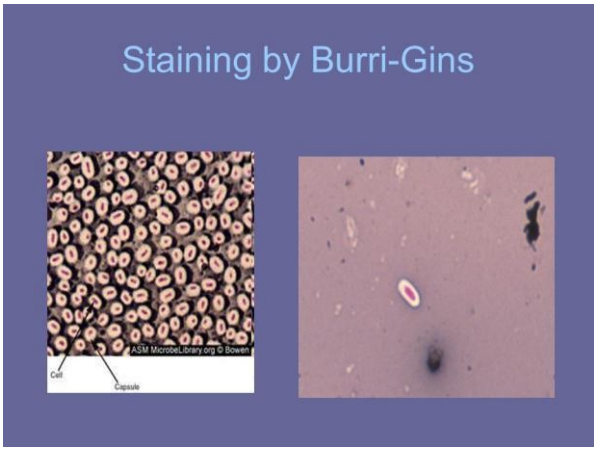
A. Bubonic plague B. Acute purulent lymphadenitis
C. Lymphogranulomatosis D. Anthrax E. Tularemia

A 45-year-old patient, a sailor, was hospitalized on the 2nd day of the disease. A week ago he returned from India. Complains of body temperature of 41^{o}C, severe headache, dyspnea, cough with frothy rusty sputum. Objectively: the patient is pale, mucous membranes are cyanotic, breathing rate - 24/min, tachycardia is present. In lungs: diminished breath sounds, moist rales over both lungs, crepitation. What is the most likely diagnosis?

A. Pneumonic plaque B. Miliary tuberculosis
C. Influenza D. Ornithosis E. Sepsis

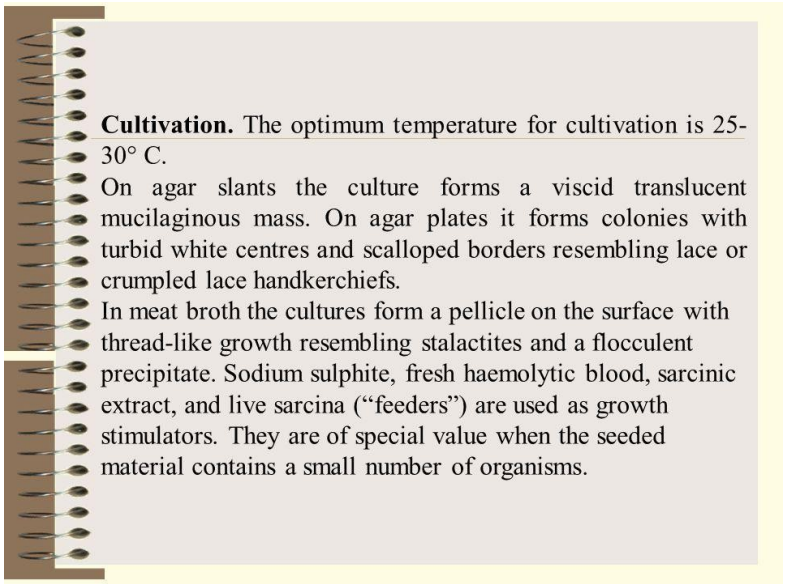
The laboratory for especially dangerous infections conducts microscopic examination of pathological material from a patient with suspected plague. The sample was stained by Burri-Gins technique. What property of the causative agent can be identified by this technique?

A. Capsule formation
B. Spore formation C. Acid resistance
D. Alkali resistance
E. Presence of volutin Granules



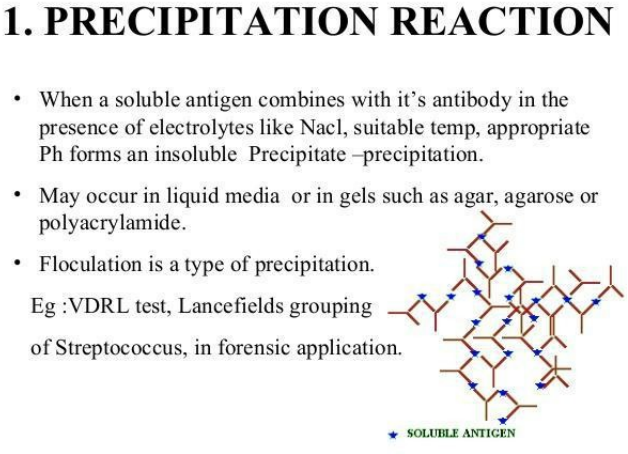
A puncture sample has been taken from the inguinal lymph nodes of a patient provisionally diagnosed with plague. The sample was inoculated into a hard nutrient medium. What shape will the colonies have, if the diagnosis is confirmed?

A. "Dewdrops"
B. "Shagreen leather"
C. "Lace handkerchief"
D. "Mercury drops"
E. "Lion's mane"


Cultivation. The optimum temperature for cultivation is 25-30° C.
On agar slants the culture forms a viscid translucent mucilaginous mass. On agar plates it forms colonies with turbid white centres and scalloped borders resembling lace or crumpled lace handkerchiefs.
In meat broth the cultures form a pellicle on the surface with thread-like growth resembling stalactites and a flocculent precipitate. Sodium sulphite, fresh haemolytic blood, sarcinic extract, and live sarcina ("feeders") are used as growth stimulators. They are of special value when the seeded material contains a small number of organisms.

Dwellers of a village noticed mass mortality of rats in some farms. It was suspected that the animals might have died from plague. What postmortal analyses should be conduced in order to establish the causative agent of the infection as soon as possible?

A. Ring precipitation reaction
B. Agglutination reaction
C. Passive agglutination reaction
D. Neutralization reaction
E. Complement-binding reaction


1. PRECIPITATION REACTION

- When a soluble antigen combines with it's antibody in the presence of electrolytes like Nacl, suitable temp, appropriate Ph forms an insoluble Precipitate –precipitation.
- May occur in liquid media or in gels such as agar, agarose or polyacrylamide.
- Floculation is a type of precipitation.

Eg :VDRL test, Lancefields grouping of Streptococcus, in forensic application.

SOLUBLE ANTIGEN

On the territory of a certain region the mass death of rodents was observed. It was assumed that it may be caused by plague agent. What serological reaction should be applied for quick determination of antigen of this epizootic agent?

A. Precipitation reaction B. Agglutination reaction
C. Reaction of passive hemagglutination
D. Bordet-Gengou test E. Neutralization reaction

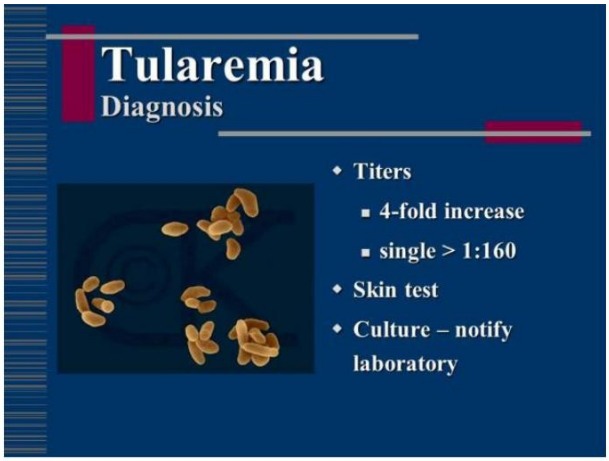
On a certain territory mass death of rodents was registered. It was suspected that their death might have been caused by plague. What serological reaction should be applied for quick identification of antigen of the causative agent of this epizooty?

A. Precipitation B. Agglutination
C. Passive hemagglutination
D. Complement binding E. Neutralization

Tularemia

On examination of a patient with disease onset 5 days ago the doctor suspected tularemia and prescribed the patient tularin intracutaneously. What is the purpose of this drug administration in the patient?

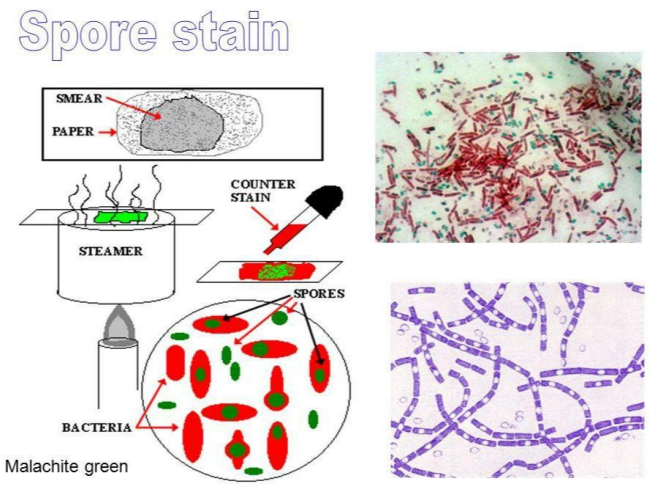
A. Allergy diagnostics
B. Prognosis for the disease C. Treatment
D. Treatment evaluation
E. Prevention



Antrax

A smear of streptobacillus preparation stained by Ozheshko method has been studied microscopically with oil immersion. What structural feature of the bacteria has been studied?

A. Spores B. Capsule C. Flagella D. Inclusions
E. Structure of cell wall

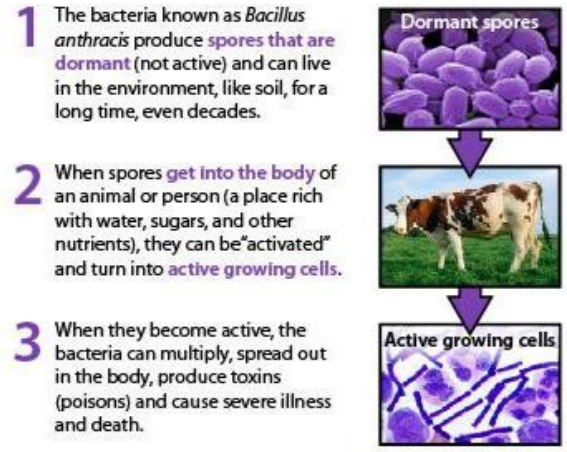


It is planned to use the territory of an old cattle burial ground (which is not used for more than 50 years) for building houses. But ground analysis revealed presence of the pathogen of the very dangerous illness. Which of the indicated microorgonisms is likely to remain in the ground for such a long time?

A. Mycobacterium bovis B. Brucella abortus
C. Yersinia pestis D. Francisella tularensis
E. Bacillus anthracis

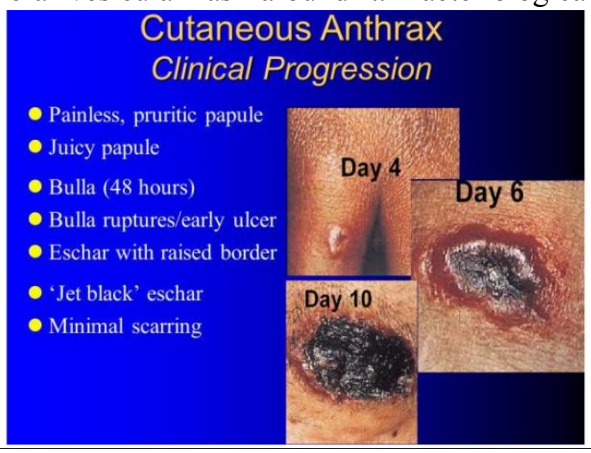
The territory of an old burial ground for animal refuse that hasn't been used for over 50 years is meant for house building. But soil investigation showed the presence of viable spores of a causative agent causing a very dangerous disease. What microorganism might have been preserved in soil for such a long period of time?

A**. Bacillus anthracis**
B. Francisella tularensis
C. Brucella abortus
D. Yersinia pestis
E. Mycobacterium bovis



A patient complained about a carbuncle on his face. Examination results: neither dense nor painful edema of subcutaneous cellular tissue, there is black crust in the middle of the carbuncle and peripheral vesicular rash around it. Bacteriological examination revealed presence of immobile streptobacilli able of capsulation. What microorganisms are causative agents of this disease?

A. Bacillus antracis
B. Staptylococcus aureus
C. Bacillus anthracoides
D. Bacillus megaterium
E. Bacillus subtilis



A 34 year old male patient consulted a doctor about face carbuncle. Objectively: a loose, painless edema of hypodermic tissue; black crust in the center of carbuncle, vesicular rash around it. Microbiological examination revealed static streptobacilli capable of capsule building. What microorganisms are the causative agents of this disease?

A. Bacillus antracis B. Staptylococcus aureus
C. Bacillus subtilis D. Bacillus anthracoides
E. Bacillus megaterium

A worker of a cattle farm consulted a surgeon about fever up to 40^{o}C, headache, weakness. Objective examination of his back revealed hyperaemia and a dark red infiltration up to 5 cm in diameter with black bottom in the center and some pustules. What disease are these presentations typical for?

A. Anthrax B. Plaque C. Tularemia
D. Furuncle E. Abscess

A 43 y.o. patient was admitted to the hospital with complaints of high temperature of the body and severe headache. On examination: carbuncle is revealed on the forearm. There are intense edema around it, insignificant pain, regional lymphadenitis. The patient is a worker of cattle-ranch. What disease is it necessary to think about first?

A. Anthrax B. Carcinoma of skin C. Erysipelas
D. Erysipeloid E. Eczema

A 49-year-old countryman got an itching papule on the dorsum of his right hand. In the centre there is a vesicle with serosanginous exudate. Within the next days the patient developed a painless edema of hand and forearm. On the 4th day the temperature rose to 38,5^{o}C, in the right axillary region a large painful lymph node was found. One daybefore the onset of the disease the patient had examined a dead calf. What is the most likely diagnosis?

A. Cutaneous anthrax

B. Bubonic plague C. Lymphocutaneous tularemia

D. Carbuncle E. Erysipelas

Quite often, the soil may contain a number of pathogenic microorganisms. The causative agents of the following disease may exist in the soil for a long time:

A. Anthrax B. Diphtheria C. Viral hepatitis

D. Pertussis E. Dysentery

At a bacteriological laboratory animal skins are analyzed by means of Ascoli precipitaion test. What is detected if the reaction is positive?

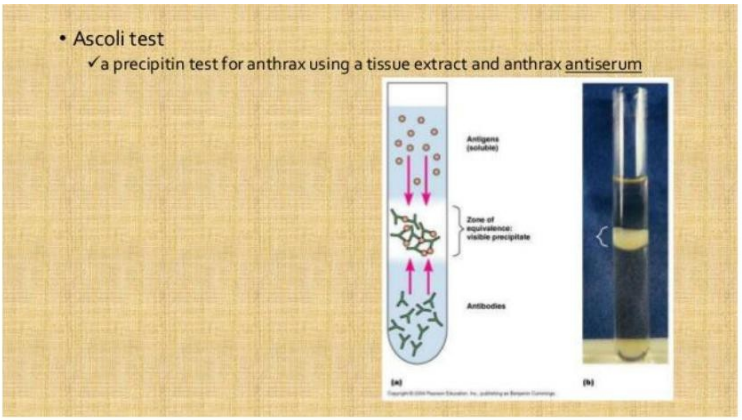
A. Anthrax agent antigens

B. Brucellosis agent

C. Anaerobic infection toxin

D. Plague agent

E. Yersinia surface Antigen



What diagnostic method should be used in industry to test the raw leather for presence of B. antracis?

A. Microscopy with Burry-Gins stain

B. Microscopy with Aujeszky stain

C. Ascoli's thermo precipitation test D. Bacteriological analysis

E. Serological test

There was a record of some anthrax cases among animals in a countryside. The spread of disease can be prevented by means of immunization. What kind of vaccine should be used?

A. STI live vaccine

B. BCG vaccine C. Salk vaccine

D. Sabin's vaccine

E. Diphteria and tetanus toxoids and pertussis vaccine

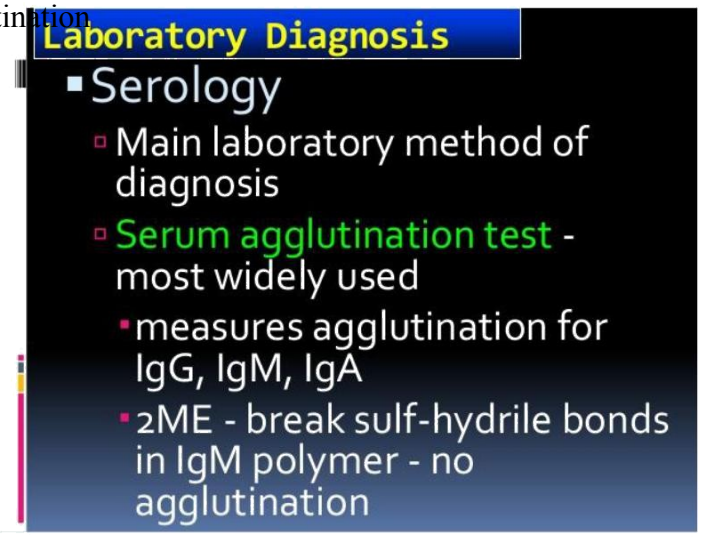
In a village, a case of anthrax had been registered. Medical services began epidemiologically indicated specific prophylaxis of population against anthrax. What preparation was used for this purpose?

A. Live vaccine B. Inactivated vaccine
C. Chemical vaccine D. Genetically engineered vaccine
E. Anatoxin

Brucella

An infectious diseases hospital admitted a veterinarian with assumed brucellosis. What serologic test can confirm this diagnosis?

A. Wright's agglutination reaction B. Widal's agglutination reaction
C. Ascoli's precipitation reaction
D. Weigl's agglutination reaction
E. Wassermann reaction of complement binding



A veterenary attendant working at a cattle farm complains of joint pain, fever, indisposition and sweating at nighttime that he has been experiencing for a month. Giving the regard to such presentations and occupational history the doctor suspected brucellosis. What material taken from this patient is to be analyzed in a common microbiological laboratory?

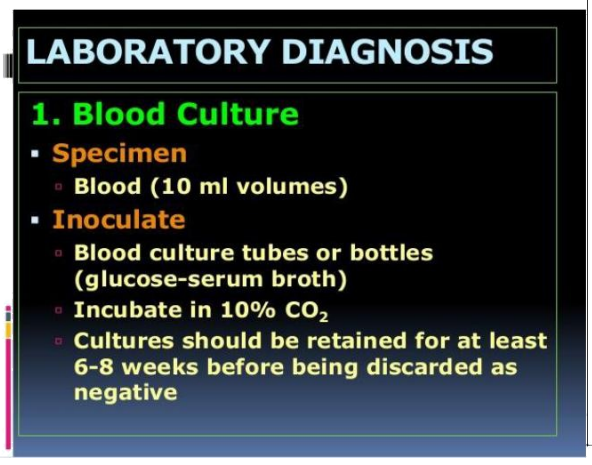
A. Blood serum
B. Spinal fluid C. Vomit mass
D. Urine E. Feces

A 40-year-old female farmworker has been diagnosed with brucellosis and administered causal chemotherapy. What group of drugs will be used for this purpose?

A. Antibiotic
B. Donor immunoglobulin C. Inactivated therapeutic vaccine
D. Antitoxic serum E. Polyvalent bacteriophage

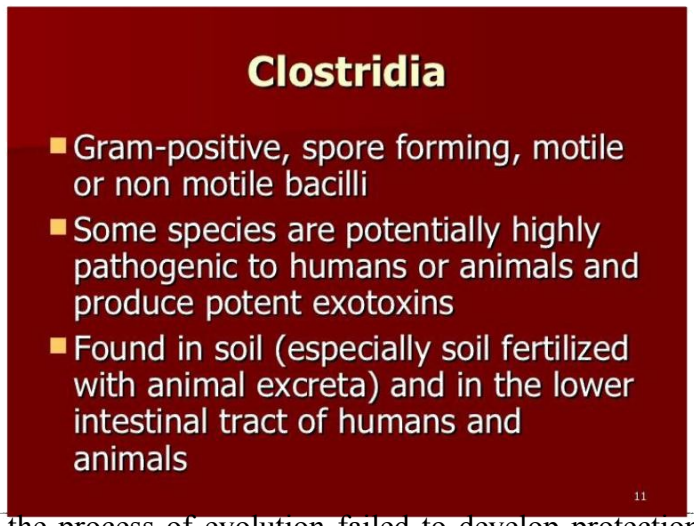
For cultivation of Brucella, pure cultures should be incubated in CO2 enriched atmosphere. What type of breathing is typical for Brucella?

A. Capnophilic
B. Facultative anaerobic
C. Obligate anaerobic D. Obligate aerobic
E. Any

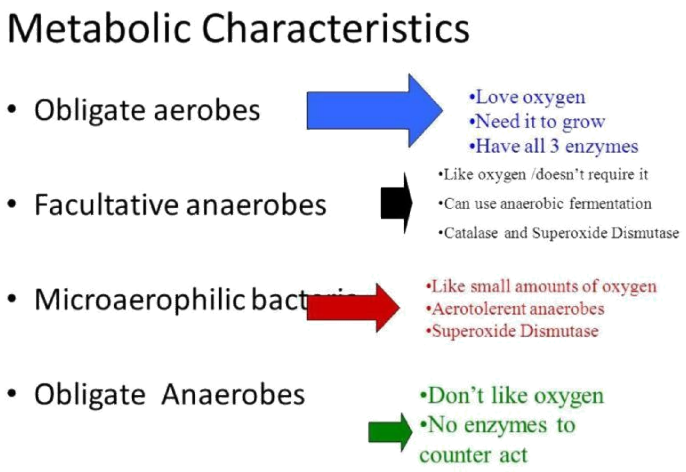


Anaerobes

Microscopic examination of a microbial culture revealed fusiform spore-forming microorganisms that get violet-blue Gram's stain. What microorganisms were revealed?
A. Clostridia B. Streptococci C. Spirochaete D. Actinomycete E. Diplococci



Those organisms which in the process of evolution failed to develop protection from H_2O_2 can exist only in anaerobic conditions. Which of the following enzymes can break hydrogen peroxide down?
A. Peroxidase and catalase
B. Oxygenase and hydroxylase
C. Cytochrome oxidase, cytochrome B5
D. Oxygenase and catalase
E. Flavin-dependent oxidase



Pathological material taken from a patient suffering from pulpitis was inoculated onto Kitt-Tarozzi cultural medium. It is planned to find the following microorganisms:
A. Anaerobic
B. Acid-resistant C. Acidophilic
D. Haemolytic E. Aerobic

A patient was taken to a hospital with acute food poisoning caused by homemade canned mushrooms. The product analysis revealed some microorganisms that develop only in the absence of oxygen. What microorganisms caused the poisoning?
A. Obligate anaerobes
B. Facultative anaerobesC. Microaerophiles
D. Obligate aerobes E. Capnophiles

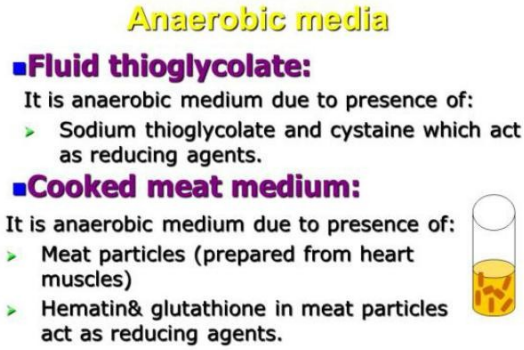
A lot of pyoinflammatory processes in oral cavity are caused by anaerobes. What nutrient medium can be used for control of wound textile contamination by anaerobes?
A. Kitt-Tarozzi
B. Endo C. Roux
D. Sabouraud's E. Ploskirev's

A patient has a necrotizing phlegmon of his lower extremity. A doctor suspects a gas gangrene. Microscopy reveals grampositive bacilli. In order to confirm the diagnosis further bacteriological tests should include inoculation of the material into the following nutrient medium:

A. Kitt-Tarozzi medium B. Endo agar
C. Meat-peptone agar D. Levine agar E. Milk-salt agar

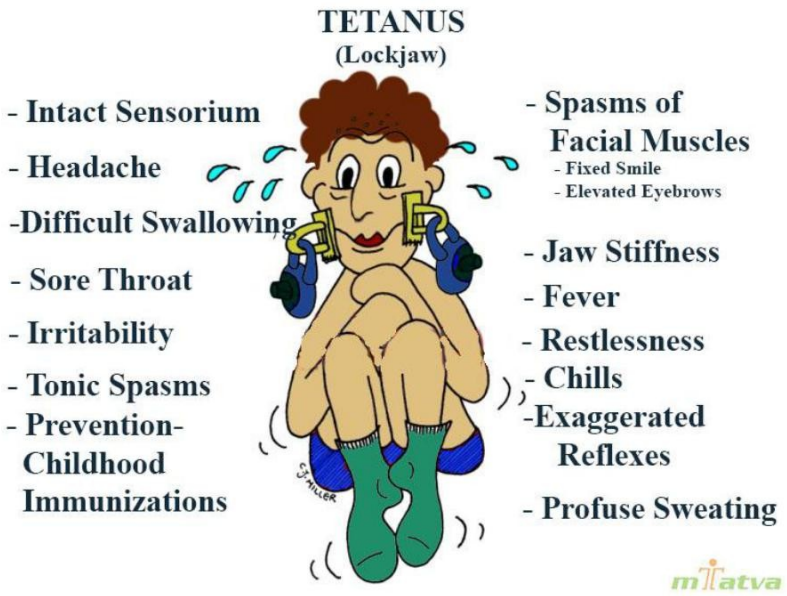
In 8 days after a surgery the patient develops tetatus. The surgeon suspects this condition to be caused by suture material contaminated by tetanus agent. The material is delivered to a bacteriological laboratory. What nutrient medium is required for primary inoculation of the suture material?

A. Sabouraud agar B. Endo agar
C. Hiss medium
D. Kitt-Tarozzi medium
E. Egg-yolk salt agar



A patient consulted a dentist about limited (restricted) mouth opening (trismus). He has a history of a stab wound of the lower extremity. What infection may cause these symptoms?

A. Tetanus B. Brucellosis C. Whooping cough
D. Wound anaerobic infection
E. Tularemia



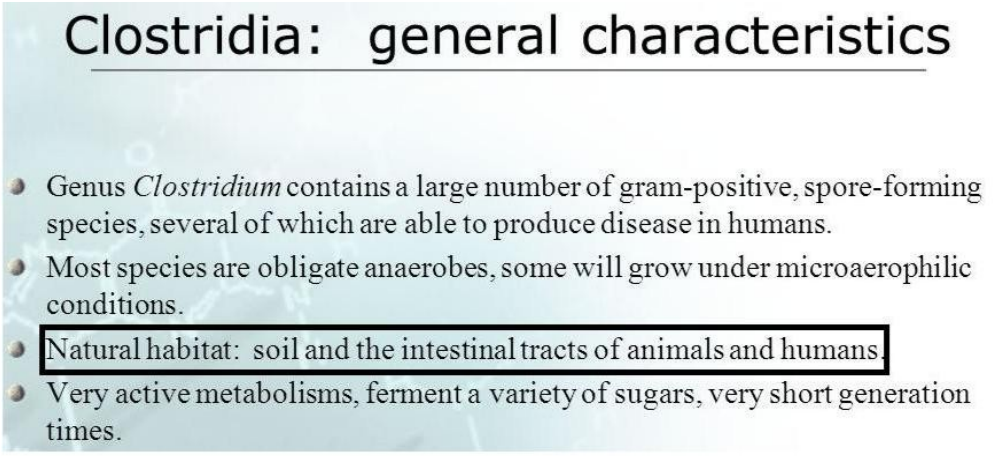
A patient with convulsive contractions of facial muscles was admitted to the infectious disease ward. From a scratch on his lower right extremity analysts isolated bacteria with terminal endospores that gave them drumstick appearance. What bacteria are compliant with given description?

A. Clostridium tetani
B. Clostridium botulinum C. Clostridium perfringens
D. Bacillus anthracis E. Bacillus cereus

A 47-year-old male patient consulted a dentist about difficult mouth opening (lockjaw or trismus). The patient has a history of a stab wound of the lower extremity. What infection can be manifested by these symptoms?

A. Tetanus B. Brucellosis C. Whooping cough
D. Anaerobic wound infection E. Tularemia

On the 15-th day after a minor trauma of the right foot a patient felt malaise, fatigability, irritability, headache, high body temperature, feeling of compression, tension and muscular twitching of his right crus. What disease can it be? **A. Tetanus** B. Anaerobic gas gangrene C. Erysipelas D. Acute thrombophlebitis E. Thromboembolism of popliteal artery	
A 65 y.o. woman complains of complicated mouth opening following foot trauma 10 days ago. Next day she ate with difficulties, there were muscles tension of back, the back of the head and abdomen. On the third day there was tension of all muscle groups, generalized convulsions every 10-15 min. What is the most probable diagnosis? **A. Tetanus** B. Tetania C. Meningoencephalitis D. Hemorrhagic stroke E. Epilepsy	
A 45-year-old patient complains of body temperature rise up to 40°C, general weakness, headache, painfulness and spastic muscle contractions around the wound in the shin. He received this wound 5 days ago when working in his garden. He requested no medical care back then. What wound infection can be suspected? **A. Tetanus** B. Anthrax C. Erysipelas D. Gram-positive E. Gram-negative	
A 45-year-old patient complains of fever up to 40°C, general weakness, headache and spasmodic contraction of muscles in the region of a shin wound. The patient got injured five days ago when tilling soil and didn't seek medical attention. What kind of wound infection can be suspected? **A. Tetanus** B. Anthrax C. Erysipelas D. Gram-positive E. Gram-negative	
A 38-year-old male complains of tonic tension of the masticatory muscles, so that he cannot open his mouth. 12 days before, he was bitten by an unknown dog. Objectively: there is pronounced tension and twitching of the masticatory muscles. What is the most likely diagnosis? **A. Tetanus** B. Rabies C. Hysteria D. Neuralgia E. Apyretic tetanus	
Soil microflora often includes the representatives of pathogenic microorganisms. Specify the diseases, whose causative agents may say viable in the soil for a long time: **A. Tetanus and gas anaerobic infection** B. Tuberculosis and mycobacterioses C. Colibacillosis and cholera D. Leptospirosis and plague E. Typhoid fever and dysentery	



What preventive medications should be injected to a patient with open maxillofacial trauma provided that he has never got prophylactic vaccination before?

A. Antitetanus immunoglobulin and anatoxin
B. Diphtheria, tetanus toxoids and pertussis vaccine and antibiotics C. Anticonvulsive drugs and anatoxin
D. Antitetanus serum and antibiotics E. Tetanus anatoxin and antibiotics

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Tetanus Prophylaxis

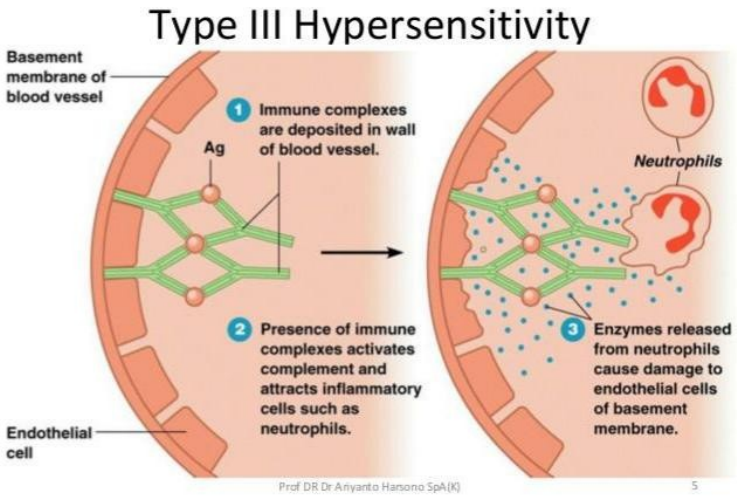
History of Tetanus Immunization (Doses)	Clean minor Wounds		All other Wounds	
	Td	TIG	Td	TIG
Uncertain	Yes	No	Yes	Yes
0 - 1	Yes	No	Yes	Yes
2	Yes	No	Yes	No[1]
3 or more	No[2]	No	No[3]	No

1. unless wound is more than 24 hours old
2. unless it has been more than 10 years since last dose
3. unless it has been more than 5 years since last dose

Td: tetanus and diphtheria toxoids for adults (> 7 y.o.)
DPT for children

Anti-tetanus gamma globulin is produced by hyperimmunization of donors with tetanus anatoxin. What class of immunoglobulins prevails in this preparation?
A. IgG B. IgA C. IgM D. IgE E. IgD

On the 8th day since the patient was inoculated with antitetanic serum because of dirty wound of his foot he has developed rising temperature up to ^{0}C , pains in the joints, rash and itch. The blood tests revealed leukopenia and thrombocytopenia. Allergic reaction of what type has developed in this case?
A. Anaphylactic
B. Cytotoxic C. Delayed type of hypersensitivity
D. Stimulating
E. Immunocomplex

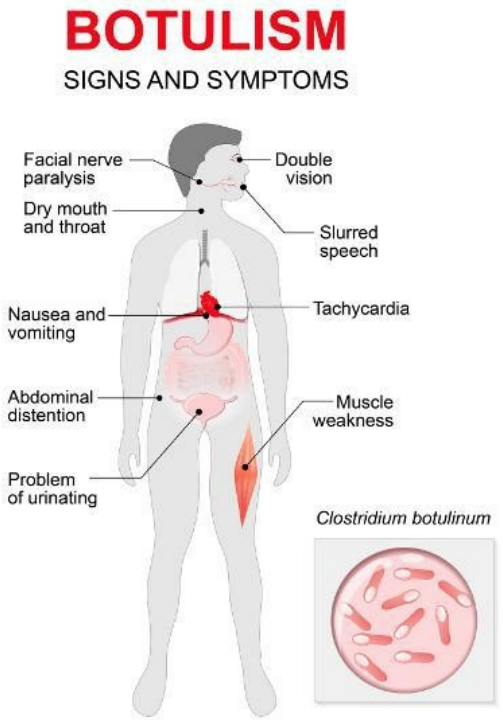


A 16-year-old adolescent was vaccinated with DTP. In eight days there was stiffness and pain in the joints, subfebrile temperature, urticarial skin eruption, enlargement of inguinal, cervical lymph nodes and spleen. What kind of allergic reaction is observed?
A. Immunocomplex B. Hypersensitivity of immediate type
C. Cytoxic D. Hypersensitivity of delayed type E. –

A child cut his leg with a piece of glass while playing and was brought to the clinic for the injection of tetanus toxoid. In order to prevent the development of anaphylactic shock the serum was administered by Bezredka method. What mechanism underlies this method of desensitization of the body? **A. Binding of IgE fixed to the mast cells** B. Blocking the mediator synthesis in the mast cells C. Stimulation of immune tolerance to the antigen D. Stimulation of the synthesis of antigenspecific IgG E. Binding of IgE receptors to the mast cells ***Specific desensitization by Bezredka.*** Desensitization is provided by little doses of the antigen, which do not cause severe reactions. The doses are introduced repeatedly after certain intervals of time, during which produced mediators get inactivated in the organism. The main dose of the antigen is introduced after antibodies binding.	
A 10-year-old child cut his leg with a piece of glass and was sent to a clinic for an anti-tetanus serum injection. In order to prevent the development of anaphylactic shock, the Besredka desensitization method was applied. What mechanism underlies this method? **A. Binding to IgE fixed to mast cells** B. Inhibited synthesis of mast cells mediators C. Stimulation of the immunological antigen tolerance D. Stimulation of antigen-specific IgG_2 synthesis E. Binding of IgE receptors on mast cells.	
A 10-year-old child cut his leg with a glass shard, when playing, and was delivered to outpatient department to receive anti-tetanus serum. To prevent development of anaphylactic shock the serum was introduced by Bezredka method. This method of organism hyposensitization is based on the following mechanism: A. Stimulation of antigen-specific IgG2 B. Stimulation of the immunological antigen tolerance C. Stabilization of mast cell membranes D. Blocking of mast cell mediators synthesis **E. Binding of mast cell-fixed IgE**	
Typical manifestations of food poisoning caused by C. botulinum are double vision, abnormal functioning of the swallowing and breathing. These symptoms develop as a result of: **A. Exotoxin effects** B. Enterotoxin effects C. Enterotoxic shock development D. Activation of adenylate cyclase E. Pathogen adhesion to the enterocyte receptors • **Botulinum toxin** is the most toxic substance known.	
Typical signs of food poisoning caused by C. botulinum include diplopia, swallowing and respiration disorders. These signs develop due to: A. Enterotoxic shock development B. Enterotoxin action C. Adenylate cyclase activation D. Adhesion of the agent to enterocyte receptors**E. Exotoxin action**	

After consumption some tinned meat a patient had diplopia, acute headache, deglutition disorder, hard breathing, muscle weakness. The diagnosis was botulism. What factor of pathogenicity are the clinic presentations of this disease connected with?

A. Exotoxin
B. Hemolysin
C. Endotoxin
D. Plasmocoagulase
E. Fibrinolysin



When examining a patient with a suspicion of food toxicoinfection, a doctor on duty has detected symptoms characteristic of botulism. The patient named the meals he had eaten the day before. What is the most probable cause of infection?

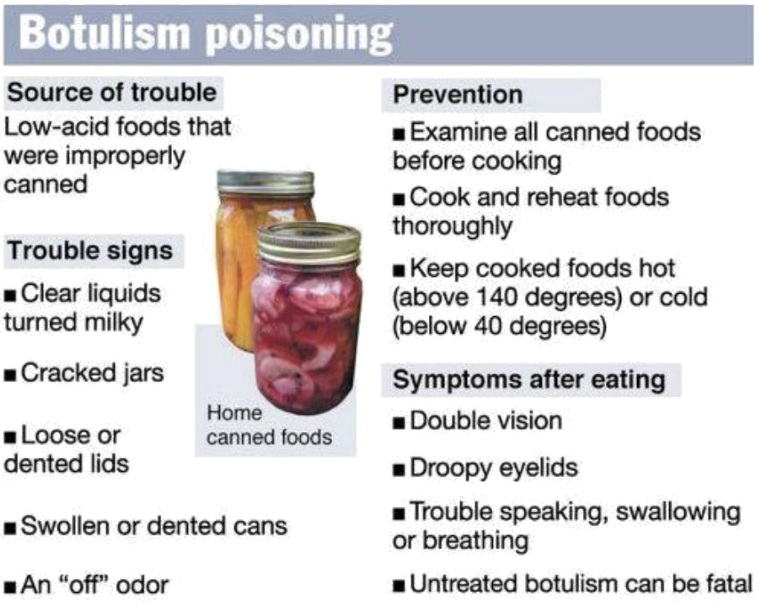
A. Homemade canned meat
B. Custard pastry from private bakery
C. Sour cream from local dairy factory
D. Strawberries from suburban vegetable garden
E. Fried eggs

When examining a patient presumptively diagnosed with food toxicoinfection, a doctor on duty has detected symptoms characteristic of botulism. The patient named the meals he ate the day before. What is the most probable cause of infection?

A. Homemade canned meat
B. Custard pastry from a private bakery
C. Sour cream from a local dairy factory
D. Strawberries from a suburban vegetable garden E. Fried eggs

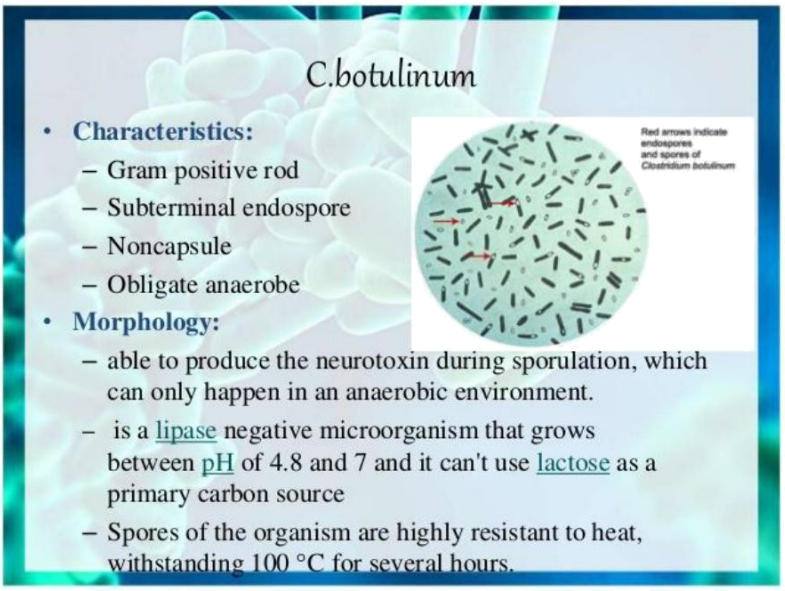
An outbreak of food poisoning was recorded in an urban settlement. The illness was diagnosed as botulism on the grounds of clinical presentations. What foodstuffs should be chosen for analysis in the first place in order to confirm the diagnosis?

A. Tinned food
B. Potatoes
C. Pasteurized milk
D. Boiled meat
E. Cabbage



A bacteriological laboratory studied the home-made dried fish which had caused a severe food poisoning. Microscopy of the culture grown on the Kitt-Tarozzi medium revealed microorganisms resembling a tennis racket. What is the most likely diagnosis?

A. Botulism
B. Salmonellosis
C. Cholera
D. Dysentery
E. Typhoid fever



A bacteriological laboratory has been investigating a sample of homemade dried fish that was the cause of severe food poisoning. Microscopy of the culture inoculated in Kitt-Tarozzi medium revealed microorganisms resembling a tennis racket. What diagnosis can be made?

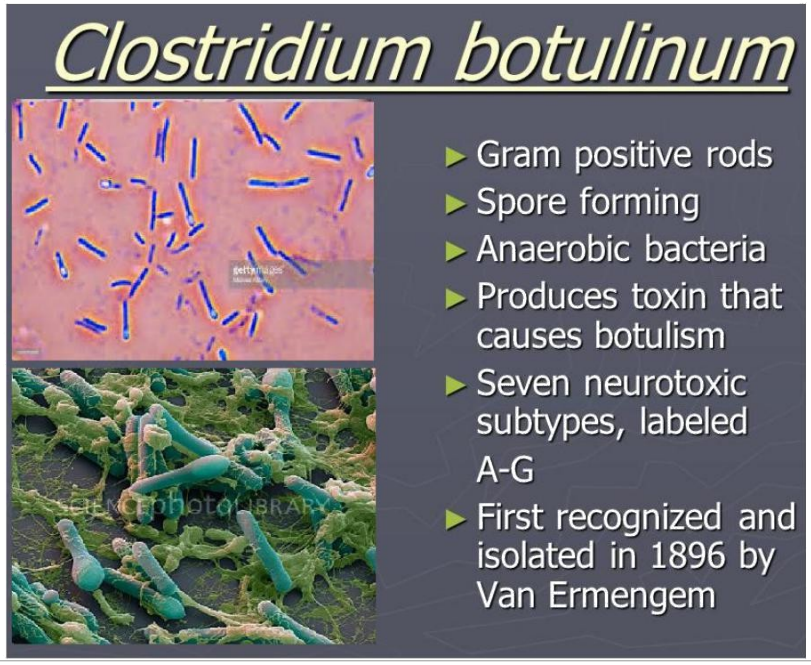
A. Botulism
B. Salmonellosis C. Cholera
D. Dysentery E. Typhoid fever

A bacteriological laboratory received a sample of dried fish from an outbreak of food poisoning. Inoculation of the sample on Kitt-Tarozzi medium revealed microorganisms resembling tennis racket. These microorganisms are causative agents of the following disease:

A. Botulism. B. Diphtheria. C. Typhoid fever.
D. Salmonellosis. E. Dysentery.

On microscopic examination of leftovers of the canned meat eaten by patient with severe food toxicoinfection the following was detected: gram-positive bacilli with subterminal staining defect and configuration alteration of bacilli generally resembling a tennis racket. What agent was detected?

A. C.botulinum
B. P.vulgaris C. E.coli
D. S.aureus
E. S.enteritidis

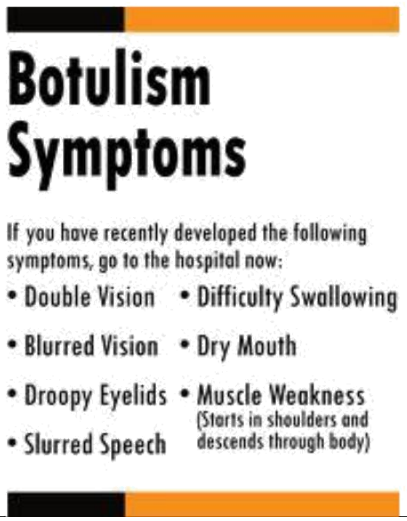


Botulism agent causes severe food toxicoinfection. Point out the most characteristic morphologic feature of botulism agent.
A. Gram-positive spore-forming bacilli with subterminal spore
B. Thick gram-positive non-sporeforming bacilli
C. Gram-positive spore-forming bacilli with terminal spore D. Thin mobile spore-forming bacilli with central spore E. Thick gram-positive non-sporeforming bacilli

The causative agent of botulism causes severe food poisoning. Specify the most characteristic morphological feature of botulism causative agent:
A. Gram-positive bacillus with subterminal spore
B. Thick gram-positive non-spore-forming bacillus C. Gram-positive bacillus with terminal spore
D. Thin mobile bacillus with central spore
E. Thick gram-positive bacillus without spores and flagella

The patient 25 y.o. was admitted on the 1st day of the disease with complaints of double vision in the eyes, heavy breathing. The day before the patient ate homemade mushrooms. On objective examination: paleness, widened pupils, disorder of swallowing, bradycardia, constipation are marked. What is the diagnosis?

A. Botulism B. Yersiniosis C. Leptospirosis
D. Salmonellosis, gastrointestinal form E. Lambliasis



In the morning a patient had nausea, abdominal discomfort, single vomiting, dry mouth. In the evening, the patient presented with the increasing general weakness, double vision, difficult swallowing of solid food. Objectively: ptosis, mydriasis, anisocoria, absence of gag and pharyngeal reflex, dry mucous membranes. The previous evening the patient had dinner with canned food and alcohol. What is the presumptive diagnosis?

A. Botulism

B. Poliomyelitis C. Food toxicoinfection

D. Acute ischemic stroke E. Intoxication with unknown poison

A 12-year-old boy presents with nausea, frequent repeated vomiting that first occurred after eating canned vegetables. Objectively: the patient has dry mucous membranes, muscular hypotonia, anisocoria, mydriasis, dysphagia and dysarthria. What is the most likely diagnosis?

A. Botulism

B. Shigellosis C. Salmonellosis

D. Cholera E. Yersiniosis

Patient with vomiting, dizziness, sensation of dubble vision, difficult swallowing was admitted to the hospital. Doctor suspects botulism. What diagnostic methods should be used for diagnosis approving?

A. - B. Bacteriological, mycological **C. Biological test, bacteriological**

D. Allergic test, serological E. Protozoological, microscopical

C. botulinum

Laboratory Diagnosis

Culture of *C. botulinum* in patient feces and implicated food.

Detection of toxin in feces or serum from the patient and in leftover food: i.p. injection of mice ⟶ die rapidly. Toxin may also be detected by other serological tests.

Typing of toxin is done by neutralization with specific antitoxin in mice.

Treatment

Stomach lavage and high enemas.

Trivalent (A, B, E) antitoxin administered intravenously promptly.

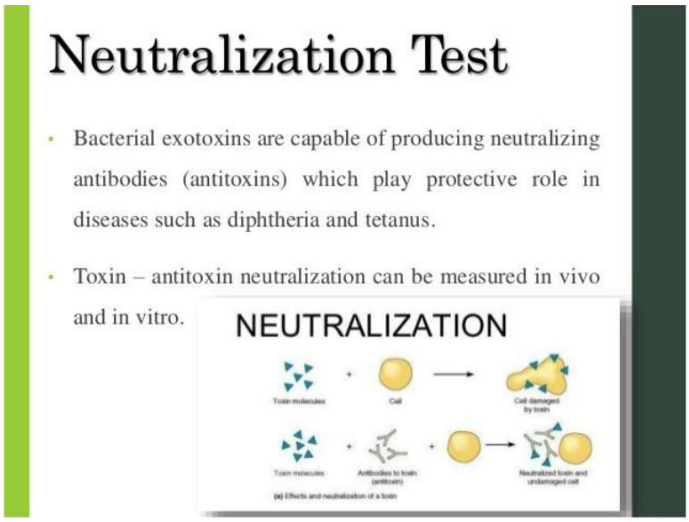
Adequate ventilation by mechanical respirator.

A patient has been hospitalized with provisional diagnosis of botulism. What serological reaction should be used to reveal botulinum toxin?

A. Neutralization reaction

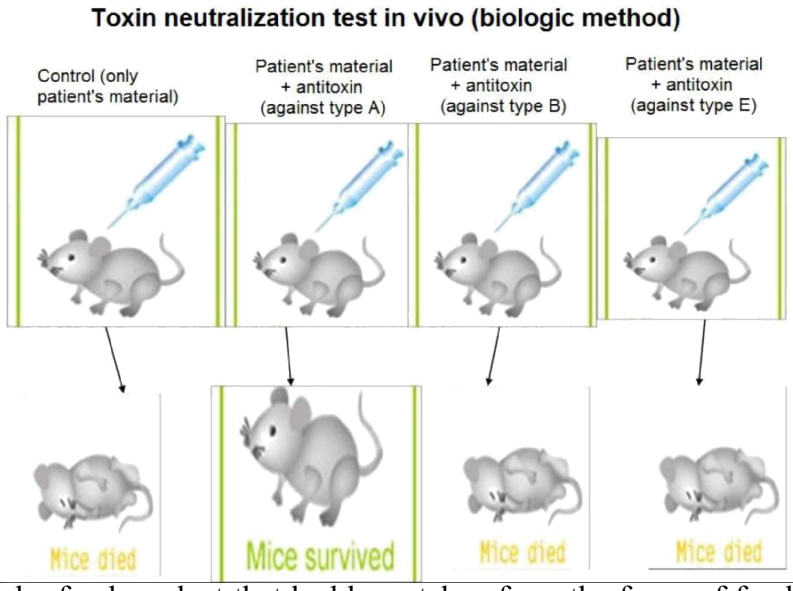
B. Agglutination reaction

C. Bordet-Gengou test D. Precipitation reaction E. Immunofluorescence test



Researchers of a bacteriological laboratory examine tinned meat for botulinic toxin. For this purpose a group of mice was injected with an extract of the material under examination and antitoxic antibotulinic serum of A, B, E types. A control group of mice was injected with the same extract but without antibotulinic serum. What serological reaction was applied?

A. Neutralization
B. Precipitation C. Complement binding
D. Double immune diffusion E. Opsonocytopha-gic



A laboratory received a food product that had been taken from the focus of food poisoning and presumably contained botulinum toxin. To identify the type of toxin, the neutralization reaction must be performed on white mice. What biological product is used in this reaction?

A. Antitoxic serum B. Normal serum C. Antibacterial serum
D. Diagnosticum E. Allergen

Bacteriological laboratory examines canned meat whether it contains botulinum toxin. For this purpose an extract of test specimen and antitoxic antibotulinic serum of A, B, E types were introduced to a group of mice under examination; a control group of mice got the extract without antibotulinic serum. What serological reaction was applied?

A. Neutralization B. Precipitation C. Complement binding
D. Double immune diffusion E. Opsonophagocytic

A bacteriological laboratory tests canned meat for botulinum toxin. Extract of the tested material and ABE botulinum antitoxin serum was introduced into the test group of mice; a control group of mice received the extract without antibotulinic serum. What serological reaction was used?

A. Neutralization B. Precipitation C. Complement binding
D. Double immunodiffusion E. Opsonophagocytic

Toxin Antitoxin Neutralization Tests

- In neutralization reactions, the harmful effects of a bacterial toxin are eliminated by a specific antibody (antitoxin).
- An antitoxin is an antibody produced in response to a bacterial toxin that neutralizes the bacterial toxin and therefore no harmful effects are produced.

A 12 year old girl complains about abrupt weakness, nausea, dizziness, vision impairment. The day before she ate home-made stockfish, beef. Examination revealed skin pallor, a scratch on the left knee, dryness of mucous membranes of oral pharynx, bilateral ptosis, mydriatic pupils. The girl is unable to read a simple text (mist over the eyes). What therapy would be the most adequate in this case?

A. Parenteral introduction of polyvalent antibotulinic serum B. Parenteral disintoxication
C. Parenteral introduction of antibiotics D. Gastric lavage
E. Parenteral introduction of antitetanus serum

A patient diagnosed with botulism has been prescribed antibotulinic serum for treatment. What immunity will be formed in the given patient?

A. Antitoxic passive immunity B. Infection immunity
C. Antitoxic active immunity D. Antimicrobic active immunity
E. Antimicrobic passive immunity

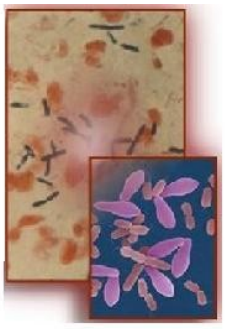
Passive Immunization

- **Is by injection of preformed antibodies of known specificity** that:
  - are obtained from human (**homologous**) or animal (**heterologous**) source (**heterologous antibodies** are produced by hyperimmunization of horses or cows)
  - induce **antitoxic**, **antibacterial** or **antiviral** immunity
  - produce **short-term protection**
  - are used for post-exposure prophylaxis and treatment of infectious diseases (=**immunotherapy**)
  - **can be a life-saving treatment**

A patient has food poisoning. Laboratory analysis revealed a culture of anaerobic gram-positive spore-forming bacteria. What is the most likely kind of the isolated causative agent?

A. C. perfringens
B. Proteus vulgaris C. P. mirabilis
D. Vibrio parahemolyticus E. Esherichia coli

Clostridium perfringens



Cl. perfringens causes two distinct diseases, gas gangrene and food poisoning, depending on the route of entry into the body

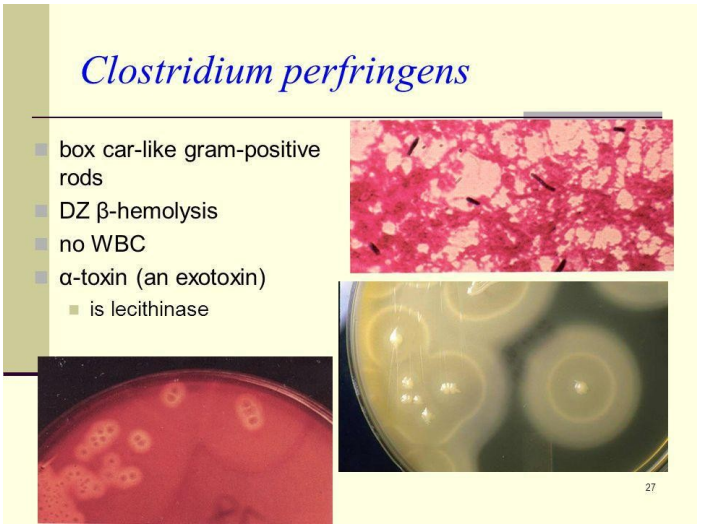
Disease: Gas Gangrene

Transmission:

- Spores are located in the soil; vegetative cells are members of the normal flora of the colon and vagina
- Gas gangrene is associated with war wounds, automobile and motorcycle accidents, and septic abortions

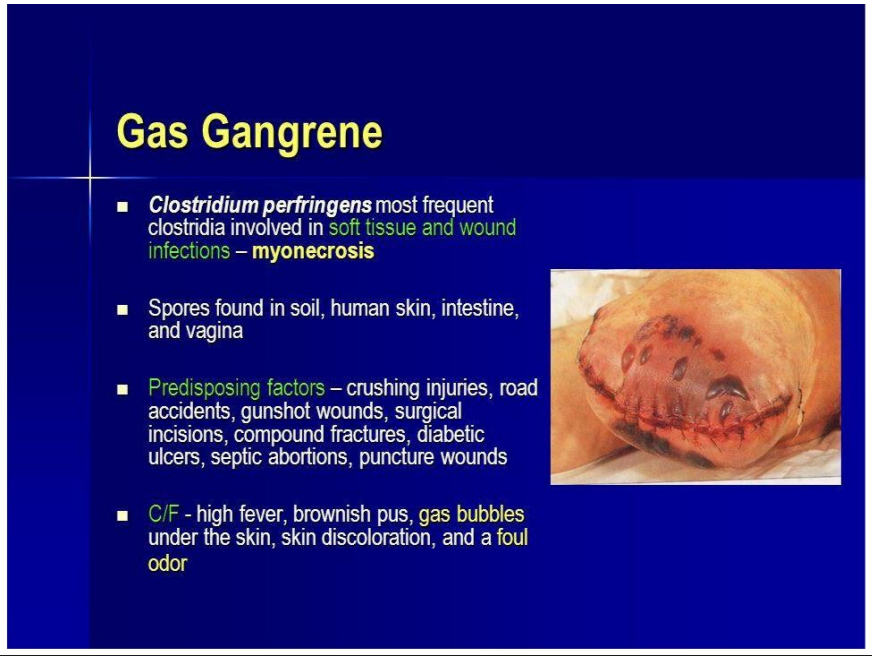
Gram-positive spore-forming bacilli were extracted in anoxic environment from the patient's wound contaminated with soil. Cultivation on a blood-glucose agar resulted in growth of the colonies surrounded with hemolysis zone. What agent was extracted from the wound?

A. Clostridium perfringens
B. Clostridium botulinum
C.Staphylococcus aureus
D.Pseudomonas aeruginosa
E. Esherichia coli



On the 5th day after a surgery for colon injury a patient complains of bursting pain in the postoperative wound, weakness, drowsiness, headache, fever up to ^{o}C. Objectively: the skin around the wound is swollen, there is gas crepitation. The wound discharges are scarce foul-smelling, of dark-gray color. What is the most likely diagnosis?

A. Anaerobic clostridial wound infection B. Abscess
C. Postoperative wound infection D. Erysipelas E. Phlegmon



4 days after a patient received a gunshot wound of the middle third of the thigh soft tissues his condition suddenly began deteriorating. There are complaints of bursting pain in the wound; pain increases during the last 12 hours. Edema of skin and hypodermic tissue quickly grows. Body temperature is 38,2^{o}C, heart rate is 102/min. The wound edges gape, are dull in color; the muscles, viable as of day before, now protrude into the wound, look boiled, are dull in color, have dirty-grey coating and fall apart when being held with forceps. What infection has developed in the wound?

A. Anaerobic B. Aerobic gram-negative C. Putrid
D. Aerobic gram-positive E. Diphtheria of wound

A laboratory received a material from a patient's wound. Preliminary diagnosis is gaseous gangrene. What microbiological method should be applied to determine species of causative agent?

A. Bacteriological
B. Allergic
C. Bacterioscopic
D. Serological E. RIA

Laboratory Diagnosis of gas gangrene

- **Specimen:** Histological specimen or wound exudates
  - Specimens of exudates should be taken from the deeper areas of the wound
- **Microscopical examination (Gram, Spore stain etc)**
  - Gram-positive bacilli with blunt (not sharp) ends occurring singly or in pairs, non motile, capsulated & sporulated
  - The spore is large, oval, central to sub-terminal & non bulging (non swelling)
  - Spores are rarely observed
- **Culture:** Anaerobically at 37C
  - **On Robertson's cooked meat medium** → blackening of meat will observed with the production of H2S and NH3
  - **On blood agar** → double zones of β-hemolytic colonies

The following spore-forming bacteria can be preserved in soil over a long period of time: clostridia of tetanus, botulism, anaerobic gas infection. Name the way with which these microorganisms get into soil.

A. With feces B. With urine C. With water D. With industrial waters E. With expectoration

- Most commonly caused by ***Clostridium perfringens***
  - Gram-positive, spore-forming rod
  - produce gas gangrene, a necrotizing infection of skeletal muscle or clostridial myonecrosis
  - secretes toxin and tissue damaging enzymes
- Transmitted by contamination of injured tissue by spores from soil or bowel microbiota

A patient consulted a stomatologist about purulent inflammation of his gums. What drug will be the most effective if it is suspected that a causative agent is an anaerobe?

A. Metronidazole
B. Gentamicin C. Oxacillin
D. Co-trimoxazole E. -

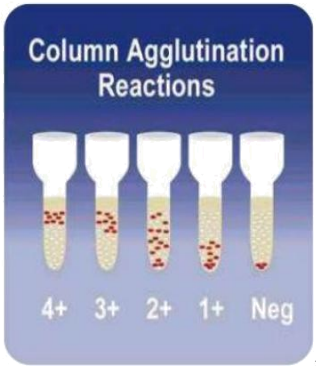
Bordetella

For serological diagnostics of the whooping cough it was made large-scale reaction with parapertussis and pertussis diagnosticums. At the bottom of the test-tubes with diagnosticum of Bordetella parapertussis grain-like sediment formed. What antibodies have this reaction revealed?

Bacteriolysins
Agglutinins
Antitoxins
Opsonins
Precipitins

Agglutination

- **Agglutinins**
  - Antibodies that produce such reactions
- **Involves two-step process:**
  - Sensitization or initial binding
  - Lattice formation or formation of large aggregates



A large-scale reaction with parapertussis and pertussis diagnosticums was made in order to make serological diagnostics of the whooping cough. At the bottom of the test-tubes with diagnosticum of Bordetella parapertussis a granular sediment formed. What antibodies did this reaction reveal?

A. Agglutinins

B. Precipitins C. Opsonins

D. Bacteriolysins E. Antitoxins

A patient has been suffering from elevated temperature and attacks of typical cough for 10 days. Doctor administered inoculation of mucus from the patient's nasopharynx on the agar. What microorganism is presumed?

A. Pertussis bacillus

B. Pfeiffer's bacillus C. Listeria

D. Klebsiella E. Staphylococcus

A patient has severe catarrhal symptoms. Material growth on Bordet-Gengou agar showed mercury-drop like colonies. Examination of the blood smears revealed some small ovoid gram-negative bacilli sized 1-3 microns. What microorganisms were isolated?

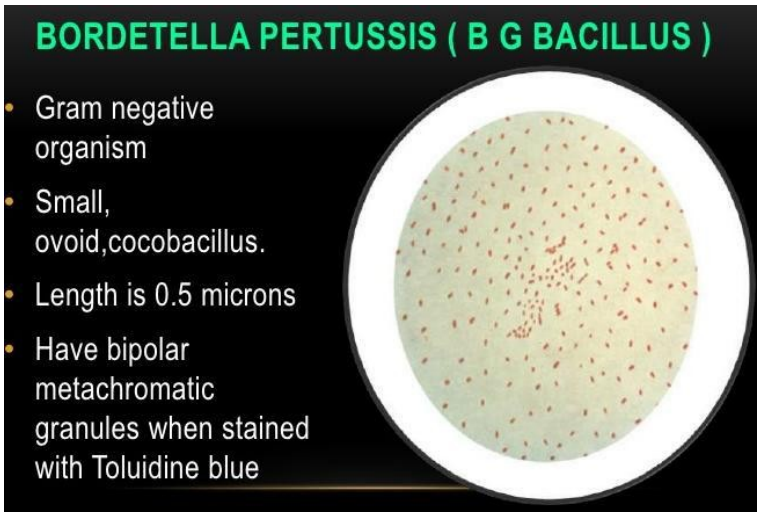
A. Bordetella

B. Corynebacteria

C. Mycobacteria

D. Meningococcus

E. Brucella



During bacteriological examination of sputum of a child with choking cough and fever there were revealed glossy smooth colonies growing on casein-charcoal agar and reminding of mercury drops. Microscopic examination revealed short Gram-negative bacteria. What microorganism was secured from the sputum?

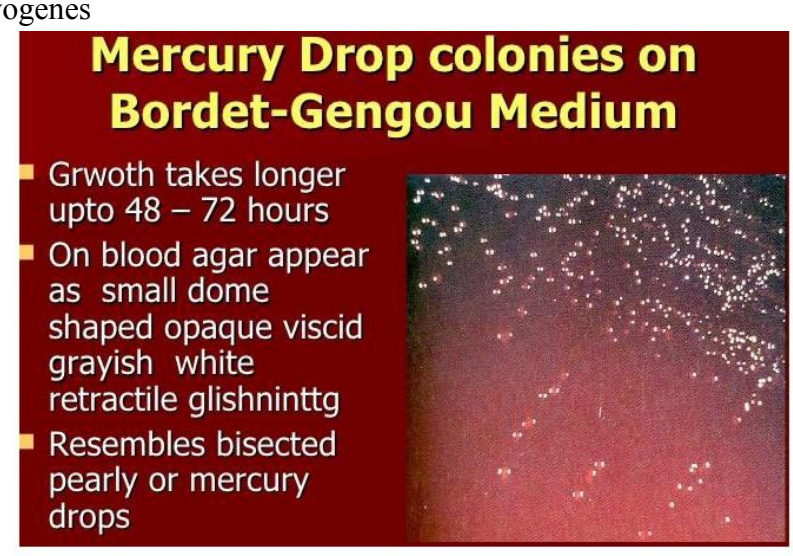
A. Bordetella pertussis

B. Haemophylus influenzae

C. Corynebacterium dyphtheriae

D. neumoniaa neumonia

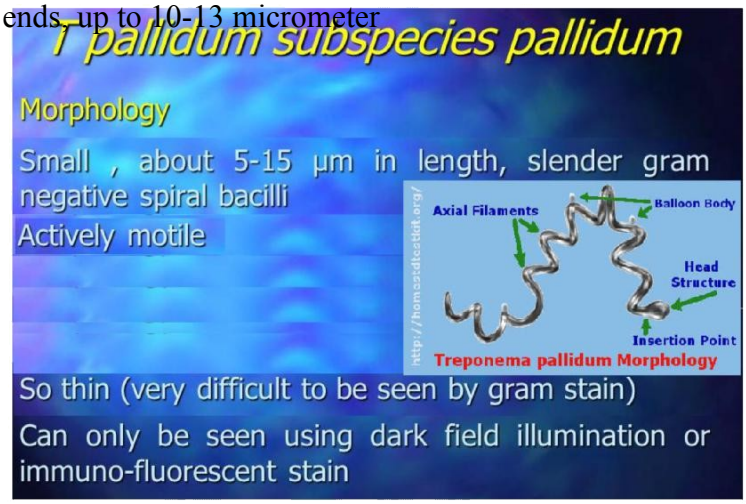
E. Streptococcus pyogenes



Treponema

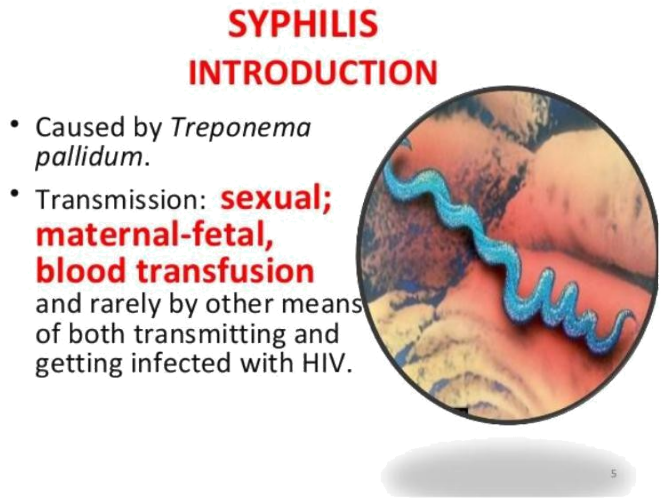
5. While studying a microslide obtained from the punctuate of a regional lymph node and stained by Romanovsky-Giemsa method a physician revealed some light pink thin microorganisms with 12-14 regular spiral coils and pointed ends, up to 10-13 micrometer long. This might be the causative agent of the following disease:

Syphilis
Trypanosomiasis
Leptospirosis
Relapsing fever
Leishmaniasis



In the micropreparation made from patient's regional lymph node punctate and stained according to Romanovsky-Giemsa method, the doctor found out thin microorganisms with 12-14 equal ringlets and pale-pink sharp pointes 10-13 mkm in length. The pathogen of what disease is it about?

A. Leishmaniasis
B. Leptospirosis
C. Surra
D. Syphilis
E. Relapsing fever

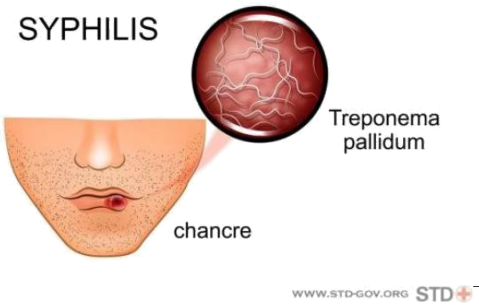


3. In a microslide of the patient's regional lymph node stained with Giemsa method a doctor detected thin microorganisms with 12-14 uniform tendrils with pointed tips, 10-13 micrometers in length, pale pink in color. In this case they can be identified as infectious agents of the following disease:

A. Syphilis B. Trypanosomiasis
C. Leptospirosis D. Relapsing fever E. Leishmaniasis

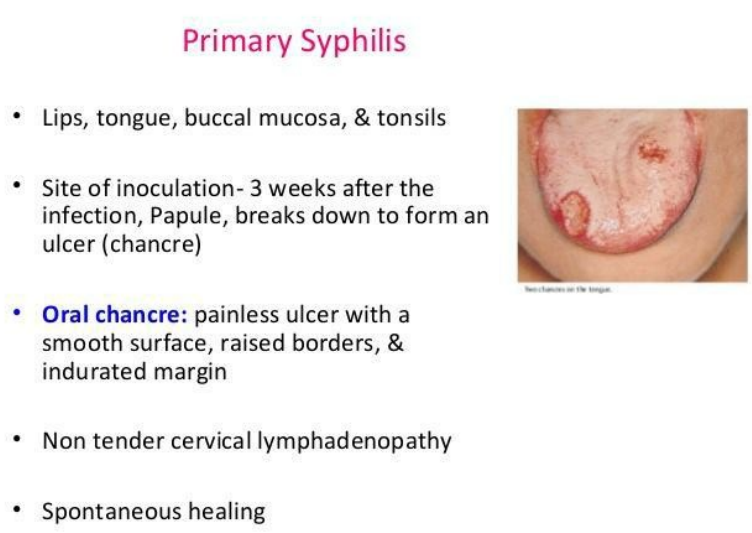
Bacterioscopic examination of chancre material revealed some mobile, long, convoluted microorganisms with 8-12 regular coils. These features are typical for:

A. Treponema
B. Borrellia C.
Leptospira D.
Vibrios
E. Campylobacter



An 18-year-old patient has enlarged inguinal lymph nodes, they are painless, thickened on palpation. In the area of genital mucous membrane there is a small-sized ulcer with thickened edges and "laquer"bottom of greyish colour. What is the most probable diagnosis?

A. Syphilis
B. Tuberculosis
C. Lepra
D. Trophic ulcer
E. Gonorrhea



A 14-year-old patient was diagnosed with Hutchinson's triad: barrel-shaped incisors, parenchymatous keratitis and deafness. The revealed presentations are consistent with the following disease:

A. Syphilis
B. Toxoplasmosis
C. Lepra
D. Tuberculosis
E. –

A dentist examined a 5-year-old boy and found him to have a saddle nose, high-arched palate, natiform skull. Both front maxillary incisors are peg-shaped and have a crescent-shaped notch in the cutting edge. Lymph nodes are not changed. What is the provisional diagnosis?

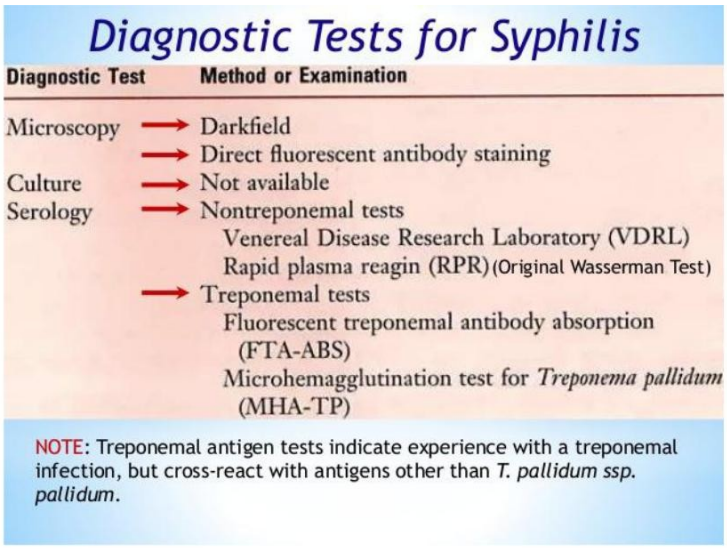
A. Late congenital syphilis
B. Early congenital syphilis C. Tertiary syphilis
D. Fluorosis E. Rickettsiosis

8. During examination of the patient's oral cavity a dentist noticed deformation of the teeth and a crescent indentation of the upper right incisor. The teeth are undersized, barrel-shaped – tooth cervix is wider than its edge. The patient uses a hearing aid, suffers from visual impairment. What type of syphilis affects teeth in such way?

A. Primary B. Early congenital
C. Neurosyphilis D. Secondary **E. Late congenital**

A 32 y.o. man is divorced, has an irregular sexual life. He complains of falling out of hair in the region of eyelashes, eyebrows, scalp. Objectively: diffuse alopecia is observed, eyebrow margin is absent, eyelashes are stair-like (Pinkus' sign). What examination should be carried out first of all?

A. Wasserman test,
IFT B. T. pallidum Immobilization Test (TPI)
C. Detection of the nasal mucous membrane for M. leprae
D. Consultation of neuropathist
E. CBC



A patient who suffered form syphilis took a course of antibiotic therapy and fully recovered. Some time later he was infected again with Treponema pallidum. What form of infection is it?

A. Reinfection
B. Recurrence C. Superinfection
D. Relapse
E. Complication

Reinfection: Subsequent infection by same organism in a host (after recovery).

A patient had been provisionally diagnosed with syphilis. A laboratory assistant took the blood serum for an immunologic test based on the detection of antibodies preventing the movement of treponemas and causing their death. What reaction was used for the diagnosis?

A. Immobilization
B. Complement binding
C. Agglutination
D. Precipitation
E. Neutralization

Treponema Pallidum
Immobilization - TPI

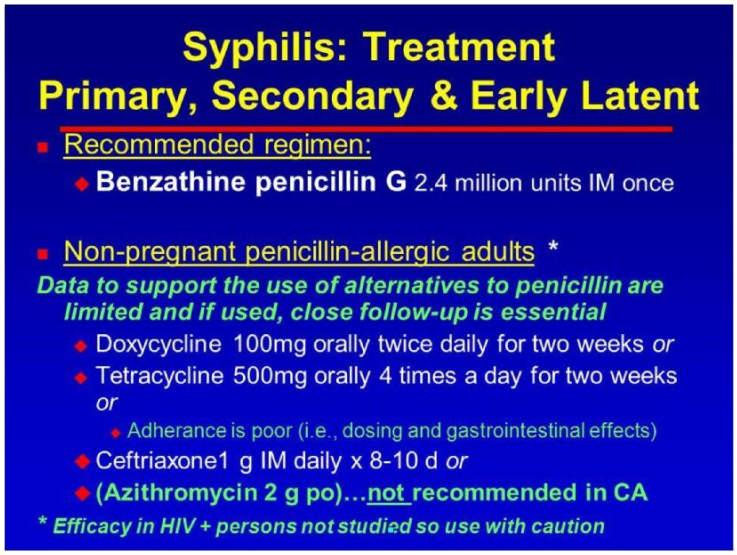
- An antibody present in the serum of a syphilitic patient, in the presence of complement, causes the immobilization of actively motile *Treponema pallidum* obtained from testes of a rabbit infected with syphilis.

A 32-year-old patient undergoing dental examination was found to have some rash-like lesions resembling secondary syphilis in the oral cavity. The patient was referred for the serological study with the purpose of diagnosis confirmation. In order to detect antibodies in the serum, living Treponema were used as diagnosticum. What serological test was performed?

A. Immobilization
B. Passive HA C. PT
D. CFT E. Nt

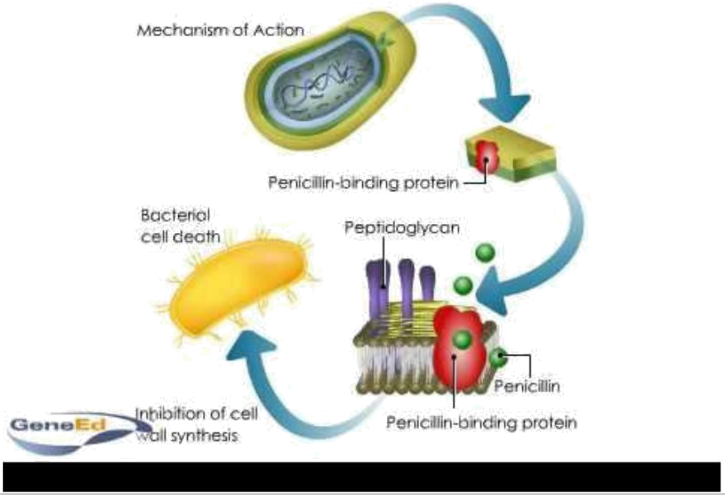
A patient suffering from syphilis was prescribed a drug the action of which based upon disturbed generation of murein leading to death of the causative agent. What drug is it?

A. Benzylpenicillin sodium salt
B. Bijochinol
C. Ciprofloxacin
D. Azithromycin
E. Doxycycline



A 19 year old woman suffers from primary syphilis. Doctor administered her complex therapy that includes benzylpenicillin sodium salt. What is the mechanism of action of this drug?

A. It blocks synthesis of peptidoglycan of microbial membrane B. It blocks s[redacted]
C. It blocks thiol enzymes
D. It blocks RNA synthesis
E. It blocks DNA synthesis



Leptospira

A man was admitted to the hospital on the 5th day of disease that manifested itself by jaundice, muscle aching, chill, nose bleedings. In course of laboratory diagnostics a bacteriologist performed darkfield microscopy of the patient's blood drop. Name a causative agent of this disease:

A. Leptospira interrogans
B. Borrelia dutlonii
Calymmatobacterium granulomatis
Bartonella bacilloformis
Rickettsia mooseri

A patient was admitted to the hospital on the 7th day of the disease with complaints of high temperature, headache, pain in the muscles, especially in calf muscles. Dermal integuments and scleras are icteric. There is hemorrhagic rash on the skin. Urine is bloody. The patient was fishing two weeks ago. What is the most likely diagnosis?

A. LeptospirosisB. YersiniosisC. Salmonellosis
D. Brucellosis E. Trichinellosis

A 33 year old patient was delivered to the infectious diseases department on the 7-th day of disease. He complained about great weakness, high temperature, pain in the lumbar area and leg muscles, icteritiousness, dark color of urine, headache. The acute disease started with chill, body temperature rise up to 40°C, headache, pain in the lumbar area and sural muscles. Icterus turned up on the 4th day, nasal and scleral haemorrhages came on the 5th day. Fever has lasted for 6 days. Diuresis – 200 ml. What is the most probable diagnosis?

A. Leptospirosis B. Typhoid fever
C. Virus A hepatitis D. Sepsis E. Yersiniosis

A 25-year-old patient was delivered to an infectious diseases unit on the 3rd day of illness with complaints of headache, pain in lumbar spine and gastrocnemius muscles, high fever, chill. Objectively: condition of moderate severity. Scleras are icteric. Pharynx is hyperemic. Tongue is dry with dry brown coating. Abdomen is distended. Liver is enlarged by 2 cm. Spleen is not enlarged. Palpation of muscles, especially gastrocnemius muscles, is painful. Urine is dark in color. Stool is normal in color. The most likely diagnosis is:

A. LeptospirosisB. Infectious mononucleosis
C. Viral hepatitis A D. Malaria E. Yersiniosis

A man died from an acute infectious disease accompanied by fever, jaundice, haemorrhagic rash on the skin and mucous membranes as well as by acute renal insufficiency. Histological examination of renal tissue (stained by Romanovsky-Giemsa method) revealed some convoluted bacteria looking like C and S letters. What bacteria were revealed?

A. Leptospira
B. Treponema
C. Spirilla
D. Borrelia
E. Campilobacteria

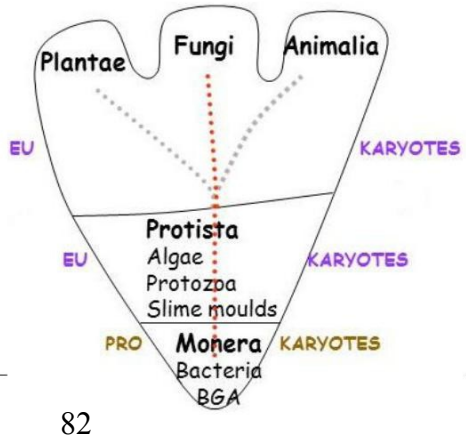
Leptospira interrogans

- Morphology – stained with Giemsa/ silver impregnation, hooked ends resemble umbrella handles
- Culture – media (semi solid/ liquid) enriched with rabbit serum - Fletcher's medium
- Pathogenicity – causes Weil' disease (leptospirosis)

Protozoa

0 Etiological factors for the infectious diseases are often microorganisms with various ultrastructure. Which of the following microorganism groups relates to the eukaryotes?

Protozoa
Viruses
Viroids
Prions
Scotobacteria



In order to prevent wound infection associated with surgical procedures a patient was given a synthetic antiprotozoan drug with a high activity against Helicobacter pylori. Specify this drug:

A. Metronidazole
B. Doxycycline hydrochloride C. Chingamin
D. Acyclovir
E. Isoniazid

About metronidazole

Type of medicine	Antimicrobial agent
Used for	To treat or prevent infection
Also called	Flagyl®
Available as	Tablets, oral liquid medicine, suppositories, and injection

Metronidazole is used to treat a wide variety of infections caused by anaerobic bacteria and micro-organisms called protozoa. These types of organisms often cause infections in areas of the body such as the gums, pelvic cavity and abdomen because they do not need oxygen to grow and multiply. It is commonly prescribed to treat an infection called bacterial vaginosis. It is also prescribed before gynaecological surgery and surgery on the intestines, to prevent infection from developing. Metronidazole can safely be taken by people who are allergic to penicillin.

Metronidazole is also used to get rid of *Helicobacter pylori* (a bacterial infection often associated with stomach ulcers).

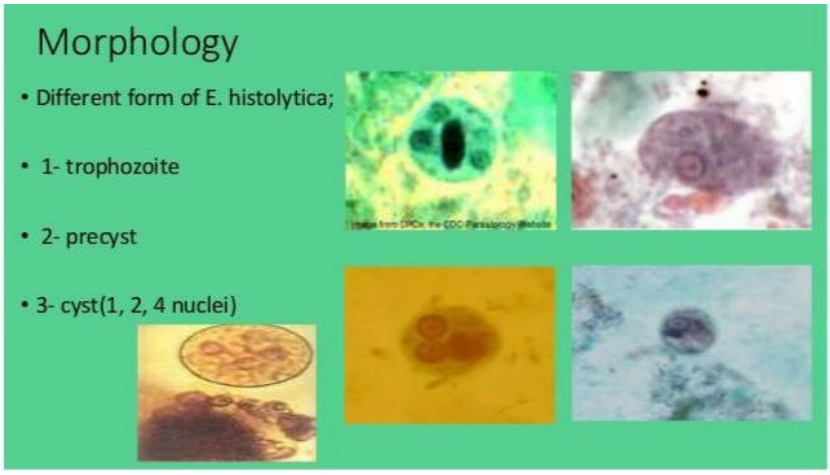
A dentist has detected symptoms of parodontosis in a patient. What antiprotozoal drug should be prescribed?

A. Metronidazole B. Levamisole C. Griseofulvin
D. Mykoseptin E. Furazolidone

Entamoeba

Patients with similar complaints applied to the doctor: weakness, pain in the intestines, disorder of GIT. Examination of the feces revealed that one patient with four nucleus cysts should be hospitalized immediately. For what protozoa are such cysts typical?

A. Lamblia **B. Dysenteric amoeba**
C. Balantidium D. Trichomonas
E. Intestinal amoeba



Several patients with similar complaints came to the doctor. They all present with weakness, pain in the intestines, indigestion. Feces analysis revealed the need for urgent hospitalization of the patient, who had microbial cysts with four nuclei detected in his samples. Such cysts are characteristic of the following protozoon:

A. Entamoeba histolytica.
B. Entamoeba coli.
C. Balantidium.
D. Trichomonad.
E. Lamblia.

A patient complains of frequent bowel movements and stool with blood admixtures ("raspberry jelly" stool). Microscopic examination revealed large mononuclear cells with absorbed red blood cells. What protozoon is this morphological structure typical for?

A. Entamoeba histolytica
B. Giardia lamblia
C. Campylobacter jejuni
D. Toxoplasma gondii
E. Balantidium coli

Clinical presentation:

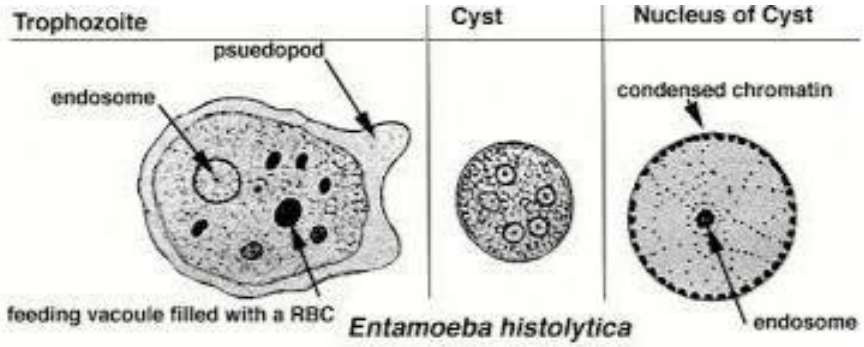
- **Intestinal amoebiasis:**
  - **Acute invasive colitis**; flask-shaped ulcers: dysentery; bloody mucoid diarrhea.
  - **Chronic infection**
    Due to repeated infection or insufficient treatment; inflammation results in granuloma formation or fibrosis with scar formation (later).
- **Extra intestinal Amoebiasis:**

Amoebic liver abscess, pleuro-pulmonary amebiasis, amoebic abscess of the brain.

Treatment: Metronidazole.

A 40-year-old patient presents with abdominal pain, frequent loose stools with mucus and blood. Stool analysis revealed vegetative forms of some protozoa sized 30-40 microns, with short pseudopodia, containing large amounts of phagocytosed erythrocytes. What protozoan disease does the patient have?

A. Amebiasis B.
Leishmaniasis C.
Trichomoniasis
D. Giardiasis
E. Toxoplasmosis



A patient complains of acute spastic abdominal pain, frequent urge to defecate, liquid bloody feces with mucus. Laboratory analysis of fecal smear revealed inconstant in shape organisms with erythrocyte. What is the most likely diagnosis?

A. Amebiasis.

B. Lambliasis. C. Schistosomiasis.

D. Intestinal trichomoniasis. E. Balantidiasis.

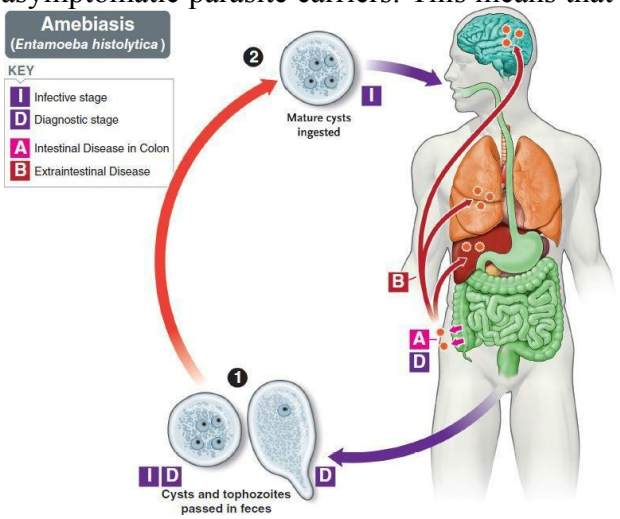
A patient with suspected liver abscess was admitted to the surgical department. The patient had been staying for a long time on business in one of African countries and fell repeatedly ill with acute gastrointestinal disorders. What protozoal disease may the patient be now ill with?

A. Amebiasis B. Trypanosomosis

C. Leishmaniasis D. Malaria E. Toxoplasmosis

Among public catering workers examined by doctors of sanitary and epidemiologic station often occur asymptomatic parasite carriers. This means that a healthy person carries cysts that infect other people. Such parasitizing is possible for the following causative agent:

A. Dysenteric amoeba B. Malarial plasmodium C. Intestinal trichomonad D. Dermatotropic leishmania E. Viscerotropic leishmania



When doctors of a sanitary and epidemiologic institution examine employees of public catering establishments they often reveal asymptomatic parasitosis, that is when a healthy person is a carrier of cysts that infect other people. What causative agent can parasitize in such a way?

A. Dysenteric amoeba B. Malarial plasmodium

C. Enteral trichomonad D. Dermatotropic leishmania

E. Viscerotropic leishmania

Microscopy of dental plaque revealed unicellular organisms. Their cytoplasm had two distinct layers, barely visible core, wide pseudopodia. The patient is most likely to have:

A. Entamoeba gingivalis B. Entamoeba histolytica

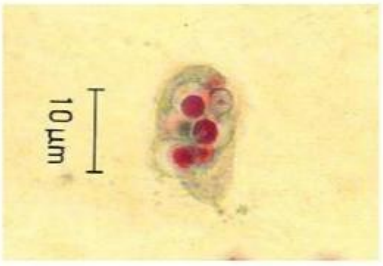
C. Trichomonas tenax D. Lamblia E. Entamoeba coli

Entamoeba gingivalis

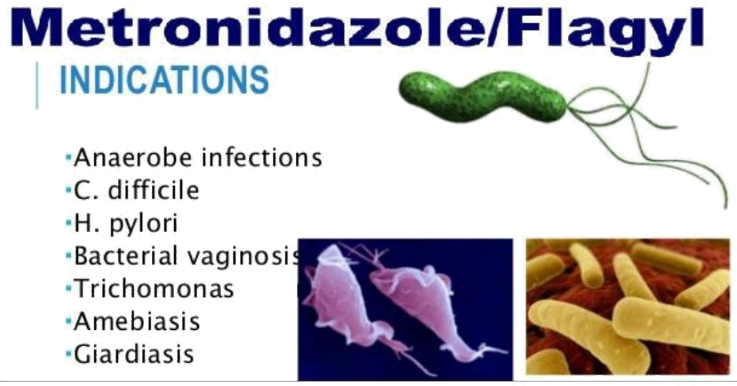
Hosts: Prevalence is from 50 to 95%.

Stage:

Trophozoite lives on the surface of teeth and gums. Parasites feed on epithelial cells of the mouth, bacteria, food debris, and other cells available to them.

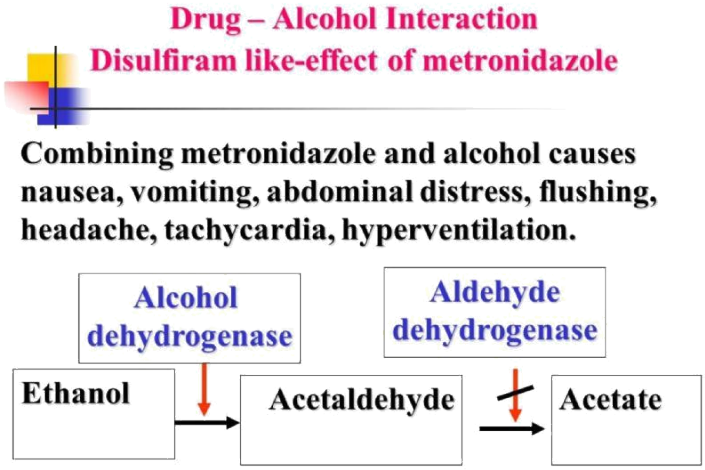


Organisms are more common in persons with pyorrhea (gum disease) but they are not the cause of the condition.

Carious cavities of a 29-year-old patient contain the parasitic protozoa. It is established that they relate to the Sarcodina class. Specify these single-celled organisms: **A. Entamoeba gingivalis** B. Entamoeba histolutica C. Entamoeba coli D. Amoeba proteus E. Lamblia intestinalis	
A 52-year-old patient has the following diagnosis: systemic amebiasis with involvment of intestines, liver, lungs. What drug should be prescribed? **A. Metronidazole** B. Quiniofone C. Tetracycline D. Quingamine E. Enteroseptol	
Systemic amebiasis with involvment of intestines, liver, lungs was diagnosed in a 52-year-old patient. What drug should be prescribed? A. Quiniofone B. Enteroseptol **C. Metronidazole** D. Tetracycline E. Quingamine 	
What drug is more advisable for the patient with amebic dysentery? **A. Metronidazole** B. Pyrantel C. Levamisole D. Bicillin-5 E. Benzylpenicillin sodium salt (Penicillin G sodium salt)	
A 30-year-old patient complains about having abdominal pain and diarrhea for five days; body temperature rise up to 37, 5^{o}C along with chills. The day before a patient had been in a forest and drunk from an open water reservoir. Laboratory analyses enabled to make the following diagnosis: amebic dysentery. What is the drug of choice for its treatment? **A. Metronidazole** B. Furazolidonum C. Levomycetin D. Phthalazol E. Emetine hydrochloride	
A 30 year old patient consulted a doctor about having diarrhea and stomach aches for 5 days, temperature rise up to 37,5^{0}C with chills. The day before the patient was in a forest and drank some water from an open pond. He was diagnosed with amebic dysentery that was bacteriologically confirmed. Name the medication for treatment of this disease: **A. Metronidazole** B. Furasolidone C. Chloramphenicol D. Phthalazole E. Emethine hydrochloride	
A 30 y.o. patient is diagnosed with amebic dysentery. This diagnosis was bacteriologically confirmed. Name the preparation for its treatment: **A. Metronidazole** B. Mebendazole C. Itrakonazole D. Furacillin E. Acyclovir	

A patient ill with amebiasis was prescribed a certain drug. The use of alcohol together with this drug is contraindicated because the drug inhibits metabolism of ethyl alcohol. What drug is it?

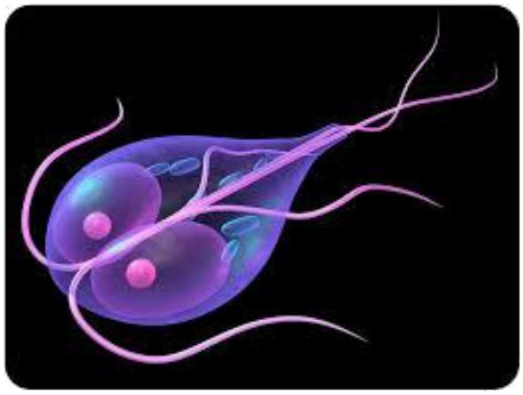
A. Metronidazole
B. Reserpine
C. Clonidine
D. Diazepam
E. Aminazine



Gardia lamblia

Examination of duodenal contents revealed some pyriform protozoa with twin nuclei and four pairs of flagella. There were two supporting filaments between the nuclei and a suctorial disc on the ventral side. What representative of protozoa was revealed in this patient?

A. Lamblia B. Toxoplasma
C. Leishmania
D. Intestinal trichomonad
E. Trypanosome

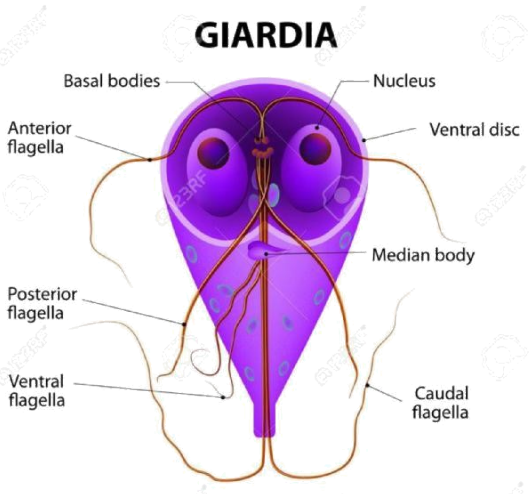


Examination of the duodenal contents revealed some pear-shaped protozoa with two nuclei and four pairs of flagella. The organisms had also two axostyles between the nuclei and a ventral adhesive disc. What protozoan representative was found in the patient?

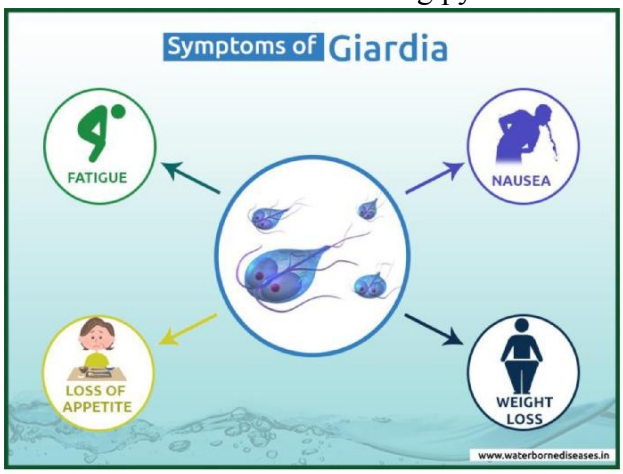
A. Lamblia B. Toxoplasma C. Leishmania
D. Intestinal trichomonad E. Trypanosome

A duodenal content smear of a patient with indigestion contains protozoa 10-mcm large. They have piriform bodies, 4 pairs of filaments, two symmetrically located nuclei in the broadened part of body. What kind of the lowest organisms is it?

A. Lamblia
B. Dysentery ameba
C. Trichomonas D. Intestinal ameba E. Balantidium

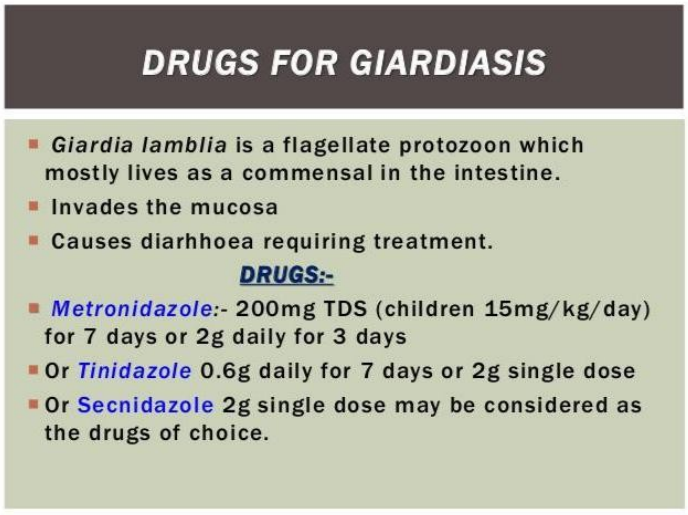


A 13 year old child complains about poor appetite, pain in the right subcostal area. Microscopical examination of duodenal contents revealed big pyriform cells with two nuclei. What microorganism was revealed? A. Lamblia
B. Trichomonas
C. Amoeba
D. Trypanosoma
E. Toxoplasma



A female patient consulted a doctor about a sense of epigastric discomfort, nausea and anorexia. A duodenal content analysis revealed lamblia. What drug should be prescribed?
Metronidazole
Chingamin
Rifampicin
Isoniazid
Acyclovir

A patient consulted a doctor about bowels disfunction. The doctor established symptoms of duodenitis and enteritis. Laboratory examination helped to make the following diagnosis: lambliosis. What medication should be administered?
A. Metronidazole
B. Erythromycin
C. Monomycin D. Chingamin
E. Tetracycline

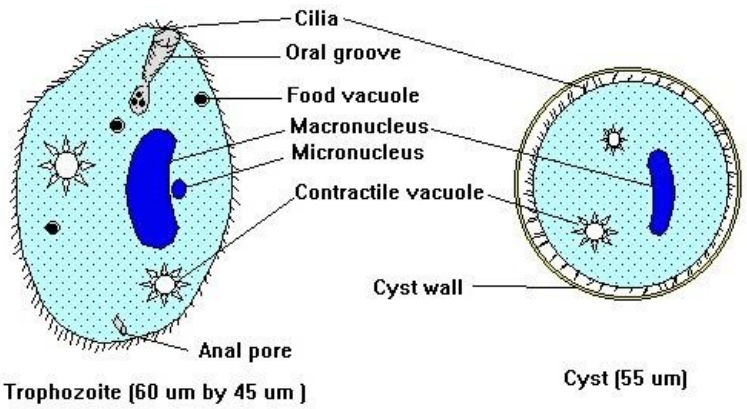


Balantidium

Sanitary assessment of a pond, where the children from a recreation summer camp take their swims, detected there oval cysts 50-60 micron in diameter, with 2 nuclei visible in their cytoplasm (macronucleus and micronucleus). What protozoa do these cysts belong to?
A. Toxoplasma B. Amoeba
C. Balantidium
D. Lamblia E. Euglena

A patient working at a pig farm complains about paroxysmal abdominal pain, liquid feces with admixtures of mucus and blood, headache, weakness, fever. Examination of large intestine revealed ulcers from 1 mm up to several cm large, feces contained oval unicellular organisms with cilia. What disease should be suspected?

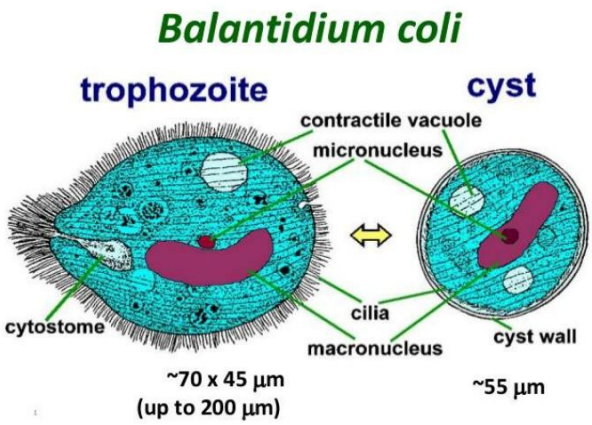
A. Balantidiasis
B. Amebiasis
C. Toxoplasmosis
D. Lambliasis
E. Trichomoniasis



Balantidium coli

Slime, blood and protozoa 30-200 microns of length have been revealed in a man's feces. The body is covered with cilias and has correct oval form with a little bit narrowed forward and wide round shaped back end. On the forward end a mouth is visible. In cytoplasm there are two nucleuses and two short vacuoles. For whom are the described attributes typical?

A. Balantidium
B. Lamblia
C. Dysenteric amoeba
D. Trichomonas
E. Intestinal amoeba



Leishmania

Parents with ill child came to the infectionist. They worked in one of the Asian countries for a long time. Child has eathy colored skin, loss of appetite, laxity, enlarged liver, spleen, peripheral glands. What protozoan illness can this child have?

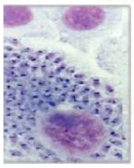
A. Amebiasis
B. Balantidiasis
C. Visceral leishmaniasis D. Lambliasis E. Toxoplasmosis

Symptoms of Visceral Leishmaniasis

- Enlargement of the spleen
- Enlargement of the liver
- Night sweats
- Severe temperature or irregular bouts of fever that can last for weeks
- Bleeding
- Blackening of the skin
- Scaly skin
- Dark and ashen skin
- Cough
- Weakness
- Substantial weight loss

A patient has roundish ulcers on his face, inflammation and enlargement of lymph nodes. These symptoms turned up as a result of mosquito bites. Laboratory examination of discharge from the ulcers revealed unicellular aflagellar organisms. What is the most probable diagnosis?

A. Dermatotropic leishmaniasis
B. Toxoplasmosis
C. Scabies
D. Trypanosomiasis
E. Myasis



Compare between

• Diagnosis of Cutaneous and Visceral leishmaniasis.

Detection of amastigotes from edge of the ulcer	Detection of amastigotes in blood, liver, spleen, lymph node, bone marrow
Montenegro test positive in 95% of cases	Montenegro test positive after successful treatment

• Ulcer produced by

L.tropica
Dry, single
chronic
In urban areas

L.major
Wet, multiple
acute
In rural areas

A group of Ukrainian tourists returning from Samarqand was bringing with them gerbils. During examination in customs office ulcers were detected on the skin of the animals. What protozoa is the most likely to cause the disease in the animals, if mosquitoes are the carriers?

A. Leishmania tropica major
B. Balantidium coli
C. P. falciparum D.
T. cruzi
E. Toxoplasma gondii

LEISHMANIASIS

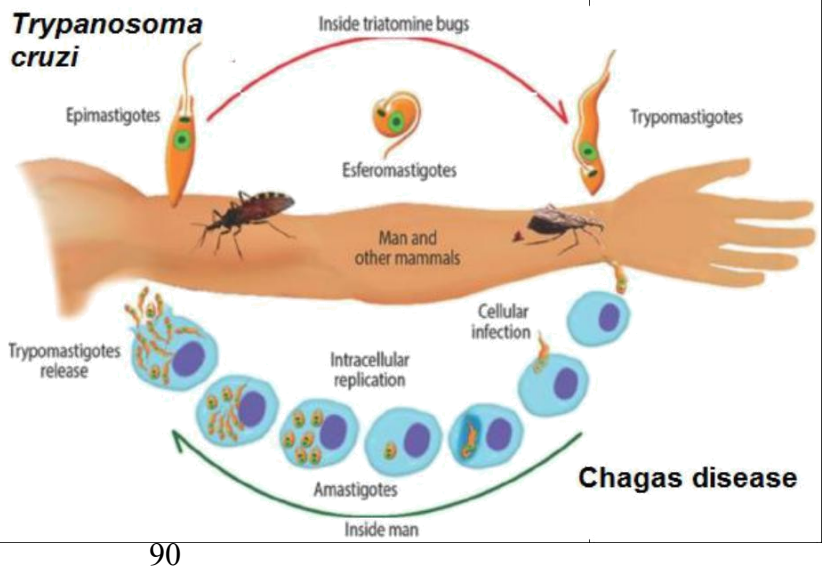
species of Leishmania :

- ***L. donovani***
  causes visceral leishmaniasis
  (Kala-azar, black disease, dumdum fever);
- ***L. tropica***
  (*L.t.major, L.t. minor* and *L.ethiopica*) cause cutaneous leishmaniasis
  (oriental sore, Delhi ulcer, Aleppo,or Baghdad boil).
- ***L. braziliensis***
  (*L. mexicana* is a etiologic agents of mucocutaneous leishmaniasis (espundia, Uta, chiclero ulcer).

Trypanosoma

While examining a blood smear taken form a patient and stained by Romanovsky's method a doctor revealed some protozoa and diagnozed the patient with Chagas disease. What protozoan is the causative agent of this disease?

A. Trypanosoma cruzi
B. Toxoplasma gondii C.
Leishmania donovani D.
Leishmania tropica E.
Trypanosoma brucei



In the South and Central America there can be found a species of trypanosomes that is the causative agent of Chagas disease. What animal is the infection carrier specific to this disease?
A. Gnat B. Mosquito C. Tsetse fly D. Cockroach **E. Triatomine bug**

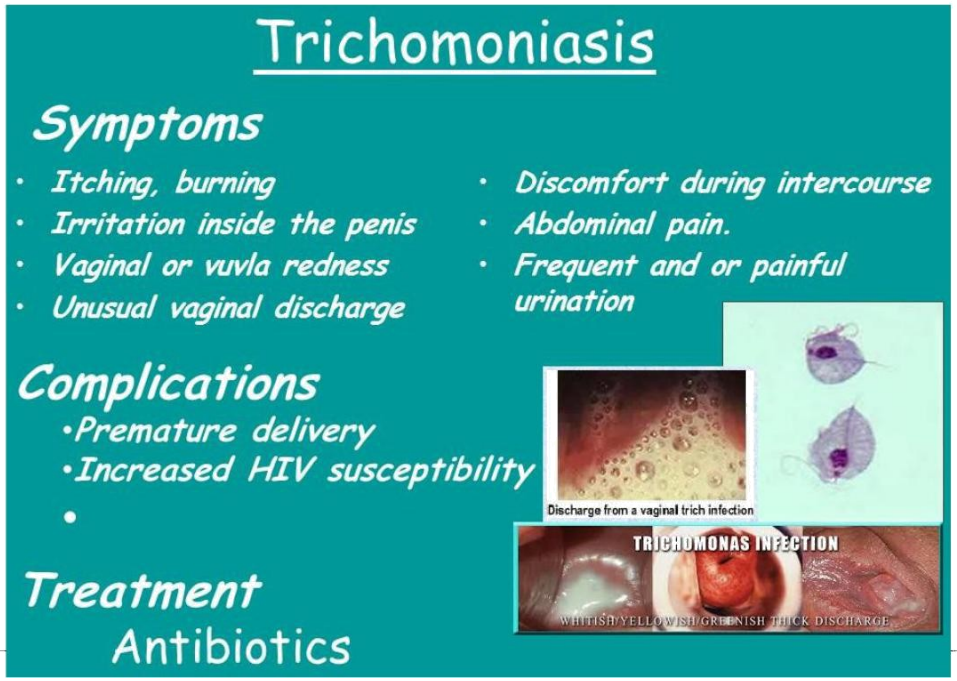
A businessman came to India from South America. On examination the physician found that the patient was suffering from sleeping-sickness. What was the way of invasion?
A. As a result of bug's bites
B. As a result of mosquito's bites
C. With contaminated fruits and vegetables
D. Through dirty hands E. After contact with a sick dogs

Trichomonas

A patient has symptoms of inflammation of urogenital tracts. Examination of a vaginal smear revealed big monocellular, pear-shaped organisms with the pointed spike at the posterior end of body, big nucleus and undulating membrane. What protozoa were found in the smear?

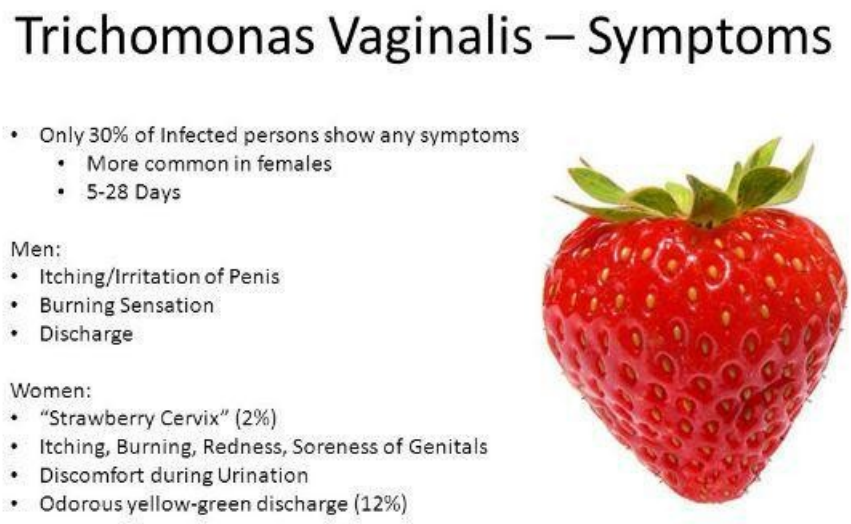
A. Trichomonas vaginalis
B. Trichomonas hominis C. Trichomonas buccalis D. Trypanosoma gambiense E. Lamblia intestinalis

A gynaecologist was examining a patient and revealed symptoms of genital tract inflammation. A smear from vagina contains pyriform protozoa with a spine, flagella at their front; there is also an undulating membrane. What disease can be suspected?
A. Urogenital trichomoniasis
B. Lambliasis C. Intestinal trichomoniasis
D. Toxoplasmosis E. Balantidiasis



A female patient has symptoms of inflammation of urogenital tracts. A smear from the vaginal mucous membrane contained big unicellular pyriform organisms with a sharp spike on the back end of their bodies; big nucleus and undulating membrane. What protozoa were revealed in the smear?

A. Trichomonas vaginalis
B. Trichomonas hominis C.
Trichomonas buccalis D.
Trypanosoma gambiense E.
Lamblia intestinalis

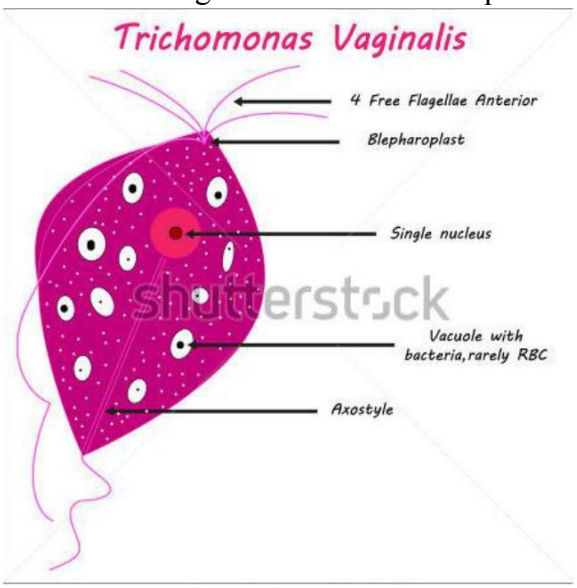


Microscopical examination of discharges from the gums of a patient ill with paradontosis revealed some protozoan pear-shaped organisms 6-13 micrometer long. The parasite has one nucleus and undulating membrane, there are four flagella at the front of its body. What protozoan were found?

A. Trichomonads
B. Leishmania C. Amoebae
D. Balantidia E. Lamblia

A smear from frothy and purulent vaginal discharges of a 42 y.o. woman was stained by Romanovsky-Giemsa method. Its analysis revealed some microorganisms of flagellates class. What microorganism were the most probably revealed?

A. Trichomonas vaginalis
B. Leishmania donovani C.
Trypanosoma gambiense
D. Trihomonas hominis
E. Lamblia intestinalis



A 42-year-old female has foamy purulent vaginal discharges. The smear stained by Romanovsky-Giemsa's method has been found to include flagellated bacteria. What is the most likely microorganism that has been found by the doctor?

A. Trichomonas vaginalis

B. Trypanosoma gambiense

C. Leishmania donovani D.

Trihomonas hominis

E. Lamblia intestinalis

A patient consulted a dentist about itching and burning in the oral cavity; high temperature. The patient was diagnosed with trichomonal gingivostomatitis. What drug should be chosen for his treatment?

A. Metronidazole

B. Ampicillin

C. Gentamicin sulfate

D. Nystatin

E. Doxycycline hydrochloride

Plasmodium

As an example of specific human parasites one can name Plasmodium falciparum, human pinworm and some others. The source of parasite invasion is always a human. Such specific human parasites cause the diseases that are called:

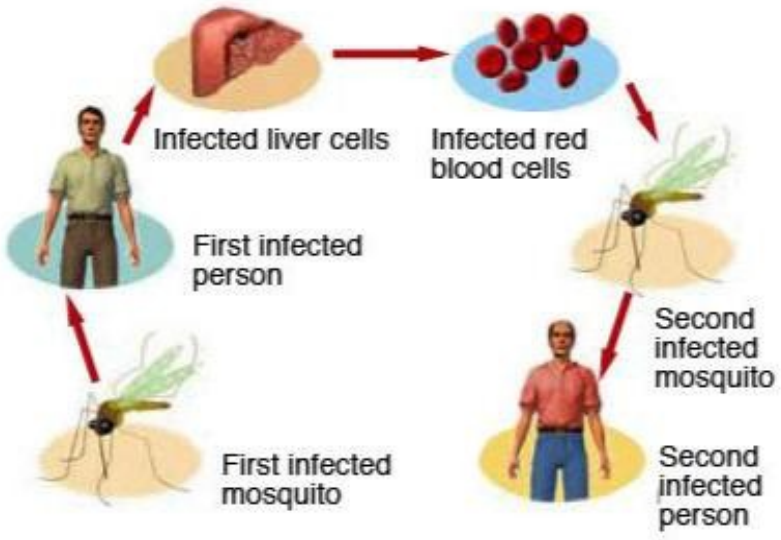
A. Anthroponoses

B. Zoonoses

C. Anthropozoonoses

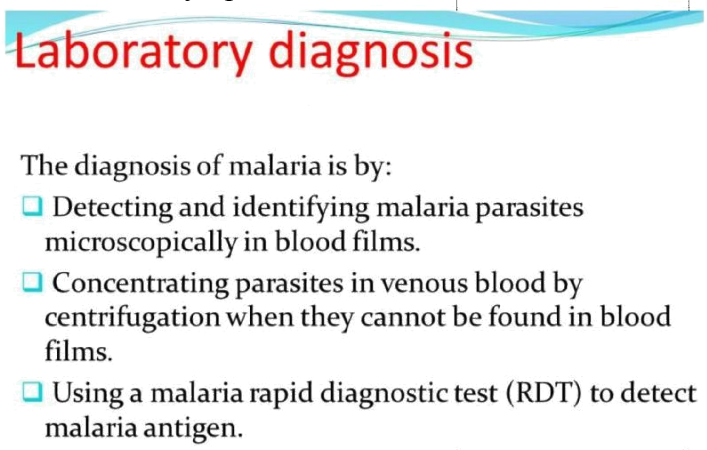
D. Infections

E. Multifactorial Diseases



A patient who has recently come from an endemic area presents with elevated body temperature, headache, chills, malaise, that is with the symptoms which are typical for a common cold. What laboratory tests are necessary to confirm or to refute the diagnosis of malaria?

A. Microscopy of blood smears B. Study of lymph node punctate C. Urinalysis
D. Study of cerebrospinal fluid
E. Microscopy of bone marrow punctuate



According to the data of WHO, for about 250 mln of Earth population fall ill with malaria. This disease is mostly spread in tropical and subtropical regions. Range of its spread falls into the area of the following mosquitoes:

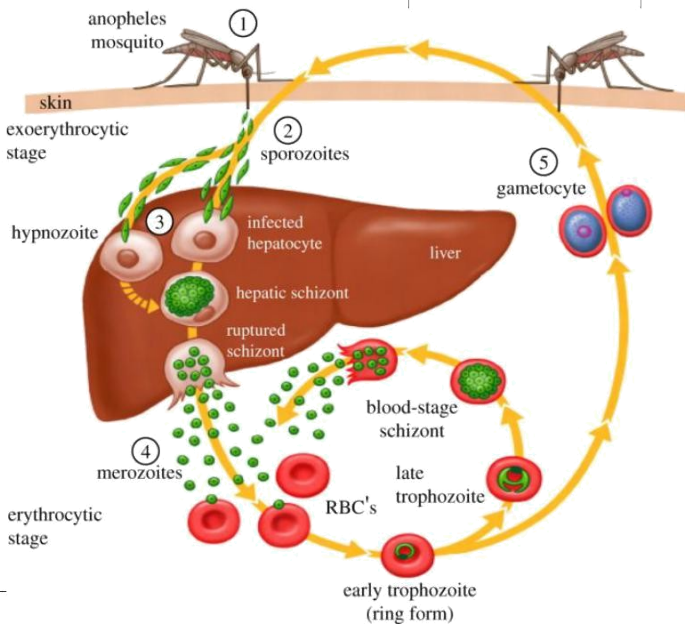
A. Anopheles
B. Culex
C. Aedes
D. Mansonia
E. Culiseta

A patient has been brought to the hospital with the complaints of headache, pain in left hypochondrium. He has been ill for 1,5 weeks. The sudden illness began with the increase of body temperature up to 39, 90C. In 3 hours the temperature decreased and hydropoiesis began. The attacks repeat rhythmically in hours. The patient had visited one an African country. The doctors have suspected malaria. What method of laboratory diagnostics is necessary to use?

A. Blood examination B. Immunological tests
C. Stool examination D. Urine examination E. -

A journalist's body temperature has sharply increased in the morning three weeks after his mission in India, it was accompanied with shivering and bad headache. A few hours later the temperature decreased. The attacks began to repeat in a day. He was diagnosed with tropical malaria. What stage of development of Plasmodium is infective for anopheles-female?

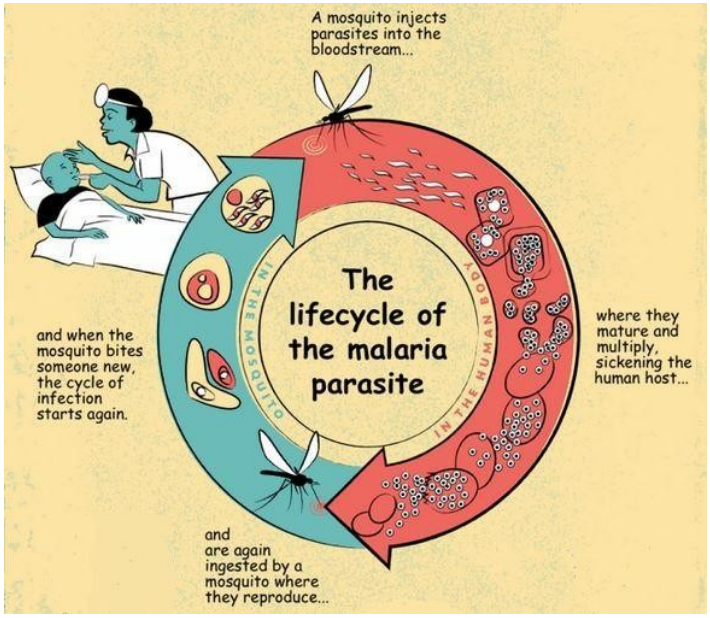
A. Gametocytes
B. Shizontes C. Merozoites D. Microgamete E. Sporozoites



A 47-year-old patient came to see a doctor on the 7th day of disease. The disease developed very fast: after the chill body temperature rose to 40°C and lasted up to 7 hours, then dropped abruptly, which caused profuse sweat. There were three such attacks occur in once in two days. Two days ago the patient arrived from Africa. Objectively: pale skin, subicteric sclera, significantly enlarged liver and spleen. What is the cause of fever attacks in this disease?

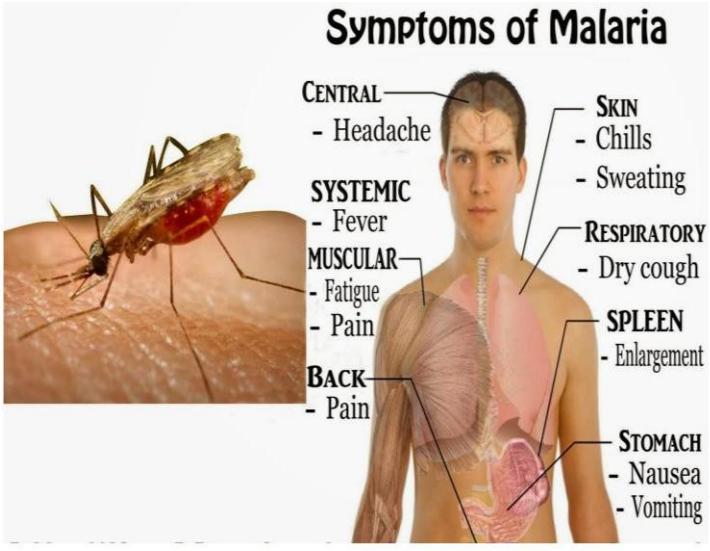
A. Erythrocytic schizogony

B. Tissue schizogony
C. Gametocytes
D. Exotoxin of a causative agent
E. Endotoxin of a causative agent



A 34-year-old male visited Tajikistan. After return, he complains of fever up to 40°C which occurs every second day and is accompanied by chills, sweating. Hepatosplenomegaly is present. Blood test results: RBC- $3x10^{12}$/l, Hb- 80 g/l, WBC- $4x10^{9}$/l, eosinophils - 1%, stab neutrophils - 5%, segmented neutrophils - 60%, lymphocytes - 24%, monocytes - 10%, ESR - 25 mm/h. What is the provisional diagnosis?

A. Malaria B. Infectious mononucleosis
C. Sepsis
D. Typhoid fever
E. Leptospirosis



A 23 year old female patient complains about periodical chill and body temperature rise up to 40°C, sense of heat taking turns with profuse sweating. The patient has had already 3 attacks that came once in two days and lasted 12 hours. She has lived in Africa for the last 2 months. Liver and spleen are enlarged. In blood: erythrocytes - $2,5x10^{12}$/l. What is the most probable diagnosis?

A. Malaria

B. Spotted fever C. Sepsis
D. Hemolytic anaemia E. Leptospirosis

2 weeks since the blood transfusion a recepient has developed fever. What protozoal disease can it be?

A. Malaria
B. Trypanosomiasis
C. Amebiasis
D. Toxoplasmosis
E. Leishmaniasis

The infectious diseases transmitted by blood transfusion:

1- HIV 2-HTLV 3-Hepatitis B and C
4-Cytomegalovirus (CMV) 5-Epstein-Barr virus.
6-Human Parvovirus (B19) 7-Human Herpesvirus 8.
8- Bacterial contamination. 9-Syphilis 10-Malaria.

Two weeks after hemotransfusion a patient developed fever. What protozoal disease can be suspected?

A. Malaria
B. Toxoplasmosis
C. Leishmaniasis
D. Amebiasis
E. Trypanosomiasis

A healthy man is in a region with high risk of catching malaria. What drug should be administered for individual chemoprophylaxis of malaria?

Chingamin
Sulfalen
Tetracycline
Metronidazole
Biseptol

Malaria Chemoprophylaxis

Chloroquine phosphate: Travelers to malaria-risk areas in Mexico, Haiti, the Dominican Republic, and some areas in Central America, the Middle East, and Eastern Europe

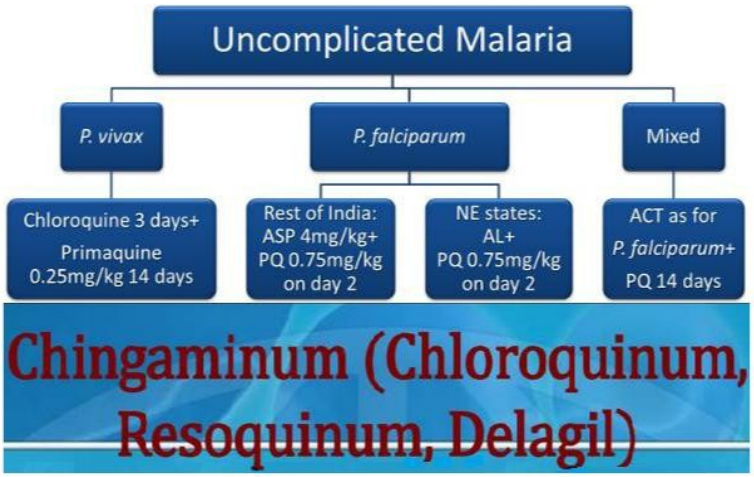
Doxycycline hyclate: Travelers to areas with extensive resistance to chloroquine (e.g., Africa)

Mefloquine: Travelers to areas with extensive resistance to chloroquine (e.g., Africa)

Atovaquone-proguanil: Travelers to areas with extensive resistance to chloroquine (e.g., Africa)

This drug has a destructive effect on erythrocytic forms of malarial plasmodia and dysenteric amoebae. It is used for treatment and prevention of such diseases as malaria, amebiasis and interstitial disease. What drug is it?

A. Chingamin
B. Emetine hydrochloride C. Tetracycline D. Erythromycin E. Quinine



What drug should be administered for individual prevention of malaria?

A. Chingamin
B. Rifampicin
C. Ampicillin
D. Gentamicin
E. Biseptol (Co-Trimoxazolel)

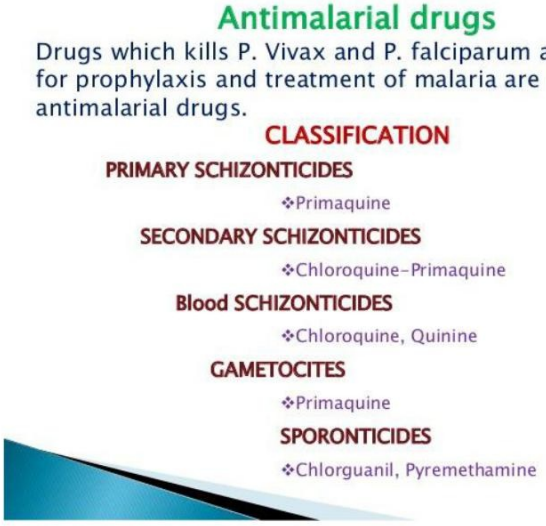
UN volunteers have arrived in Nigeria to assist the locals in aftermath of earthquakes. What drug should they prescribe for individual chemoprophylaxis of malaria?

A. Chingamin B. Pyrimethamine (Chloridinum)
C. Interferon
D. Primaquine
E. Pyrantel

	Malaria risk	Type of prevention
Type I	Very limited risk of malaria transmission	Mosquito bite prevention only
Type II	Risk of *P. vivax* malaria only or fully chloroquine-sensitive *P.falciparum*	Mosquito bite prevention + chloroquine chemoprophylaxis
Type III	Risk of *P. vivax* and *P. falciparum* malaria transmission, combined with emerging chloroquine resistance	Mosquito bite prevention + proguanil chemoprofilaxis
Type IV	High risk of *P. falciparum* malaria, combined with reported antimalarial drug resi stance or Moderat/low risk of *P. falciparum* malaria, combined with reported high levels of drug resistance	Mosquito bite prevention + chemoprophilaxis with: 1)Atovaquone-proguanil 2)Doxycycline 3)Mefloquine (select according to reported resistance pattern)

In preparation for business trip abroad the doctor was prescribed a histoschizontocidal antimalarial drug as a personal means of disease prevention. What drug was given to the doctor?

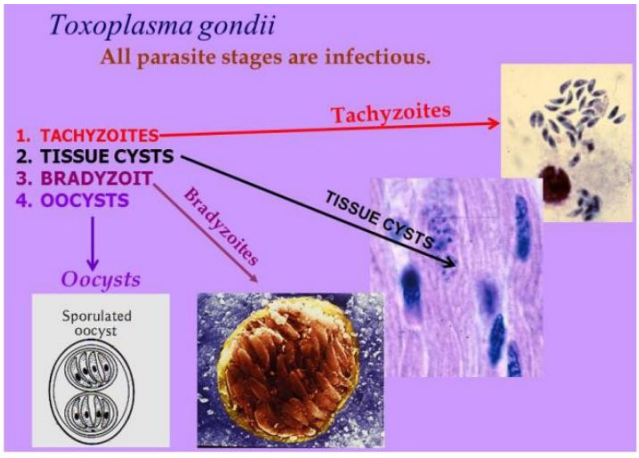
A. Chingamin B. Biseptol (Co-Trimoxazole) C. Mefloquine D. Quinine
E. Doxycycline



Toxoplasma

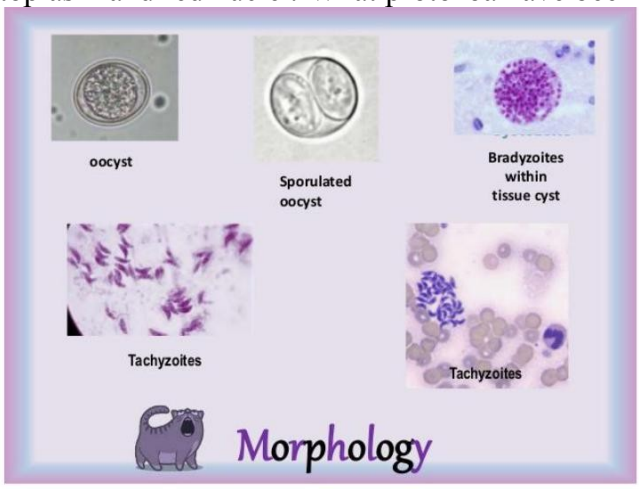
A lymph node punctate of a patient with suspected protozoa disease was examined. Examination of the stained specimen (Romanovsky's stain) revealed some crescent bodies with pointed end, blue cytoplasm and red nucleus. What protozoan were revealed in the smears?

A. Toxoplasmas
B. Malarial plasmodiums C. Dermotropic leishmania D. Viscerotropic leishmania E. Trypanosomes



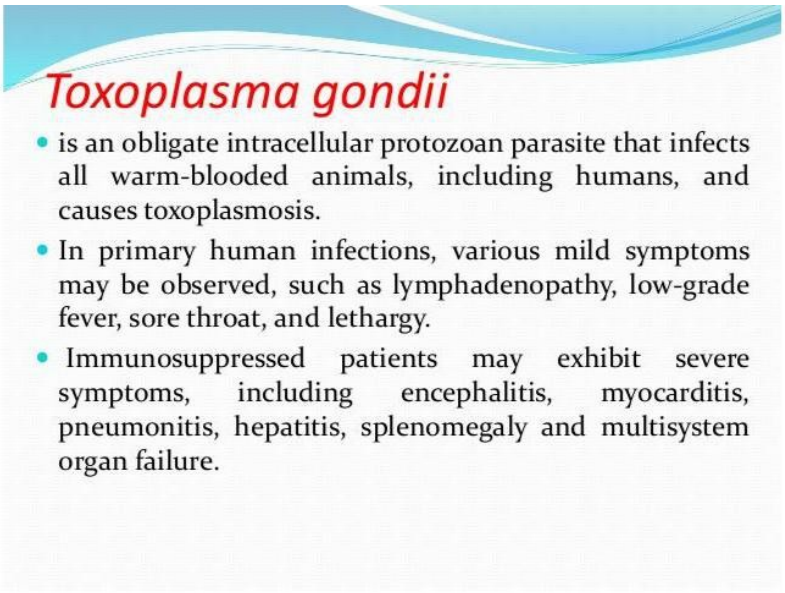
A puncture sample taken from the lymph node of a patient with preliminary diagnosis of protozoan disease has been investigated. The preparation was processed with Giemsa stain and the following was detected: crescent-shaped bodies with pointed tips, blue cytoplasm and red nuclei. What protozoa have been detected in the preparation?

A. Toxoplasma
B. Plasmodium malariae
C. Trypanosoma
D. Viscerotropic Leishmania
E. Dermatotropic Leishmania



Examination of a man revealed a protozoan disease that affected brain and caused vision loss. Blood analysis revealed unicellular half-moon-shaped organisms with pointed end. The causative agent of this disease is:

A. Toxoplasma
B. Leishmania
C. Lamblia
D. Amoeba
E. Trichmonad



A man is ill with a protozoan disease characterized by cerebral affection and loss of sight. Blood analysis revealed halfmoon-shaped unicellular organisms with pointed ends. This disease is caused by:

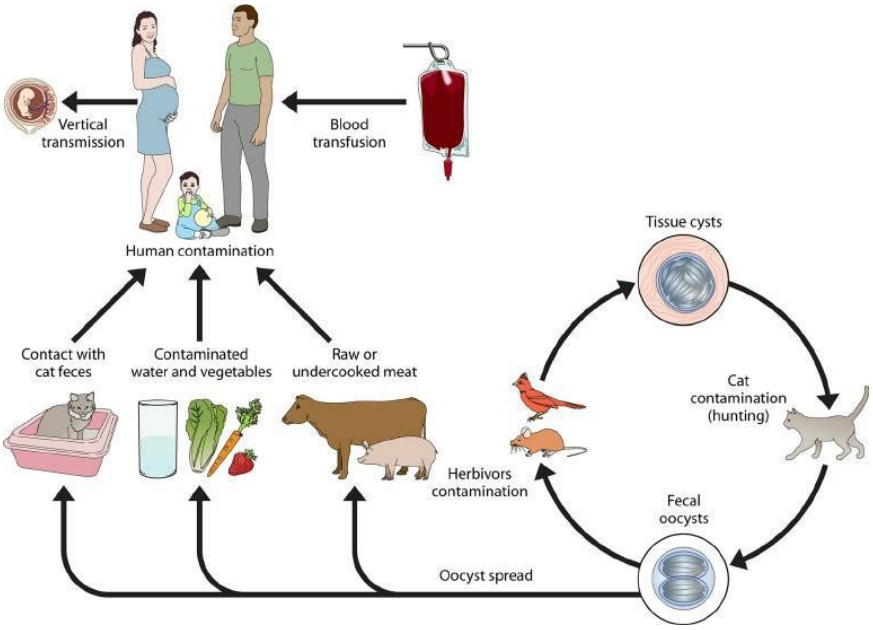
A. Toxoplasma
B. Leishmania
C. Lamblia
D. Amoeba
E. Trichomonad

A woman who was infected with toxoplasmosis during the pregnancy has a child with multiple congenital defects. This is a result of:

A. Teratogenesis
B. Cancerogenesis
C. Recombination
D. Chemical mutogenesis
E. Biological mutogenesis

A woman delivered a dead child with multiple developmental defects. What protozoan disease might have caused the intrauterine death?

A. Toxoplasmosis
B. Leishmaniasis
C. Malaria
D. Amebiasis
E. Lambliasis



A woman gave birth to a stillborn baby with numerous malformations. What protozoan disease could cause intrauterine death?

A. Toxoplasmosis
B. Leishmaniasis
C. Malaria
D. Amebiasis
E. Lambliasis

A married couple applied to the genetic consultation in order to consult about their child with multiple abnormalities (microcephaly, idiocy etc). The woman has had an illnesses during her pregnancy but she didn't take any teratogens or mutagens. The parents' and the child's karyotype is normal. Anamnesis study revealed that the family kept a cat. What gravidic disease caused the child's abnormalities?

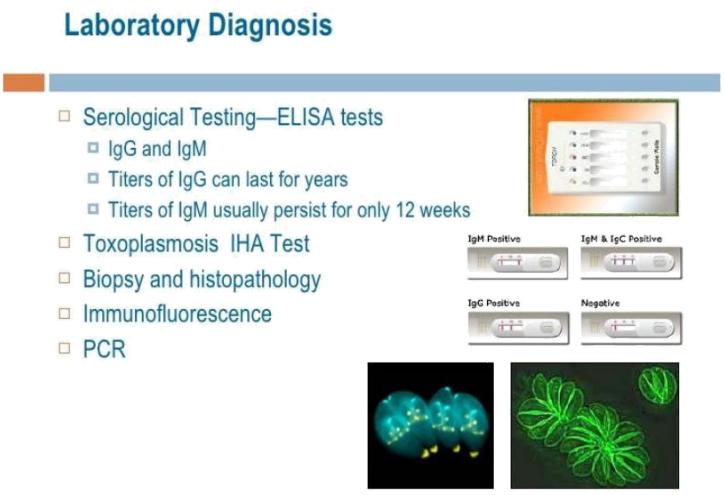
A. Toxoplasmosis
B. Leishmaniasis
C. Dysentery
D. Balantidiasis E. Trichomoniasis

Toxoplasmosis in Pregnancy

- Abortion
- Overt disease. The symptoms vary widely, the **classical triad** of Congenital Toxoplasmosis is
  - Hydrocephalus
  - Intracranial calcification
  - Chorioretinitis
- Subclinical infection: no symptoms at birth
- late onset symptoms (most common in the eyes: Chorioretinitis)
- no symptoms at all

A patient's preliminary diagnosis is toxoplasmosis. What material was used for diagnostics of this disease?

A. Blood
B. Feces
C. Urine
D. Duodenal contents E. Sputum



A patient who came to the doctor because of his infertility was administered to make tests for toxoplasmosis and chronic gonorrhoea. Which reaction should be performed to reveal latent toxoplasmosis and chronic gonorrhoea in this patient?
A. RIHA - Reverse indirect hemagglutination assay B. RDHA - Reverse direct hemagglutination assay C. IFA - Immunofluorescence assay
D. Immunoblot analysis
E. (R)CFT- Reiter's complement fixation test

A pregnant woman applied to a doctor with complaints typical for toxoplasmosis. The doctor took a sample of her blood. What serological tests should be performed in this case?

A. Complement binding assay
B. Precipitation test C. Neutralization test
D. Widal's test E. Wassermann test

After the second abortion a 23 year old woman has been diagnosed with toxoplasmosis. Which drug should be used for toxoplasmosis treatment?

A. Co-trimoxazole
B. Itraconazole C. Mebendazole
D. Azidothimidine E. Acyclovir

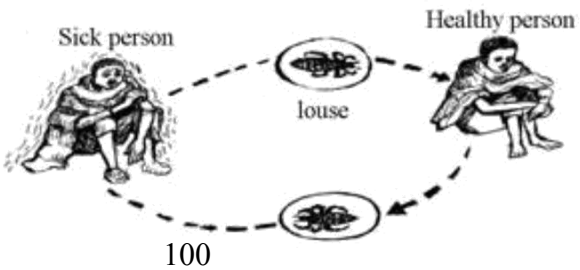
Rickettsia

A patient with suspicion on epidemic typhus was admitted to the hospital. Some arachnids and insects have been found in his flat. Which of them may be a carrier of the pathogen of epidemic typhus?

A. Lice
B. Spiders C. Bed-bugs
D. Cockroaches E. Houseflies

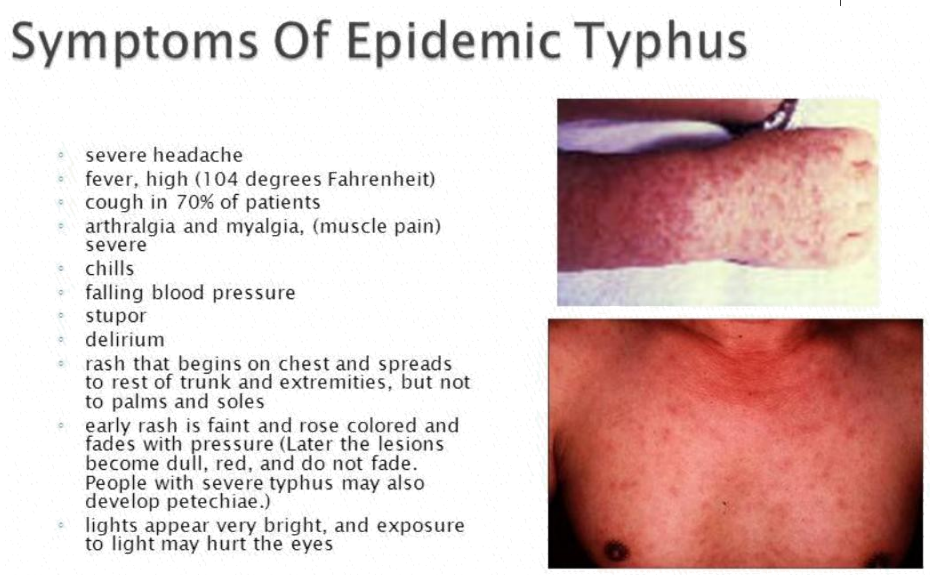
A sick man with high temperature and a lot of tiny wounds on the body has been admitted to the hospital. Lice have been found in the folds of his clothing. What disease can be suspected in the patient?

A. Epidemic typhus
B. Tularemia
C. Scabies
D. Malaria
E. Plague



A 28 y.o. homeless male was admitted to the hospital because of initial diagnosis "influenza". Roseolo-petechiae rash has appeared on the trunk and internal surfaces of the limbs on the fifth day. Temperature is 41^0C, euphoria, face and sclera's hyperemia, tongue tremor, tachycardia, splenomegaly, excitement. What is the most probable diagnosis?

A. Typhus
B. Alcogolic delirium
C. Leptospirosis
D. Abdominal typhoid
E. Measles



A 28 y.o. patient without permanent residence was admitted to the hospital with the preliminary diagnosis influenza. On the fith day of illness he got a maculopapular petechial rash on his body and internal surfaces of extremities. Body temperature is 41^0 C, euphoria, face hyperemia, sclera reddening, tongue tremor, tachycardia, splenomegaly, excitement. What is the most probable diagnosis?

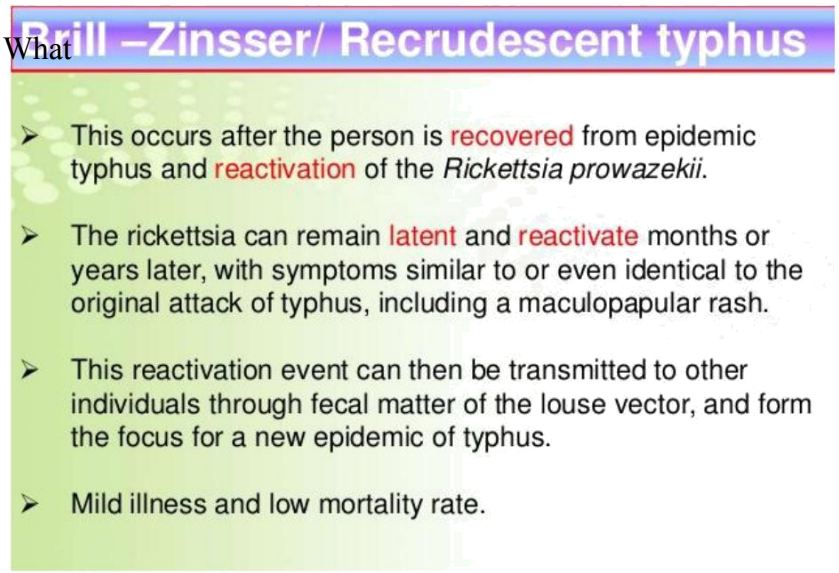
A. Epidemic typhus B. Delirium alcoholicum
C. Leptospirosis D. Measles E. Typhoid fever

A 28-year-old patient was hospitalized with preliminary diagnosis "influenza". Roseolous-petechial rash appeared on the 5th day of disease on the trunk. The temperature is 41^oC. Hyperemia of face, reddening of scleras, tremor of tongue, tachycardia, splenomegaly are present. What is the most likely diagnosis?

A. Epidemic typhus B. Measles C. Alcohol delirium
D. Leptospirosis E. Typhoid fever

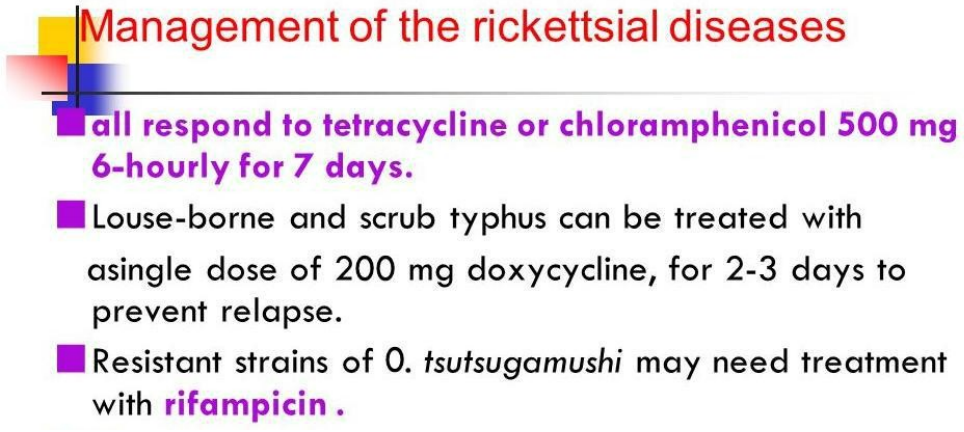
A 55-year-old patient with a characteristic rash, fever, dizziness has been admitted to a hospital. He has been provisionally diagnosed with typhus. No similar cases have been reported. In his youth (15 years old) the patient suffered typhus in a boarding school. What disease is it?

A. Brill's disease B. Typhoid fever
C. Measles
D. Rubella
E. Cholera



5 days before, a 26-year-old female patient developed an acute condition. Objectively: marked headache, vomiting, weakness, poor appetite, temperature up to 39°C. Objectively: the patient is in a moderately grave condition, excited. The face is hyperemic, sclerae are injected. The tongue is coated with brown fur. The trunk and limbs are covered with plentiful roseolous and petechial rash. Hepatosplenomegaly is present. Complement binding reaction with Rickettsia prowazekii is positive with the titer of 1:640. What drug should be administered?

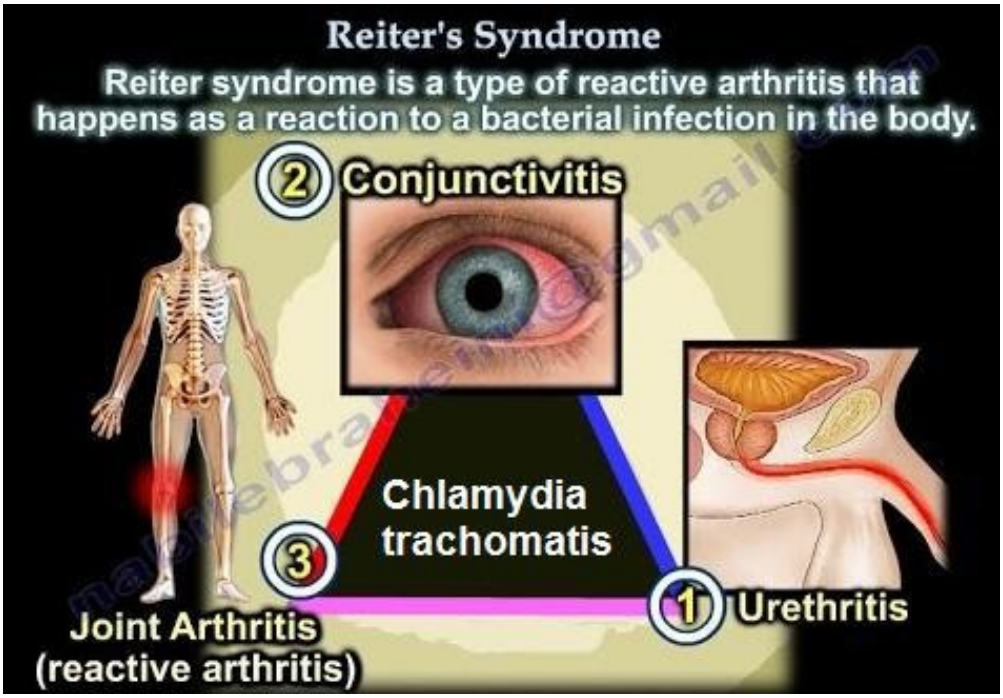
A. Doxycycline B. Chloramphenicol C. Penicillin
D. Streptomycin E. Metronidazole



Chlamydia

A 35-year-old patient has been admitted to a hospital for pain in the left sternoclavicular and knee joints, lumbar area. The disease has an acute character and is accompanied by fever up to 38°C. Objectively: the left sternoclavicular and knee joints are swollen and painful. In blood: WBCs - 9, $5x10^9$/l, ESR - 40 mm/h, CRP - 1,5 millimole/l, fibrinogen - 4,8 g/l, uric acid - 0,28 millimole/l. Examination of the urethra scrapings reveals chlamydia. What is the most likely diagnosis?

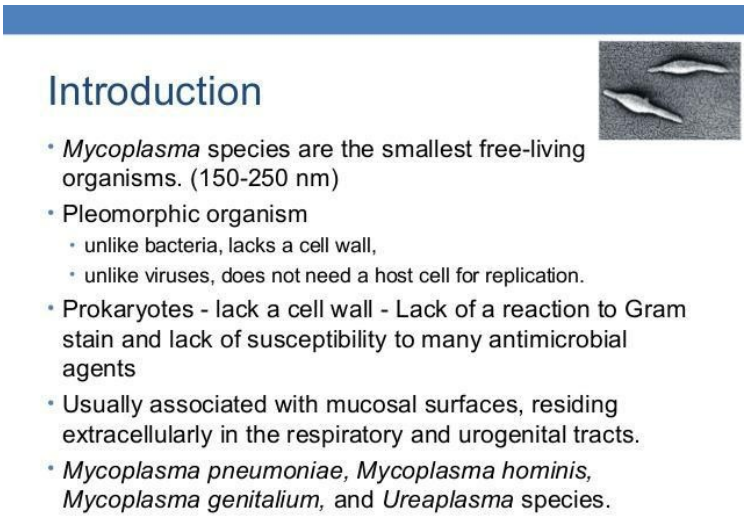
A. Reiter's syndrome B. Rheumatic arthritis C. Gout
D. Bechterew's disease E. Rheumatoid arthritis



Mycoplasma

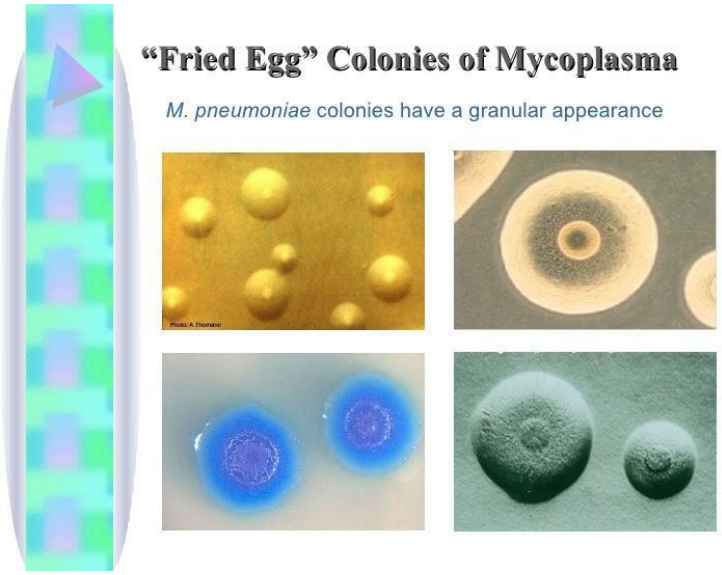
On the base of the clinical data a child was diagnosed with atypical pneumonia resistant to the effects of beta-lactam antibiotics. The patient's sputum was cultured and incubated in a special medium, which resulted in growth of microorganisms forming microscopic colonies with a dense center (looking like fried eggs). What microorganism caused the disease?

A. Mycoplasma pneumoniae
B. Klebsiella pneumoniae
C. Str. pneumoniae
D. L. pneumophila
E. Chlamidia pneumonia



From a medicinal herb a certain phytopathogenic microorganism was secured. In the nutrient medium it forms "fried egg"colonies. What is the most likely agent?

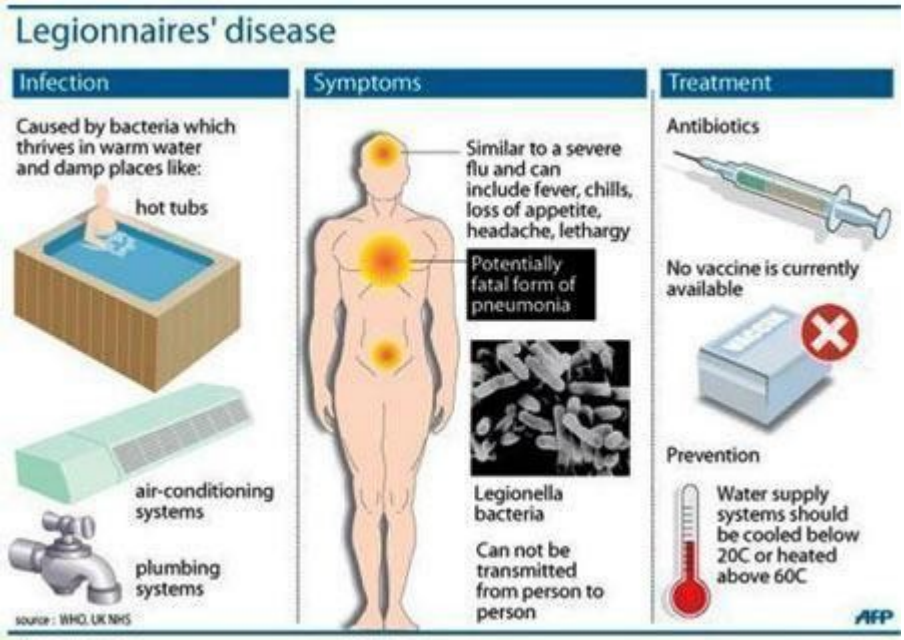
A. Mycoplasma
B. Yeasts
C. Actinomycetes
D. Nocardia
E. Pseudoonas



Legionella

A 22-year-old patient is a clerk. His working day runs in a conditioned room. In summer he was taken by an acute disease with the following symptoms: fever, dyspnea, dry cough, pleural pain, myalgia, arthralgia. Objectively: moist rales on the right, pleural friction rub. X-ray picture showed infiltration of the inferior lobe. In blood: WBC - $11 \cdot 10^9$/l, stab neutrophils - 6%, segmented neutrophils - 70%, lymphocytes - 8%, ESR - 42 mm/h. What is the etiological factor pneumonia?

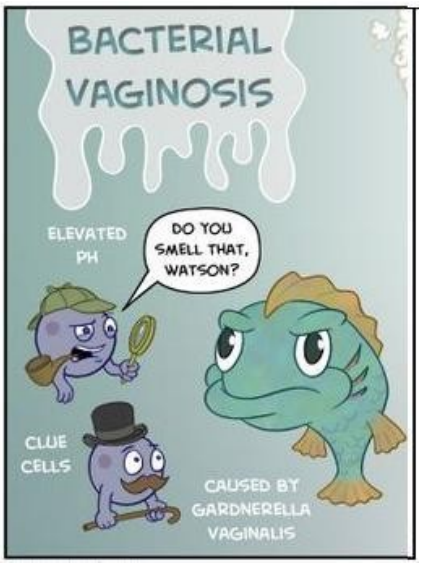
A. Legionella B. Mycoplasma C. Streptococcus
D. Staphylococcus E. Pneumococcus



Gardnerella

A 21-year-old female patient consulted a gynecologist about itching, burning, watery vaginal discharges with a fish-like smell. Speculum examination revealed that the cervical and vaginal mucosa was of a normal pink color. Vaginal examination revealed no alterations of the uterus and appendages. Gram-stained smears included clue cells. What is the most likely pathology?

A. Bacterial vaginosis (gardnerellosis)
B. Chlamydiosis
C. Gonorrhea
D. Trichomoniasis
E. Candidiasis



Pseudomonas

Bacteriological examination of the urine of the patient with pyelonephritis revealed microorganisms that produced yellow-green pigment and a characteristic odor in meat-peptone agar. What are they called?

A. Pseudomonas

B. Escherichia C. Proteus

D. Klebsiella E. Azotobacter

Many diseases of medicinal plants are caused by bacteria of the Pseudomonas genus. Select the bacteria relating to this genus:

A. Blue pus bacillus B. Colon bacillus C. Proteus

D. Mycoplasma

E. Micrococci

Pseudomonas aeruginosa – blue-greenish pus

- Skin graft infected with *Pseudomonas aeruginosa*
- Pyocyanin – blue pigment produced by *Ps.aeruginosa* (pyocyanic bacillus)

Urine examination of a patient with acute cystitis revealed leukocytes and a lot of gram-negative bacilli. Inoculation resulted in growth of colonies of mucous nature that formed green soluble pigment. What microorganism is the most probable cause of the disease?

A. Pseudomonas aeruginosa

B. Klebsiella pneumoniae

C. Escherihia coli

D. Proteus mirabilis

E. Salmonella enteritidis

P. aeruginosa is an opportunistic pathogen

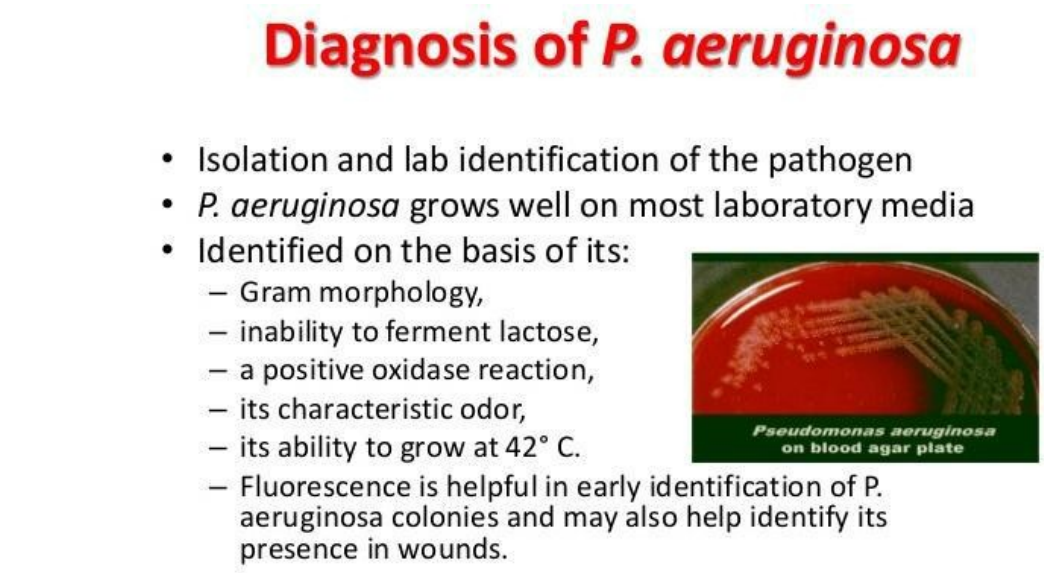
- Extremely broad host spectrum
- Hardly any infections in the normal human host
- Severe immunodeficiencies and medical devices predispose the patients to *P. aeruginosa* infections
- Broad spectrum of clinical symptoms
  - Urinary tract infections
  - Pulmonary infections
  - Soft tissue infections
  - Sepsis
  - Bone and joint infections
  - Endocarditis

A patient of surgical department complains about pain in the small of her back and in the lower part of her belly; painful and frequent urination. Bacteriological examination of urine revealed gram-negative oxidase-positive rod-like bacteria forming greenish mucoid colonies with specific smell. What causative agent can it be?

A. Pseudomonas aeruginosa

B. Mycoplasma pneumonie C. Str.pyogenes

D. E. coli E. Proteus mirabilis



A patient has wound abscess. Bacteriological examination of the wound content revealed a gram-negative bacillus which forms semi-transparent mucous colonies of blue-green color with a pearlescent appearance on the beef-extract agar. Culture has a specific odor of violets or jasmine. What type of pathogen was isolated from the patient's wound?

A. P. aeruginosa B. P.vulgaris C. S.aureus D. S.pyogenes E. S.faecalis

A patient of oral surgery department has developed a purulent complication. Bacteriological analysis of the wound discharge allowed to isolate a culture producing a blue-and-green pigment. Which of the listed microorganisms may be a causative agent of the infection?

A. Pseudomonas aeruginosa B. Staph. epidermidis

C. B. subtilis D. Pr. vulgaris E. Klebsiella pneumoniae

A patient in the oral surgery department has got purulent complication. Bacteriological analysis of the wound material found a culture that produces cyan pigment. What microorganism is the most probable causative agent?

A. Pseudomonas aeruginosa B. Staph. epidermidis

C. B. subtilis D. Kleb. pneumoniae E. Pr.vulgaris

A patient being treated in the burns department has suppurative complication. The pus is of bluish-green color that is indicative of infection caused by Pseudomonas aeruginosa. What factor is typical for this causative agent?

A. Gram-negative stain B. Presense of spores

C. Coccal form D. Cell pairing E. Mycelium formation

Bacteriological inspection of disinfection quality at a pharmacy revealed a microorganism in an utility room (in the sink). The microorganism has the following properties: mobile nonspore-forming gram-negative bacteria that form capsular substance, grow well on ordinary nutrient media, secrete the blue-green pigment. This microorganism is most likely to be of the following genus:

A. Pseudomonas B. Proteus C. Clostridium

D. Shigella E. Vibrio

A sample of a finished dosage form was found to be contaminated with some microorganisms exhibiting the following properties: greenish fluorescent colonies of gram-negative nonsporeforming bacilli that grew on the medium for the detection of pyocyanin. The bacilli release the bluegreen pigment into the medium. What microorganisms contaminated the finished dosage form?

A. Pseudomonas aeruginosa

B. Enterobacteriaceae C. Staphylococcus aureus

D. Staphylococcus epidermidis E. Staph. saprophyticus

During bacteriological examination of the purulent discharge obtained from a postoperative wound an inoculation on meat infusion agar has been performed. The inoculation has resulted in large colorless mucous colonies that in 24 hours with exposure to sunlight developed green-blue pigmentation and smell of honey or jasmine. Bacterioscopy revealed gram-negative lophotrichea. What bacterial culture is contained in purulent discharge?

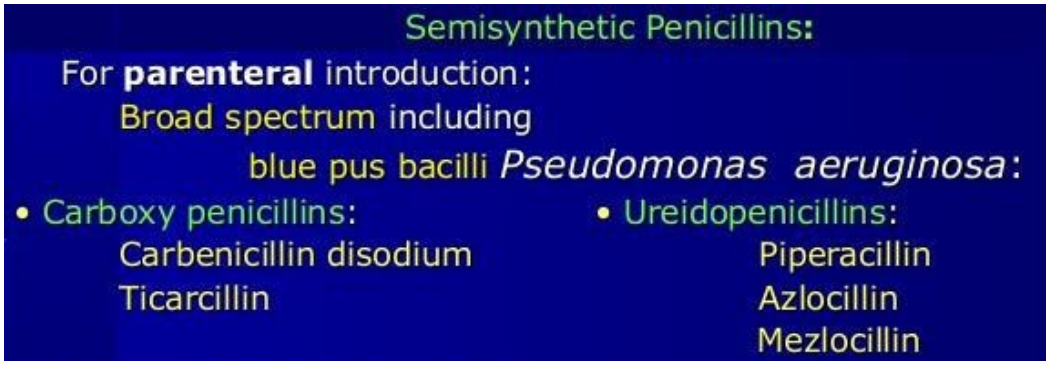
A. Pseudomonas aeruginosa B. Klebsiella osaenae

C. Streptomyces griseus D. Proteus vulgaris E. Brucella abortus

A 60-year-old patient was hospitalized to the surgical department because of infection caused by blue pus bacillus (Pseudomonas aeruginosa) which is sensative to penicillin antibiotics. Indicate which of the given penicillins has marked activity to the Pseudomonas aeruginosa?

A. Carbenicillin disodium B. Benzylpenicillin

C. Methicillin D. Oxacillin E. Methylpenicillin



A patient suffers from severe postoperative pseudomonadous infection. What of the following antibiotics should be administered in this case?

A. Amicacin sulfate

B. Benzylpenicillin

C. Cephazolin

D. Erythromycin

E. Doxycycline

From urine of a 14-year-old boy with the exacerbation of secondary obstructive pyelonephritis Pseudomonas aeruginosa was isolated with a titer of 1000000 microbes per 1 ml. Which antibiotic is most advisable to be administered in this case?

A. Ciprofloxacin B. Ampicillin C. Cefazolinum

D. Azithromycin E. Chloramphenicol

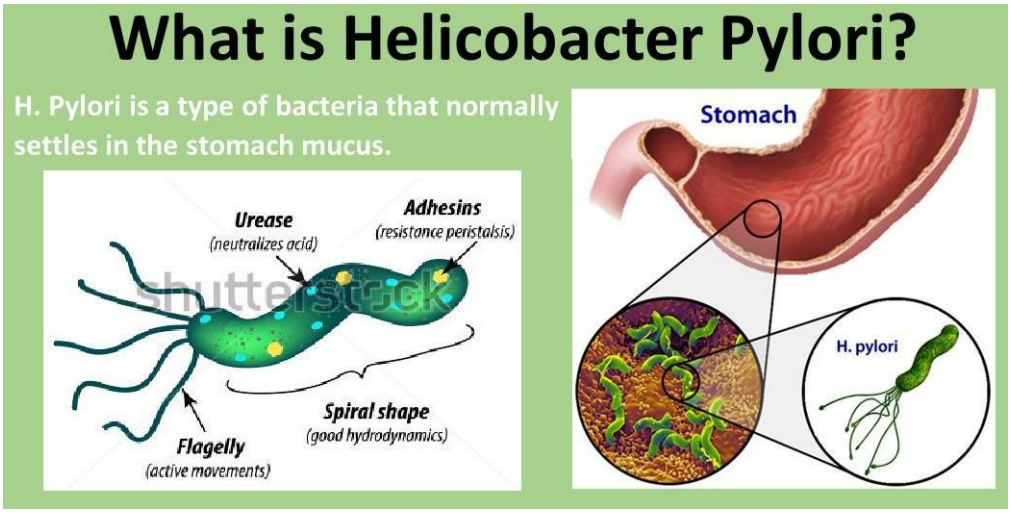
Helicobacter	
Impression smear of mucosa biopsy material has been obtained from a patient with peptic ulcer disease of the stomach. Gram-negative arcuate bent microorganisms were detected, urease activity test was positive. What microorganisms were detected in the patient? **A. Helicobacter** B. Spirochete C. Spirilla D.Leptospira E. Treponema	
A male patient has been diagnosed with gastric ulcer. Bacteriological examination of biopsy material from the affected part of stomach revealed small colonies of gram-negative, oxide reductase-positive flexibacteria that grew on the chocolate agar on the fifth day. Which of the following microorganisms is the most likely causative agent? **A. Helicobacter pylori** B. Campilobacter jejuni C. Campilobacter fetus D. Mycoplasma hominis E. Chlamydia trachomatis **Morphology :** **Gram negative curved,spiral bacilli , 2-4 u x 0.5 u** **Motile with multiple polar sheathed flagella** **Microaerophilic, 5-10% CO_2, high humidity,** **Grow on Skirrow, Butzler media** **(Blood agar + antibiotics - vancomycin, trimethoprim, ampotericin)** **Catalase +ve,** **Oxidase +ve** **DNAse +ve** **Phosphatase +ve** **Urease +ve : produces abundunt urease enzyme almost 100 times > other bacteria like proteus** **Remind : H.pylori produces abundant Urease**	
A patient underwent esophagogastroduodenoscopy. Analysis of the biopsy material enabled doctors to diagnose him with helicobacteriosis. What property of the bacteria found in this patient had to be obligatory taken into account during their cultivation? **A. Microaerophilic ability** B. Presence of urease C. Absence of spores and capsules D. Colonisation of gastral cells E. Presence of six polar flagella	
During fibergastroscopy a patient with ulcer disease of the stomach, the mucosal biopsy is taken from the area of an ulcer. Impression smear is prepared from biopsy material and stained by Gram method; the rest of biopsy material is tested for urease activity. Microscopy of the impression smear revealed gram-negative spiral-shaped microorganisms, urease activity test is positive. What bacteria were detected? **A. Helicobacter pylori** B. Campilobacter jejuni C. Treponema pallidum D. Spirilla minor E. Shigella flexneri	
A 42-year-old patient with gastric ulcer has a disbalance between the aggressive and defensive factors. Which of the following factors contributes to the development of gastric ulcer? **A. Helicobacter pylori** B. Mucin C. Hydrocarbonate D. Prostaglandin E. Prostacyclin	

A 32 year old patient complains about heartburn and dull pain in the epigastrium that appear 2-3 hours after meal. Exacerbations happen in spring and in autumn. The patient has food intolerance of eggs and fish. Objectively: stomach palpation reveals painfulness in the gastroduodenal area. Electrophasoduodenoscopy revealed a 5 mm ulcer on the anterior wall of duodenum. Urease test is positive. What is the most probable leading mechanism of disease development?

A. Helicobacterial infection

B. Dietary allergy C. Autoantibody production

D. Reduced prostaglandin synthesis E. Disorder of gastric motor activity



In order to prevent wound infection associated with surgical procedures a patient was given a synthetic antiprotozoan drug with a high activity against Helicobacter pylori. Specify this drug:

A. Metronidazole

B. Doxycycline hydrochloride C. Chingamin

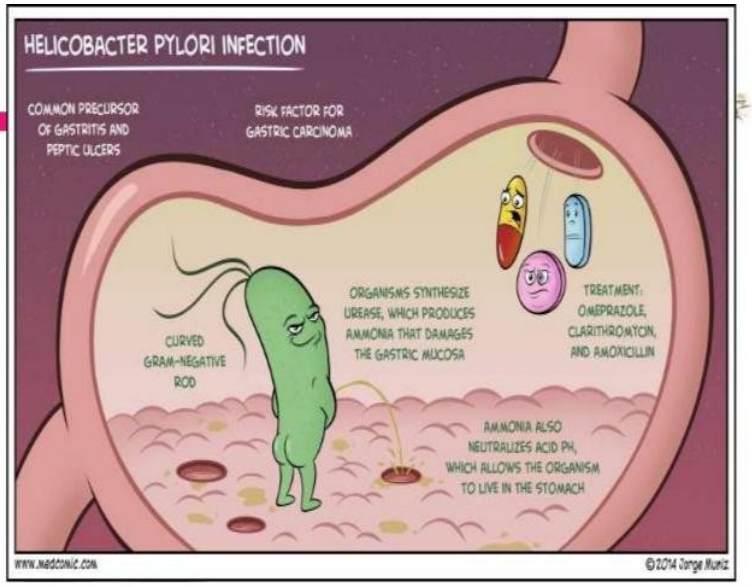
D. Acyclovir E. Isoniazid

A 6-year-old child has duodenal ulcer. What antibacterial drug should be co-administered together with metronidazole and De-Nol in order to eradicate Helicobacter pylori infection?

A. Amoxicillin

B. Tetracycline C. Oleandomycin

D. Biseptol E. Sulfadimethoxinum



Actinomycetes

A 40 year old man noticed a reddening and an edema of skin in the area of his neck that later developed into a small abscess. The incised focus is dense, yellowish-green. The pus contains white granules. Histological examination revealed drusen of a fungus, plasmatic and xanthome cells, macrophages. What type of mycosis is the most probable?

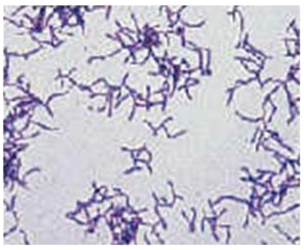
A. ActinomycosisB. AspergillosisC. Candidosis
D. Sporotrichosis E. Coccidioidomycosis

ACTINOMYCES

Anaerobic, filamentous, gram positive bacillus

– Exhibit true branching

• "Mykes" – Greek for "fungus"



A 40-year-old man developed skin redness and an swelling in the neck area, where eventually a small abscess appeared. The section the focus is dense and yellow-green colored. In the purulent masses there are white granules. Histologically there are fungal druses, plasma and xanthome cells, and macrophages detected. Specify the most correct etiological name of this pathological process?

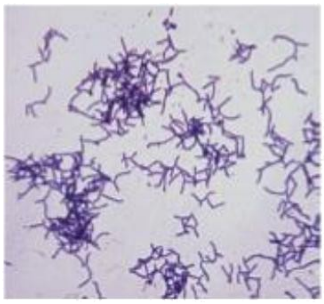
A. Actinomycosis B. Furuncle
C. Carbuncle D. Syphilis E. Leprosy

ACTINOMYCES

MORPHOLOGY & GROWTH

- Elongated branching Gram-positive bacilli
- Anaerobic or microaerophilic
- Temperature range 35-37°C
- Slow growth on blood agar in 4-7 days

DISEASE: Actinomycosis



Microscopical examination of an infiltrate removed from the submandibular skin area of a 30 y.o. man revealed foci of purulent fluxing surrounded by maturing granulations and mature connective tissue, the pus contains druses consisting of multiple short rod-like elements with one end attached to the homogenous centre. What disease is it?

A. Actinomycosis
B. Tuberculosis C. Syphilis
D. Candidosis E. –

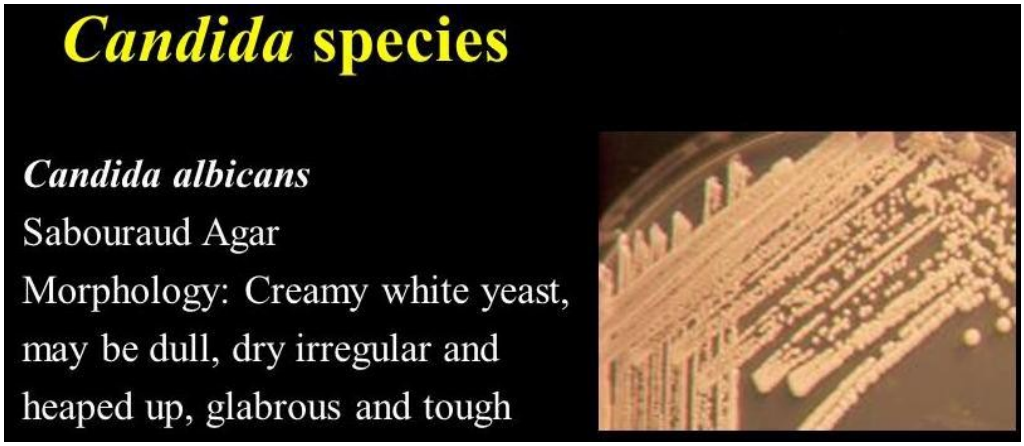
A 32-year-old patient who lives in the countryside consulted a doctor about a painful swelling and a fistula in the submandibular region. Examination revealed an infiltration with a fistula discharging thick pus and containing white granules. On dissection the infiltration tissues turned out to be dense, yellow-green and had honeycomb structure because of multiple abscesses. What is the most likely diagnosis?

A. ActinomycosisB. TuberculosisC. Lepra
D. Syphilis E. Submandibular abscess

Microscopic examination of pus sample taken from mandibular fistula canal and stained by Gram's method has revealed druses with gram-positive coloring in the center and cone-shaped structures with gram-negative coloring. Such morphology is characteristic of the agent of:
A. Fusobacteriosis **B. Actinomycosis**
C. Staphylococcal osteomyelitis
D. Anaerobic infection E. Candidiasis

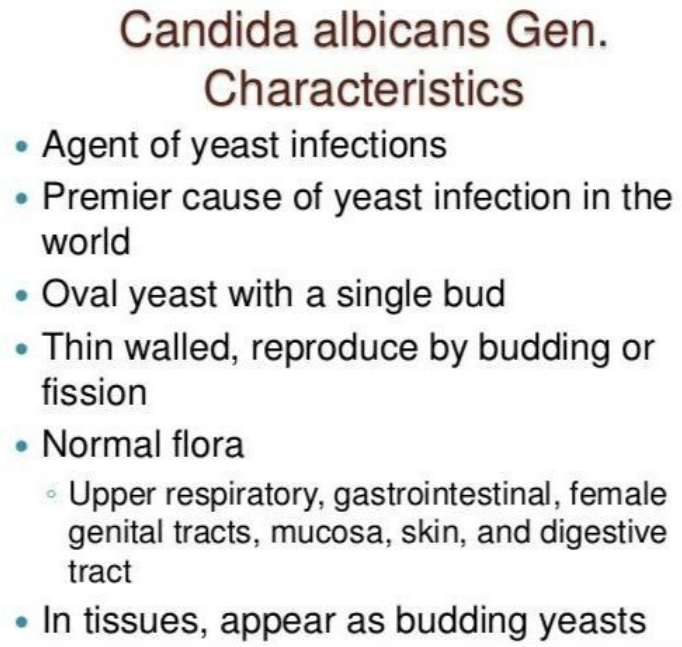
Candida

A 3 month old infant has got a white deposition on the mucous membrane of his mouth, tongue and lips. The doctor suspected candidosis. What nutrient medium should be used for inoculation of the material under examination in order to confirm this diagnosis?
A. Sabouraud B. Endo
C. Loewenstein-Jensen D. Roux E. Clauberg



A 3 m.o. baby has white film on the mucous membrane of his mouth, tongue and lips. A doctor suspected candidosis. What nutrient medium should be applied for inoculation of the material under examination in order to confirm this diagnosis?
A. Sabouraud's B. Endo C. Jensen's
D. Roux E. Clauberg's

Examination of a child revealed some whitish spots looking like coagulated milk on the mucous membrane of his cheeks and tongue. Analysis of smears revealed gram-positive oval yeast-like cells. What causative agents are they?
A. Candida
B. Staphylococci
C. Diphtheria bacillus
D. Actinomycetes
E. Fusobacteria



During examination of a 3-month old infant a pediatrician revealed that the baby's oral mucosa and tongue were covered with a thick white deposit. In the material taken from the affected site a bacteriologist revealed the presence of yeast fungi giving the reasons for suspecting a fungal infection which occurs most often in children of this age, namely:

A. Candidiasis

B. Favus C. Epidermophytosis

D. Actinomycosis E. Trichophytia

Microscopic examination of a Gramstained scrape from patient's tongue revealed oval, round, elongated chains of dark-violet gemmating cells. What disease can be caused by this causative agent?

A. Candidosis

B. Actinomycosis C. Diphtheria

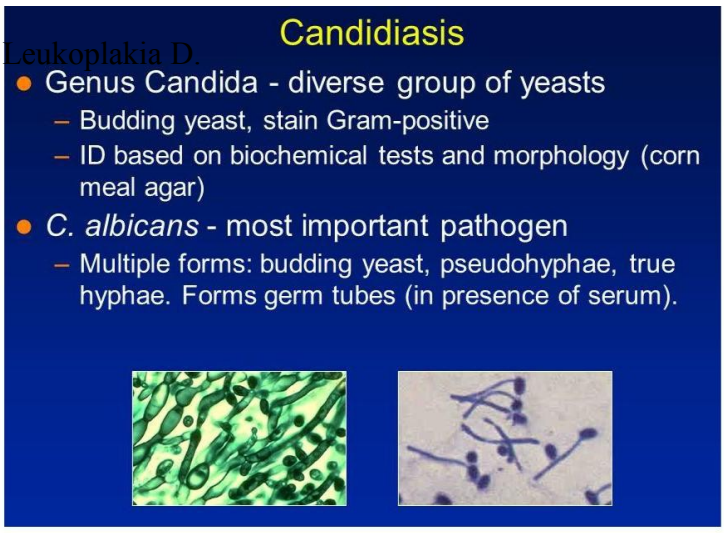
D. Staphylococcic infection E. Streptococcic infection

A 9 y.o. child has been taking antibiotics on account of bronchopneumonia for a long time. There appeared pain and burning in the area of mucous membrane of his lips and tongue. Objectively: mucous membrane of lips and tongue has caseous and grey plaques that can be easily removed by a spatula leaving hyperemia foci on their spot. Microscopic examination of the plaques revealed mycelium. What is the most probable diagnosis?

A. Candidous cheilitis

B. Exfoliative cheilitis C. Leukoplakia D. Contactant allergic cheilitis

E. Manganotti's Cheilitis



After continuous treatment with antibiotics a patient got symptoms of stomatitis. Examination of specimens of oral mucous membrane revealed some oval polymorphous Gram-positive microorganisms arranged in clusters. What microorganism may be the cause of such manifestations?

A. C.albicans

B. C.perfringens C. S.aureus

D. S.pyogenes E. H.pylori

After long-term antibiotic treatment a patient has developed whitish spots on the oral mucosa. Gram-positive oval budding cells were detected in the smear preparations. What causative agents were detected?

A. Candida fungi

B. Staphylococci C. Sarcinae

D. Actinomycete E. Tetracocci

A 70-year-old man has developed prosphetic stomatitis. Apart of this he was found to have an evident lesion of mouth corners. Microscopical examination revealed large ovoid gram-positive cells. What microorganisms are most likely to be the leading etiological agent of such a lesion?

A. Candida fungiB. StreptococciC. Staphylococci

D. Neisseria E. Corynebacteria

An 18-year-old patient has developed candidiasis after the case of pneumonia treated with β-lactam antibiotic. What antimycotic agent should be prescribed?
A. Fluconazole B. Streptomycin C. Phthalylsulfathiazole
D. Ampicillin E. Trimethoprim/sulfamethoxazole

Treatment for fungal Infection

Category	Drug	Formulation	Main Indication
Azoles (Trizoles)	Fluconazole	PO/IV	Candida albicans
	Itraconzole	PO/IV	Balstomycosis, histoplasmosis, aspergillosis, candidiasis, cryptococcal meningitis
	Posaconzole	PO	Aspergillus (alternative treatment), zygomycosis, fluconazole-resistant Candida spp.
	Voriconzole	PO/IV	Invasive aspergillosis, non-albicans candidaemia, coccidioidomycosis, fluconazole-resistant Candida spp.

"Fungal infection in the intensive care unit"

A patient who has been taking tetracycline for a long time has developed candidosis of mucous membranes. What drug shoul administered for its treatment?
A. Itraconazole B. Griseofulvin C. Nitrofungin
D. Amphotericin E. Nitrofurantoin

A female who had been continuously taking antibiotics for an intestinal infection developed a complication manifested by inflammation of the oral mucosa and white deposit. Bacteriological study of the deposit samples revealed yeast fungi Candida albicans. Which of the following medications is indicated for the treatment of this complication?
A. Fluconazole B. Biseptol C. Tetracycline
D. Furazolidone E. Polymyxin

A pregnant woman complains of vaginal mucosa irritation, itching and genital tracts secretion. Bacterioscopy of vaginal smears revealed large gram-positive oval oblong cells that form pseudomicelium. What is the most probable channel of infection?
A. Endogenous infection
B. Sexual transmission C. Contact infection
D. Vector-borne transmission
E. Wound infection

Endogenous Infection

An *endogenous infection* is one which is caused by an opportunistic pathogen from an individual's own normal microbiota.

Typically this is a consequence either of the individual being in a weakened state, or in the opportunist being deposited in a location other than that in which it typically benignly resides.

Fungi

A patient with skin mycosis has disorder of cellular immunity. The most typical characteristic of it is reduction of the following index:
A. T-lymphocytes
B. Immunoglobulin G C. Immunoglobulin E
D. B-lymphocytes E. Plasmocytes

In order to establish the possible contamination of a medication with fungi, a nutrient medium was inoculated, which resulted in growth of large cream-like colonies. What nutrient medium was used in this case?

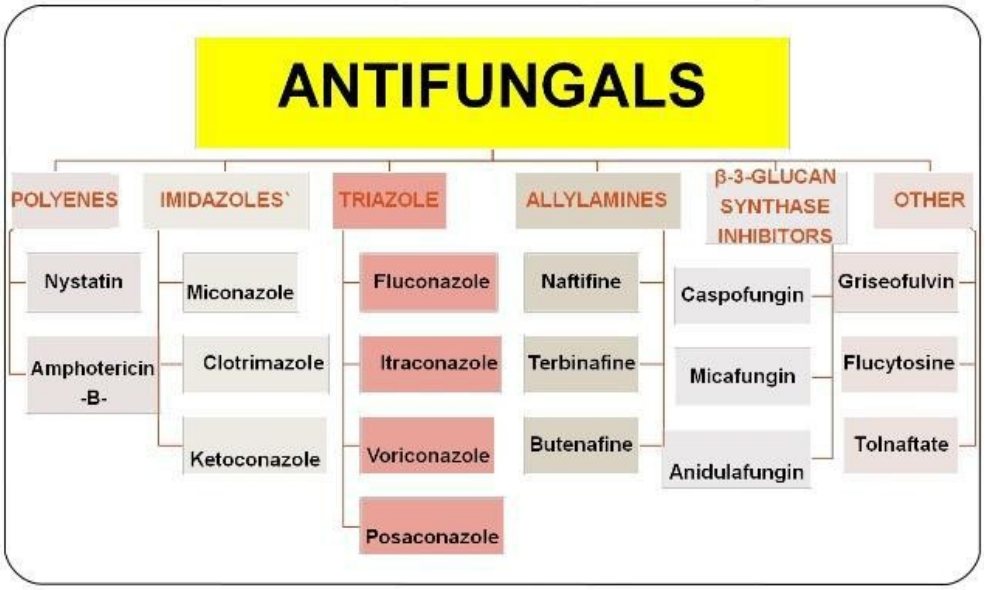
A. Sabouraud
B. Lowenstein-Jensen
C. Roux D. Loeffler E. Finn-2

Crude herbal drugs must be examined for yeast-like fungi. What agar can ensure development of these microorganisms so that associating microflora will grow very slowly or won't grow at all?

A. Sabouraud's peptone agar
B. Endo agar
C. Milk-salt agar
D. Meat infusion agar E. Blood agar

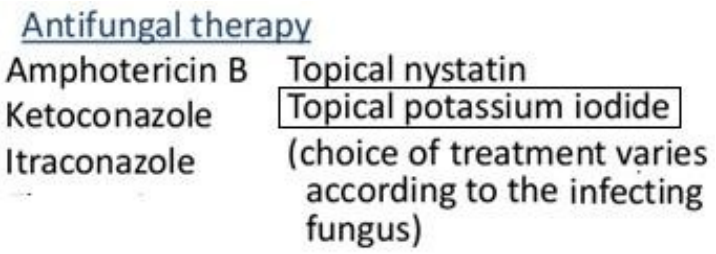
What preparations are used for prevention of fungal infection?

A. Fluconozol, Orungal, Nisoral
B. Rubomycin, Bleomycin, Mytomycin C
C. Cytosar, Cormyctin, Lomycitin
D. Captopril, Enalapril
E. Isoniazid, Ftibazid, Pyrazinamid



Name the halogen-containing antiseptic with fungicidal properties, which is used to treat dermatomycosis:

A. Iodine solution
B. Formalin solution
C. Methylene blue
D. Brilliant green
E. Boric acid solution



Sanitary microbiology

During the regular sanitary epidemiological inspection of a pharmacy, the bacteriological analysis of air was performed. The air was found to have bacilli, yeast fungi, hemolytic streptococci, micrococci. Which of the detected microorganisms indicate the direct epidemic danger?

A. Haemolytic streptococci B. Micrococci
C. Bacilli
D. Yeast fungi E. –

Presence of pathogenic microorganisms in the air can be detected by presence of sanitary representative bacteria. Choose bacteria that are indicators of direct epidemiological danger:

A.Hemolytic streptococci
B.Sarcina C.Molds D.Yeast E.Micrococci

Sanitary microbiological analysis of the indoor air of a pharmacy carried out in summer revealed presence of Streptococcus haemolyticus and Streptococcus viridians at the rate of 40 microorganisms per 1 m3. Specify the microbiological characteristic of the air:

A. Contaminated
B. Within the permissible limits C. Almost pure
D. Pure E. These microorganisms are not the indexes of the air quality

Sanitary and bacteriological examination of air in drug-store premises revealed increased content of sanitary representative microorganisms. What microorganisms are these?

A. Golden staphylococcus and hemolytic streptococcus
B. Diphtheria and tuberculosis bacilli C. Colon and blue pus bacilli
D. Epidermal staphylococcus and sarcina E. Enterococci and citrobacter

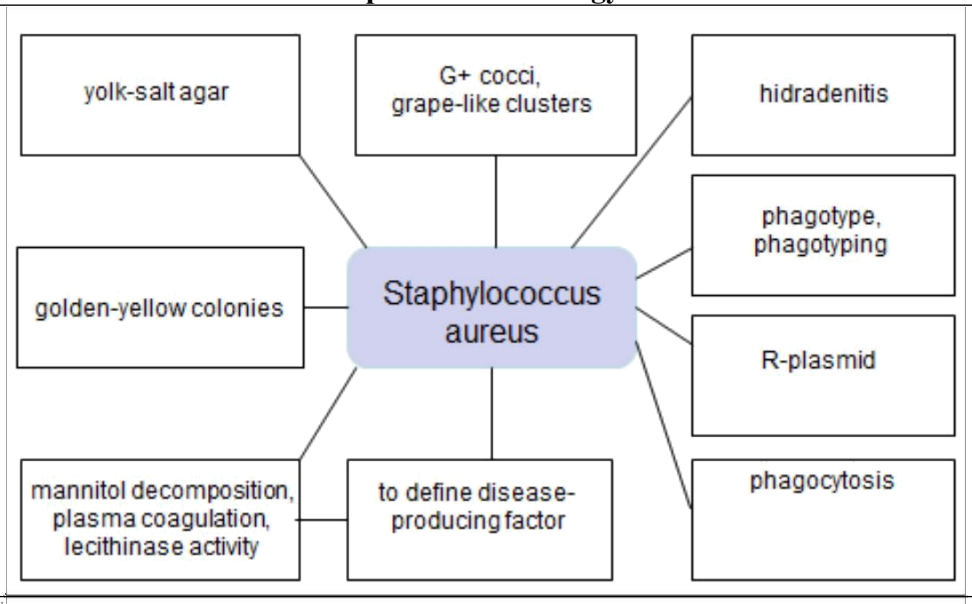
During sanitary and bacteriological examination of air in a drugstore it was revealed that the air had high concentration of sanitary meaningful microorganisms. What microorganisms are these?

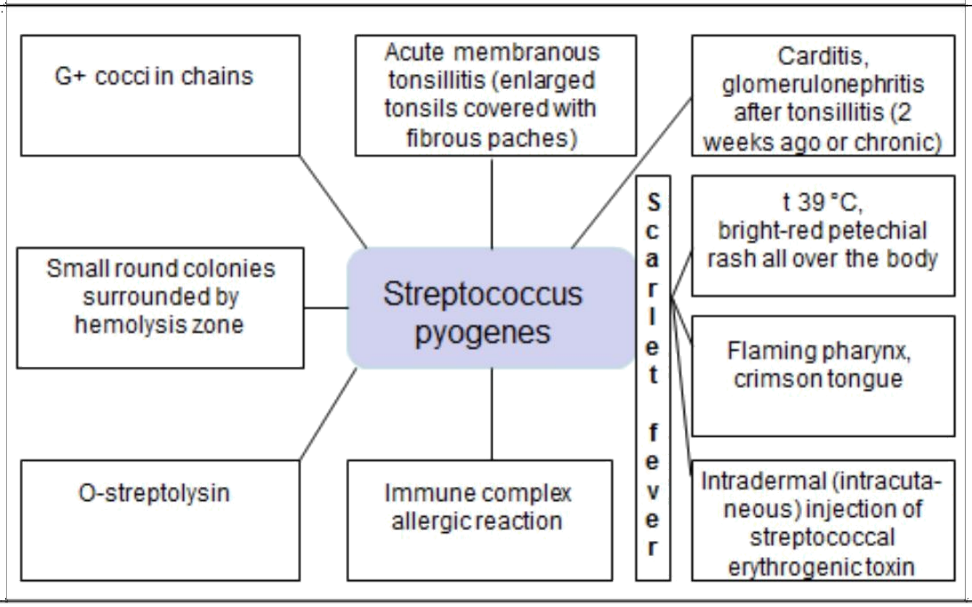
A. Staphylococcus aureus and hemolytic streptococcus
B. Diphtheritic and tuberculous bacilli C. Colibacilli and blue pus bacilli
D. Epidermal staphylococcus and Sarcina E. Enterococci and Citrobacter

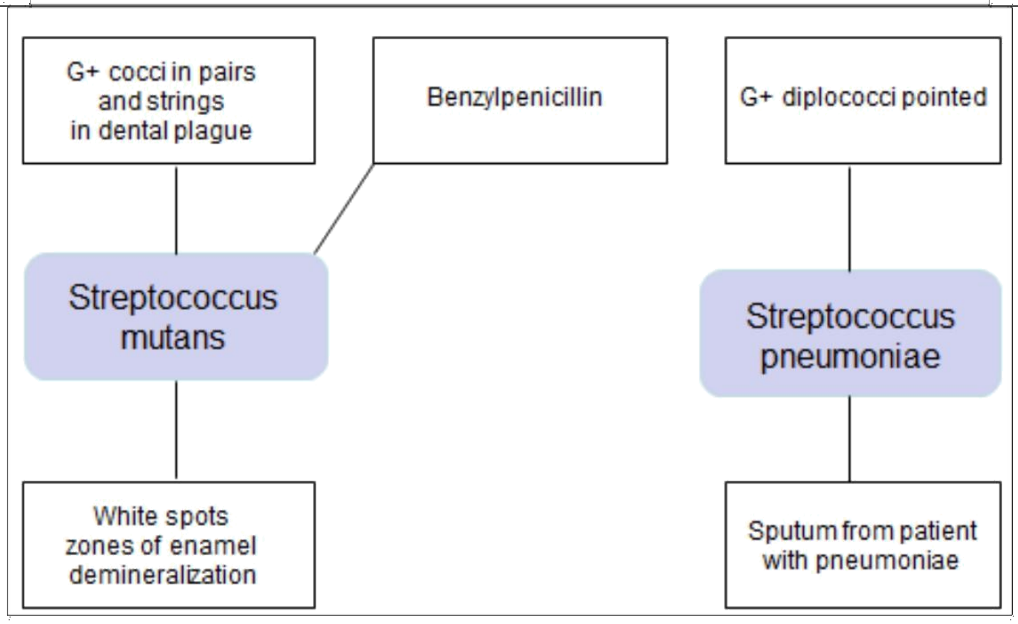
Sanitary-biologic examination of air in a drugstore revealed a sanitary-indicative microorganism. Name it:

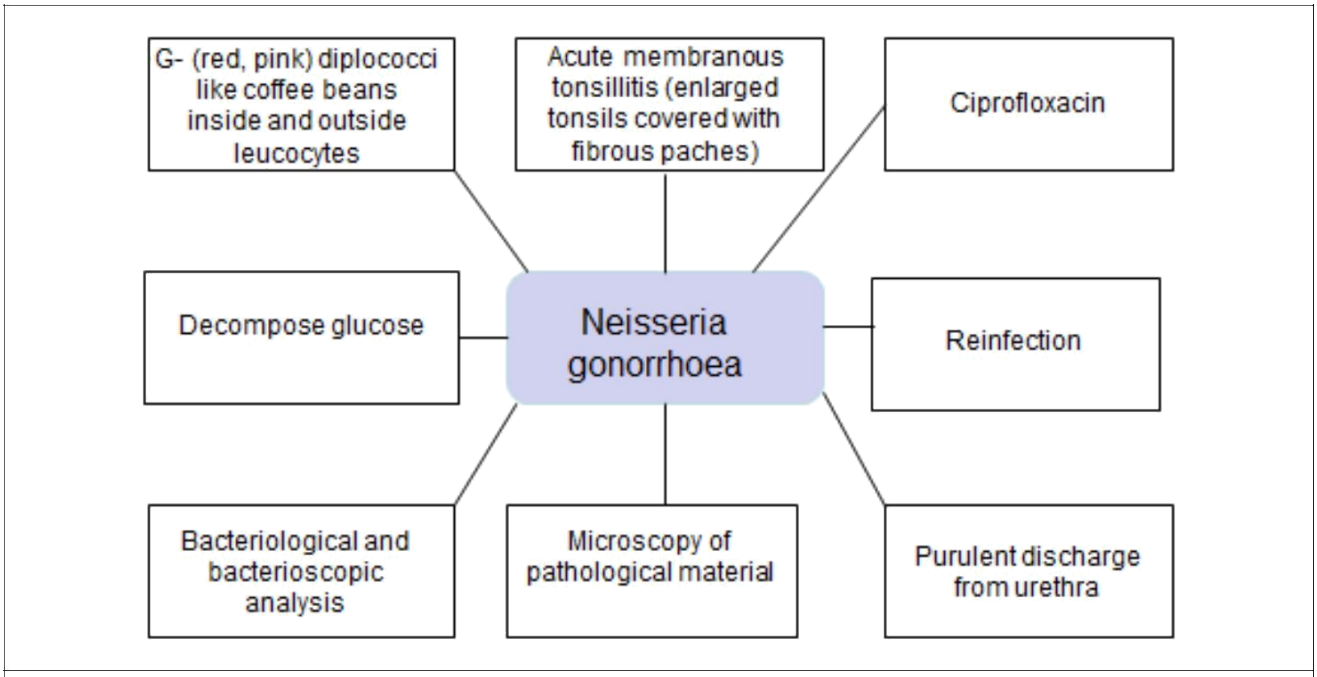
A. Staphylococcus aureusB. Colon bacillus C. Fecal enterococcus
D. α-haemolytic streptococcus E. Citrobacter

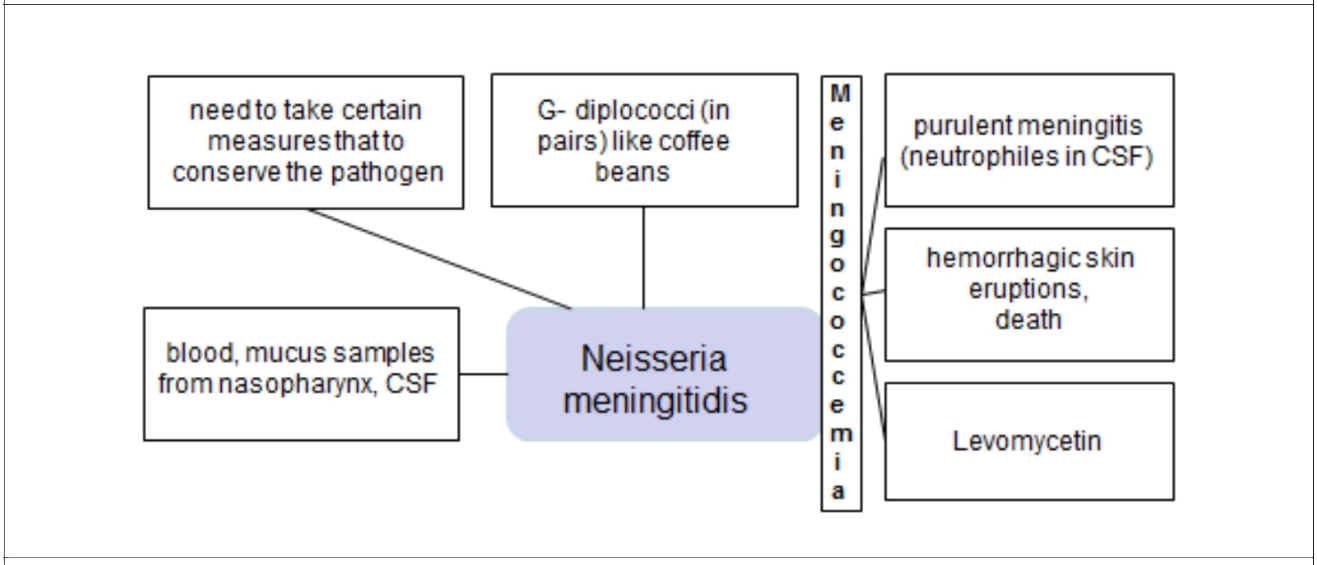
Routine investigation of microbiological sanitary condition of air in a hospital is performed once in 3 months. What microorganism is the sanitary indicator of air condition in an enclosed space? **A.S.aureus** B. E.coli C. E.faecalis D. P.aeruginosa E. C.perfringens	
Sanitary bacteriological research on water by the membrane filter method revealed two red colonies on a membrane filter (Endo agar) through which 500 ml of analyzed water were passed. Calculate the coli index and coli titer of the analyzed water: **A. 4 and 250** B.2 and 500 C.250 and 4 D.500 and 2 E.250 and 2	
During sanitary and bacteriological testing of water with the membrane filter technique there were revealed two red colonies on a membrane filter (Endo agar) through which 500 ml of water was filtred. Calculate the coli index and coli titer of the analyzed water: **A. 4 and 250** B.2 and 500 C.250 and 4 D.500 and 2 E.250 and 2	
After the sanitary and bacteriological study of tap water the following results were obtained: the total number of bacteria in 1,0 ml was 80, coli index was 3. How would you interpret the study results? **A. Water is safe to be consumed** B. Water is of doubtful quality C. Water is of highly doubtful quality D. Water is contaminated E. Water is highly contaminated	
Bacteriological analysis of tap water has resulted in the following: total bacterial count in 1,0 ml of water is 80, coli index is 3. What would be the conclusion? **A. The water is safe for consumption** B. The water quality is doubtful C. The water is extremely polluted D. The water quality is extremely doubtful E. The water is polluted	
After the water supply system had been put into operation in a new residential area, the medical officers of sanitary and epidemiological station measured total microbial number in the water. Name the maximum permissible value of this indicator for potable water: A. 1000. B. 500. C. 400. **D. 100.** E. 10.	
A laboratory received a sample of water used in drug production for sanitary and viral analysis. What group of viruses will indicate fecal contamination of water and thus the need for its additional purification? **A. Picornaviridae** B. Herpesviridae C. Flaviviridae D. Retroviridae E. Orthomyxoviridae	
In an urban settlement situated on the riverbank, an outbreak of hepatitis A was registered. The disease might have water origin. This assumption can be confirmed by growth of the following values of water quality: **A. Number of coli-phages** B. Escherichia coli index C. Oxidability D. Index of fecal coli-forms E. Presence of benign leptospirosis pathogen	
Basing upon the data of laboratory assessment of sanitary state of soil in a certain territory, the soil was found to be low-contaminated according to the sanitary indicative value; contaminated according to the coli titer; low-contaminated according to the anaerobe titer (Cl. perfringens). This is indicative of: **A. Fresh fecal contamination** B. Old fecal contamination C. Insufficient intensity of soil humification D. Constant entry of organic protein contaminations E. Insufficient insolation and aeration of soil	

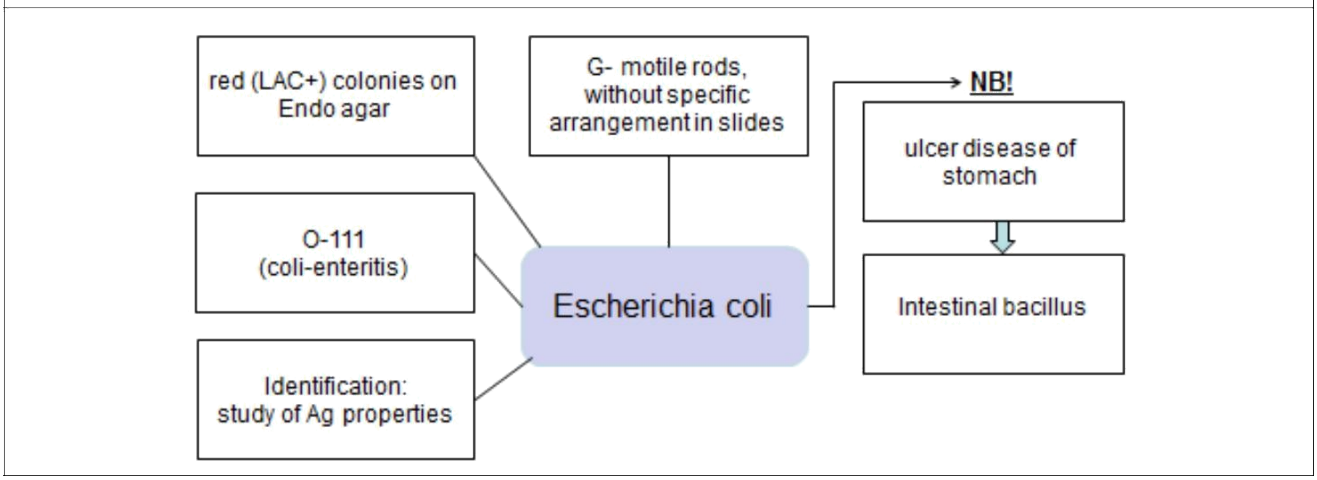

yolk-salt agar
G+ cocci, grape-like clusters
hidradenitis
phagotype, phagotyping
golden-yellow colonies
Staphylococcus aureus
R-plasmid
mannitol decomposition, plasma coagulation, lecithinase activity
to define disease-producing factor
phagocytosis

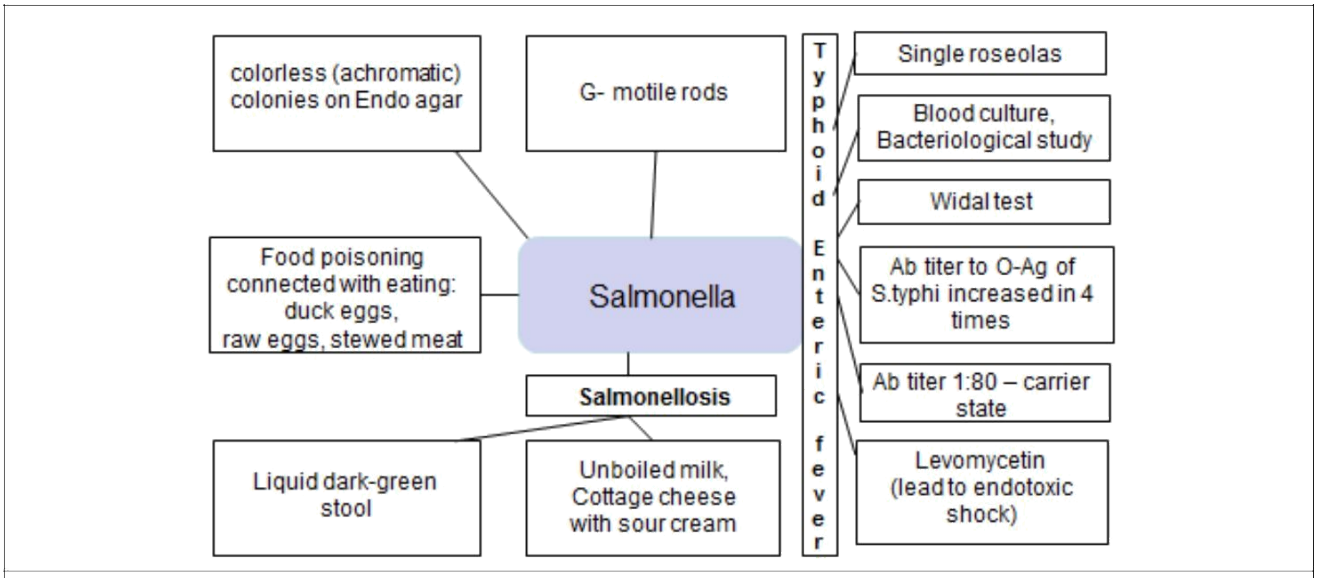

G+ cocci in chains
Acute membranous tonsillitis (enlarged tonsils covered with fibrous paches)
Carditis, glomerulonephritis after tonsillitis (2 weeks ago or chronic)
Scarlet fever
t 39 °C, bright-red petechial rash all over the body
Small round colonies surrounded by hemolysis zone
Streptococcus pyogenes
Flaming pharynx, crimson tongue
O-streptolysin
Immune complex allergic reaction
Intradermal (intracutaneous) injection of streptococcal erythrogenic toxin

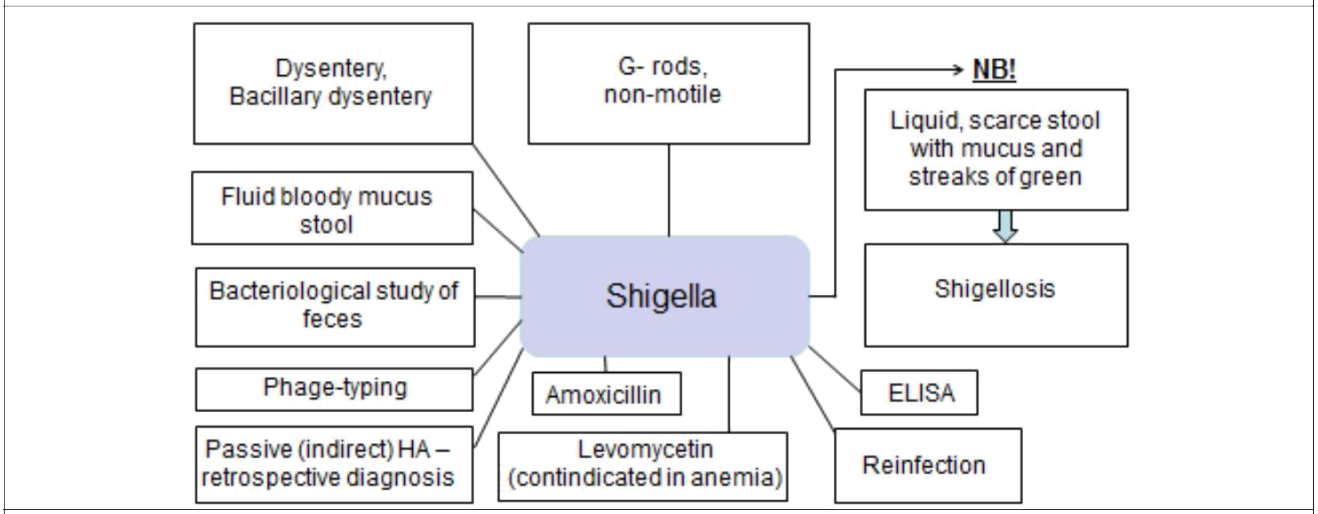

G+ cocci in pairs and strings in dental plague
Benzylpenicillin
G+ diplococci pointed
Streptococcus mutans
Streptococcus pneumoniae
White spots zones of enamel demineralization
Sputum from patient with pneumoniae

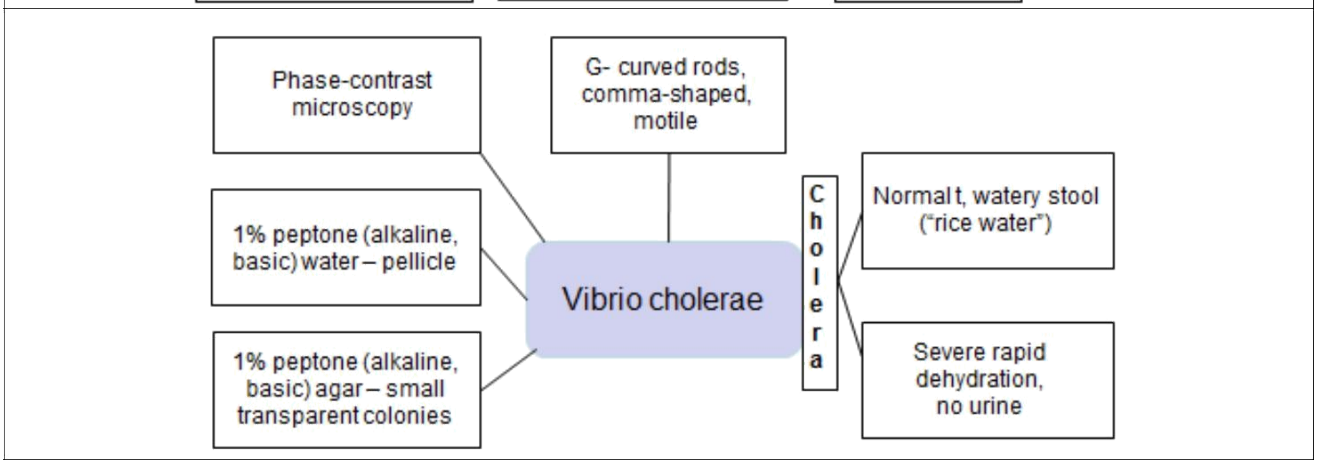

G- (red, pink) diplococci like coffee beans inside and outside leucocytes
Acute membranous tonsillitis (enlarged tonsils covered with fibrous paches)
Ciprofloxacin
Decompose glucose
Neisseria gonorrhoea
Reinfection
Bacteriological and bacterioscopic analysis
Microscopy of pathological material
Purulent discharge from urethra

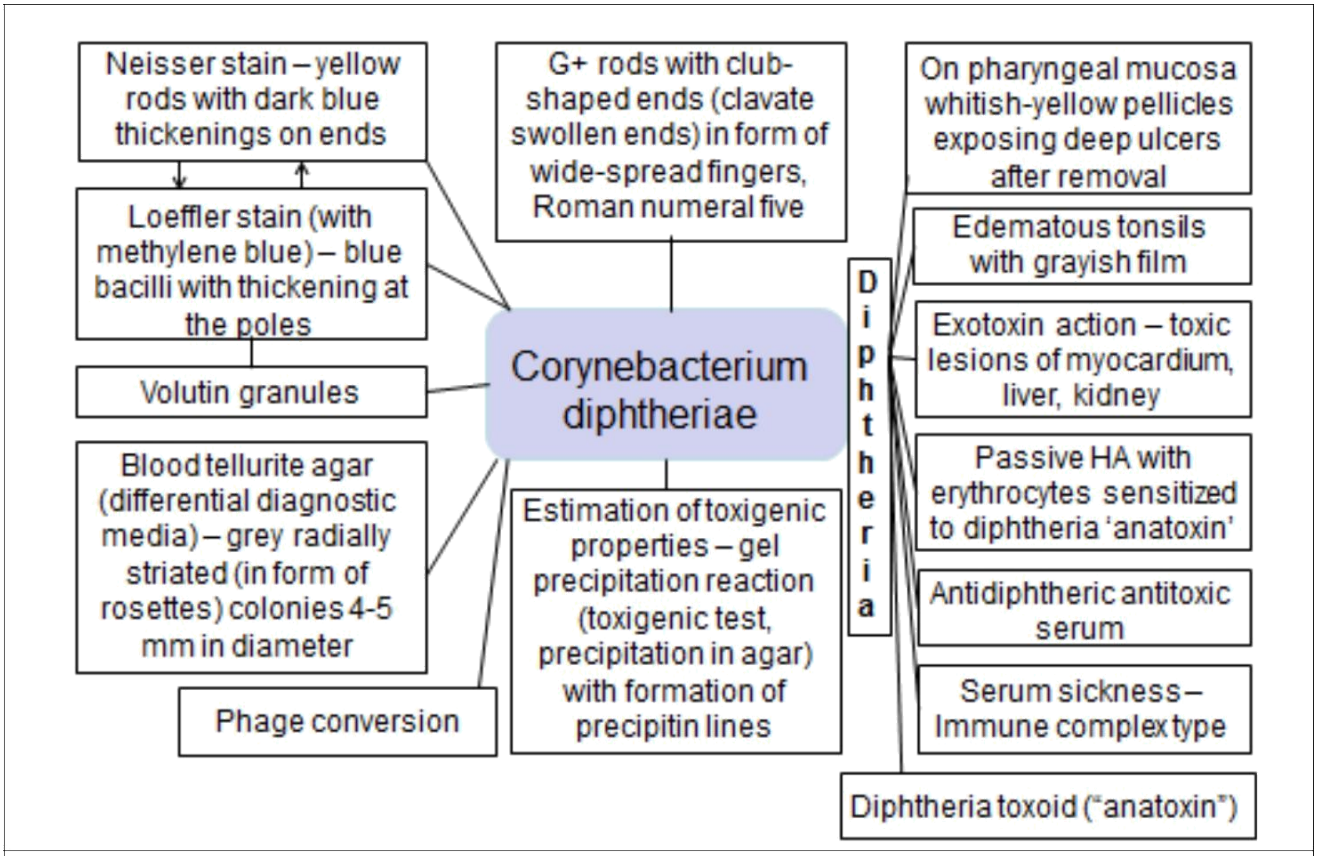

need to take certain measures that to conserve the pathogen
G- diplococci (in pairs) like coffee beans
Meningococcemia
purulent meningitis (neutrophiles in CSF)
hemorrhagic skin eruptions, death
blood, mucus samples from nasopharynx, CSF
Neisseria meningitidis
Levomycetin

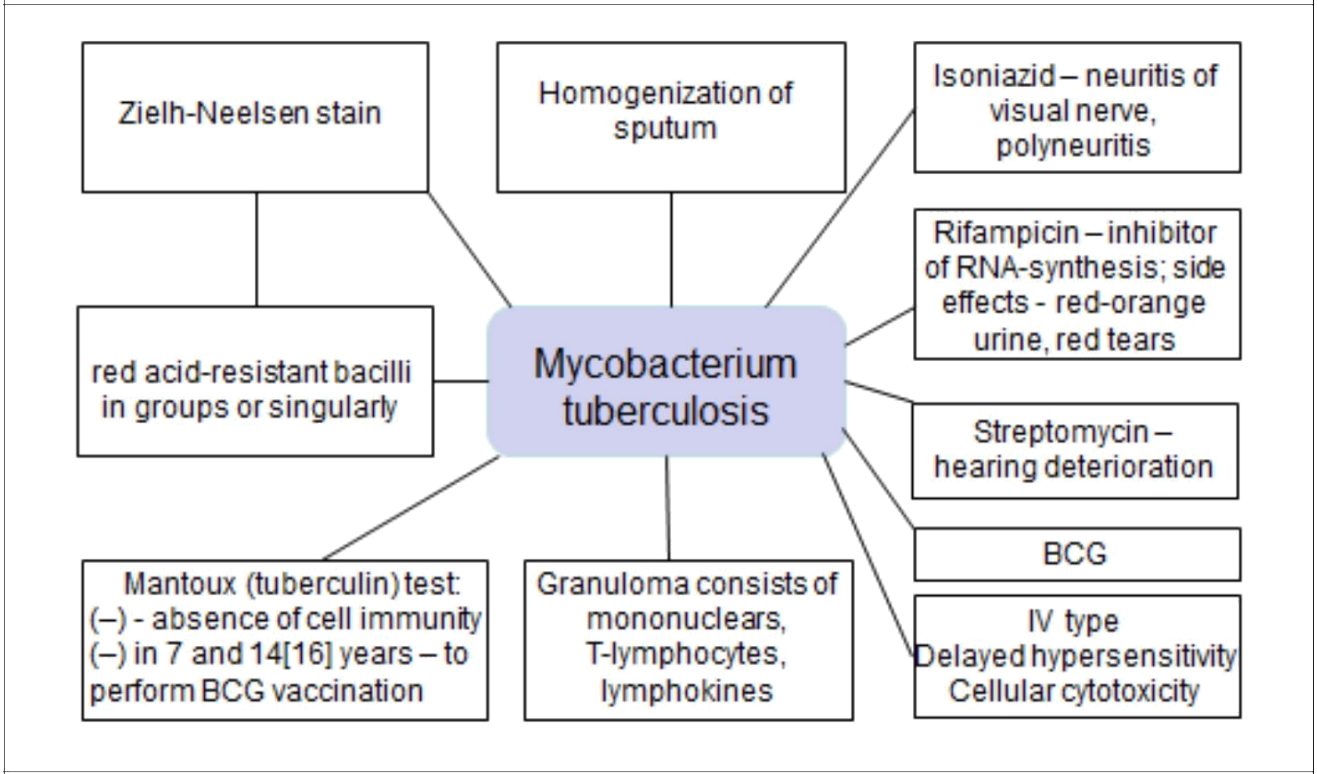

red (LAC+) colonies on Endo agar
G- motile rods, without specific arrangement in slides
NB!
ulcer disease of stomach
O-111 (coli-enteritis)
Escherichia coli
Intestinal bacillus
Identification: study of Ag properties

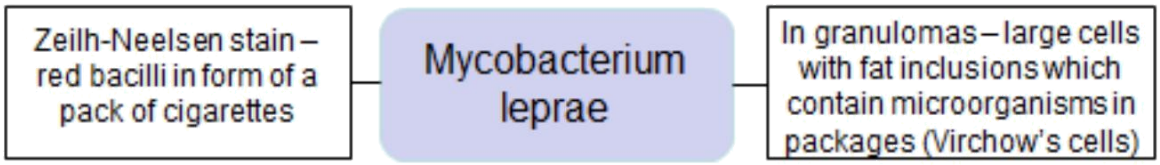

colorless (achromatic) colonies on Endo agar
G- motile rods
Typhoid Enteric fever
Single roseolas
Blood culture, Bacteriological study
Widal test
Ab titer to O-Ag of S.typhi increased in 4 times
Ab titer 1:80 – carrier state
Levomycetin (lead to endotoxic shock)
Food poisoning connected with eating: duck eggs, raw eggs, stewed meat
Salmonella
Salmonellosis
Liquid dark-green stool
Unboiled milk, Cottage cheese with sour cream

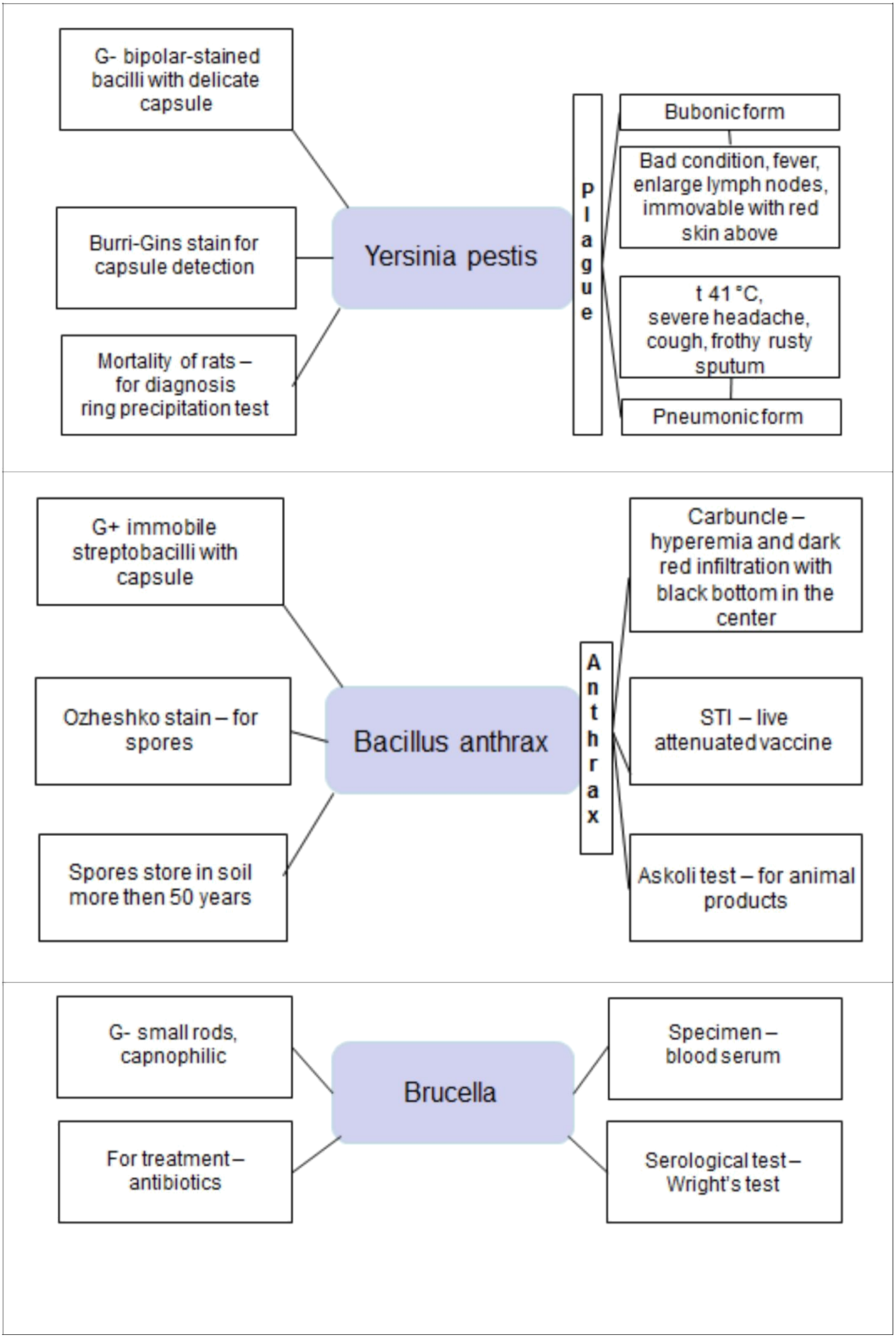

Dysentery, Bacillary dysentery
G- rods, non-motile
NB!
Liquid, scarce stool with mucus and streaks of green
Fluid bloody mucus stool
Shigella
Shigellosis
Bacteriological study of feces
Phage-typing
Amoxicillin
ELISA
Passive (indirect) HA – retrospective diagnosis
Levomycetin (contindicated in anemia)
Reinfection

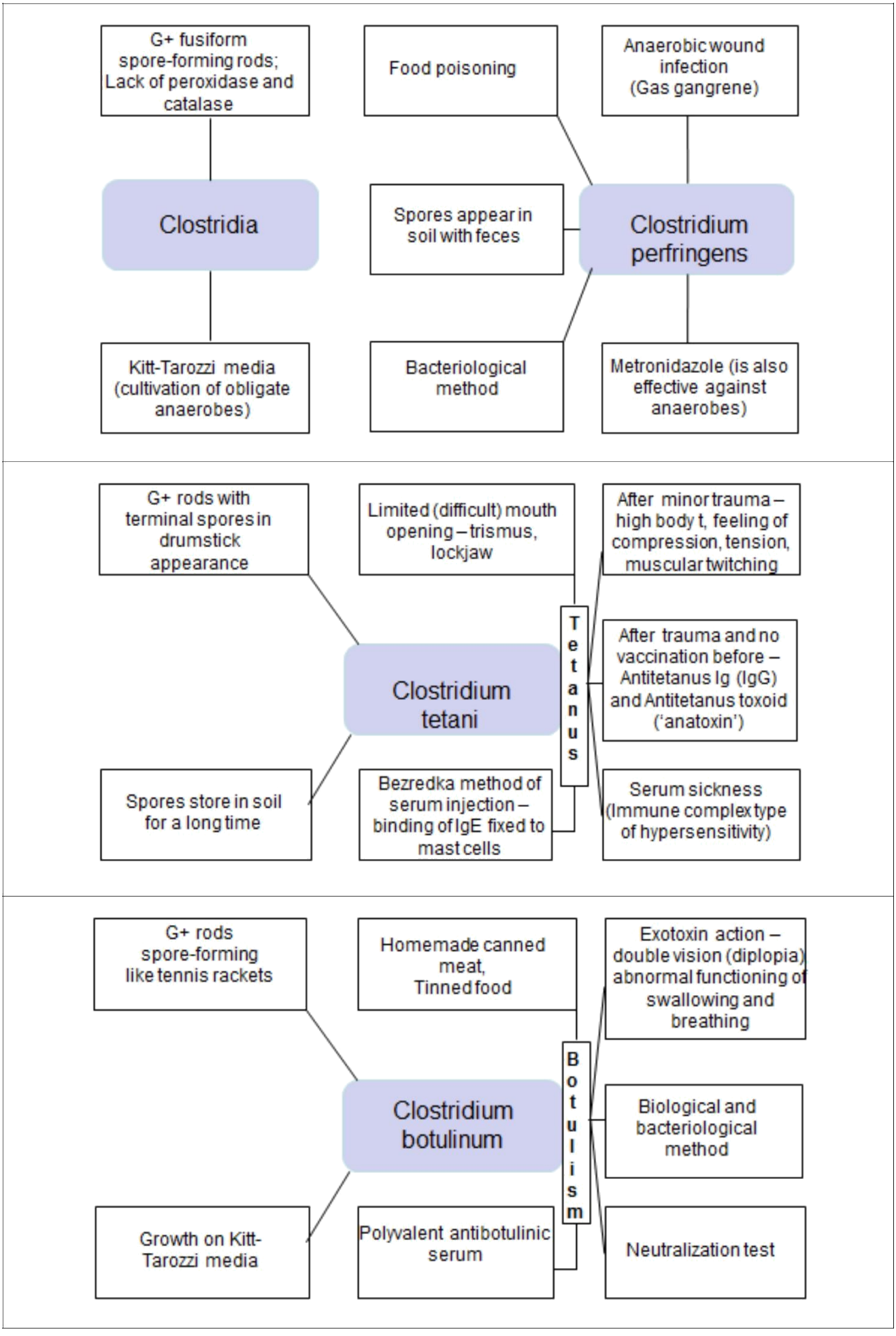

Phase-contrast microscopy
G- curved rods, comma-shaped, motile
Cholera
Normal t, watery stool ("rice water")
1% peptone (alkaline, basic) water – pellicle
Vibrio cholerae
Severe rapid dehydration, no urine
1% peptone (alkaline, basic) agar – small transparent colonies

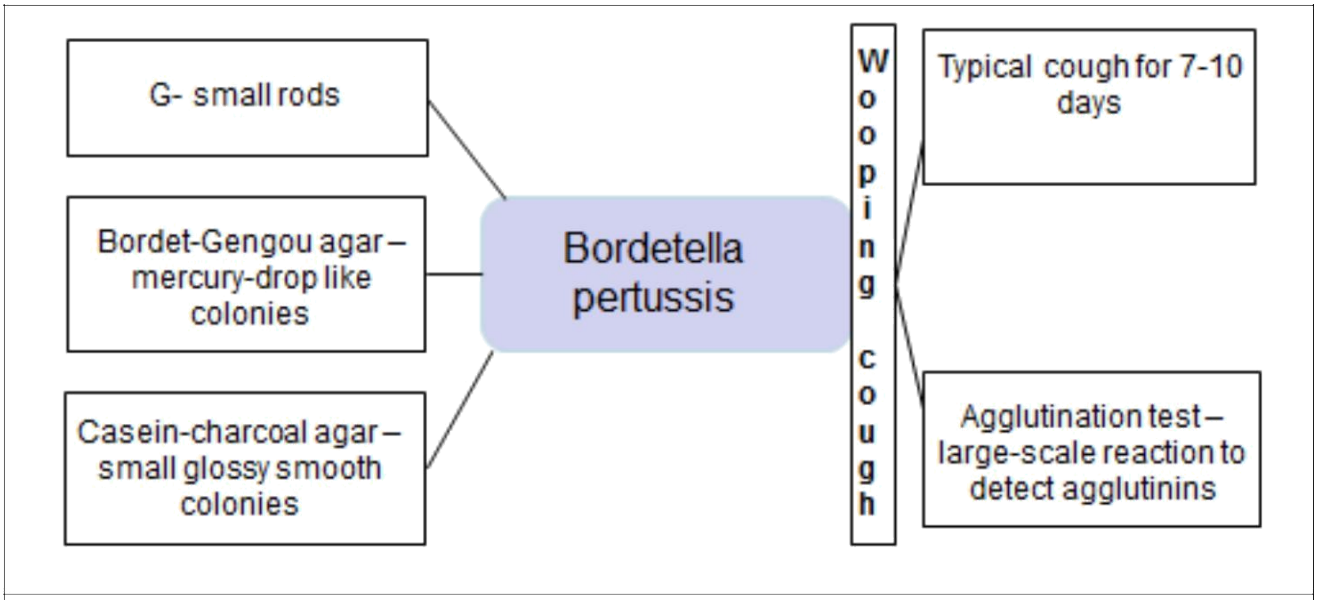

Neisser stain – yellow rods with dark blue thickenings on ends
Loeffler stain (with methylene blue) – blue bacilli with thickening at the poles
Volutin granules
Blood tellurite agar (differential diagnostic media) – grey radially striated (in form of rosettes) colonies 4-5 mm in diameter
Phage conversion
G+ rods with club-shaped ends (clavate swollen ends) in form of wide-spread fingers, Roman numeral five
Corynebacterium diphtheriae
Estimation of toxigenic properties – gel precipitation reaction (toxigenic test, precipitation in agar) with formation of precipitin lines
Diphtheria
On pharyngeal mucosa whitish-yellow pellicles exposing deep ulcers after removal
Edematous tonsils with grayish film
Exotoxin action – toxic lesions of myocardium, liver, kidney
Passive HA with erythrocytes sensitized to diphtheria 'anatoxin'
Antidiphtheric antitoxic serum
Serum sickness – Immune complex type
Diphtheria toxoid ("anatoxin")

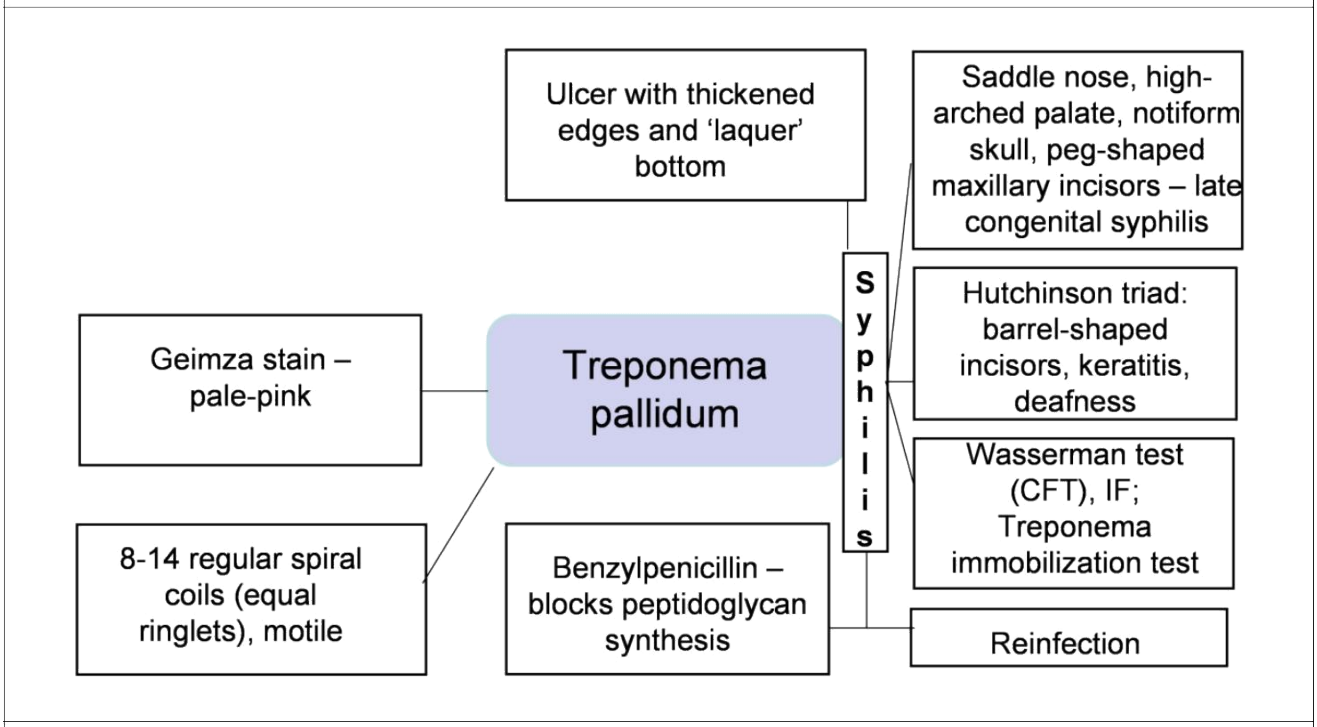

Zielh-Neelsen stain
red acid-resistant bacilli in groups or singularly
Homogenization of sputum
Mycobacterium tuberculosis
Mantoux (tuberculin) test: (–) - absence of cell immunity (–) in 7 and 14[16] years – to perform BCG vaccination
Granuloma consists of mononuclears, T-lymphocytes, lymphokines
Isoniazid – neuritis of visual nerve, polyneuritis
Rifampicin – inhibitor of RNA-synthesis; side effects - red-orange urine, red tears
Streptomycin – hearing deterioration
BCG
IV type Delayed hypersensitivity Cellular cytotoxicity

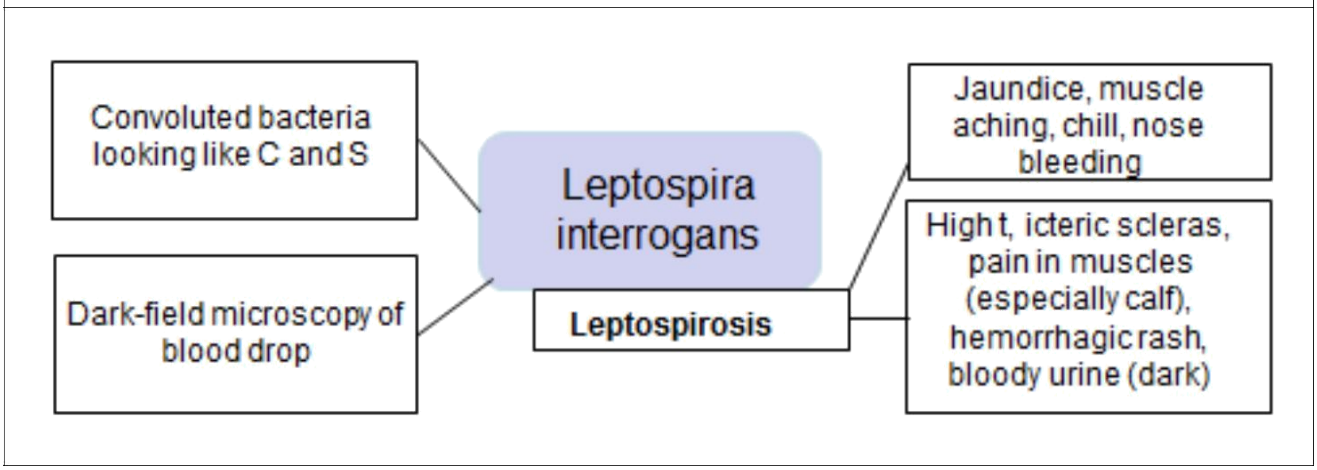

Zeilh-Neelsen stain – red bacilli in form of a pack of cigarettes
Mycobacterium leprae
In granulomas – large cells with fat inclusions which contain microorganisms in packages (Virchow's cells)

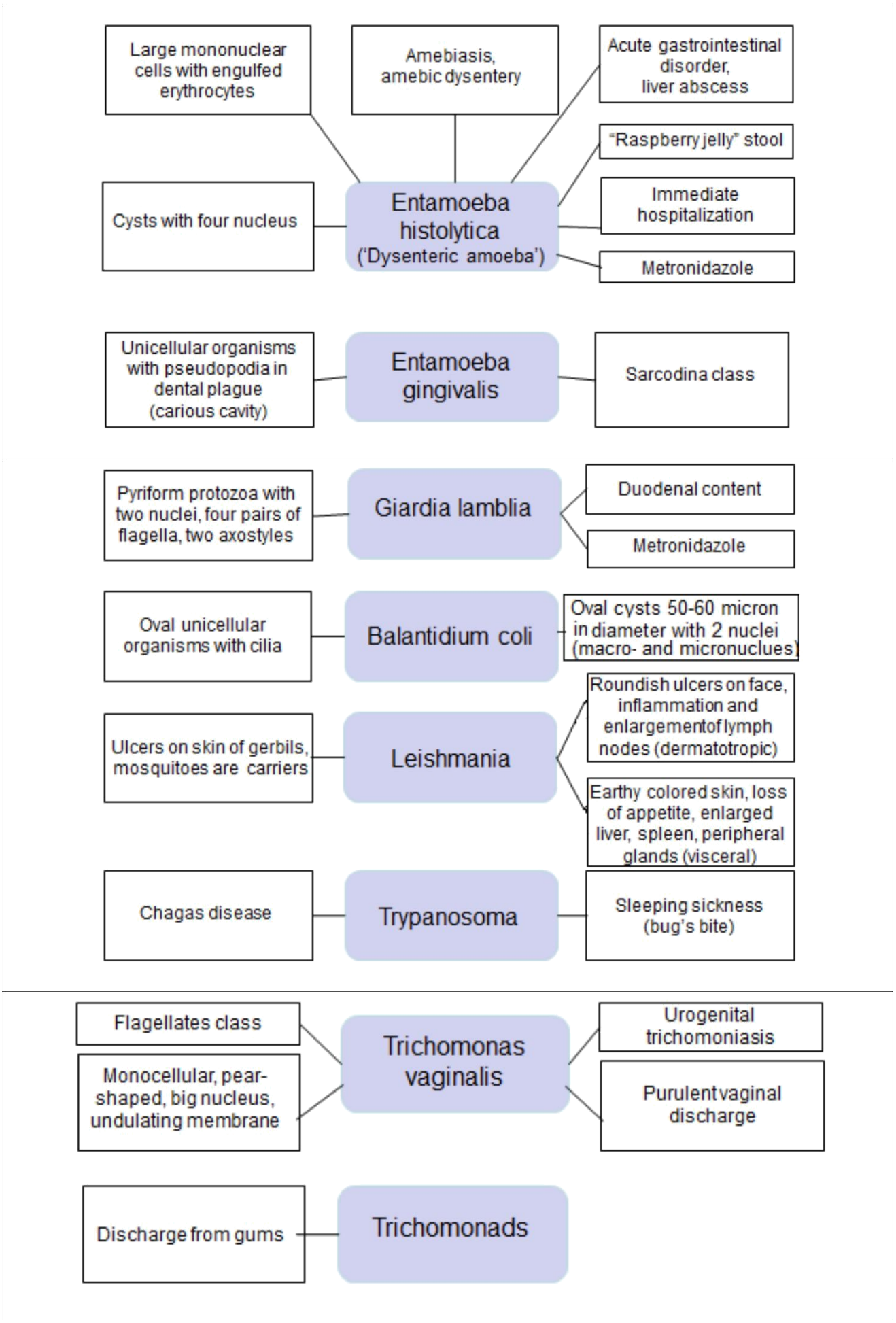

G- bipolar-stained bacilli with delicate capsule
Burri-Gins stain for capsule detection
Mortality of rats – for diagnosis ring precipitation test
Yersinia pestis
Plague
Bubonic form
Bad condition, fever, enlarge lymph nodes, immovable with red skin above
t 41 °C, severe headache, cough, frothy rusty sputum
Pneumonic form
G+ immobile streptobacilli with capsule
Ozheshko stain – for spores
Spores store in soil more then 50 years
Bacillus anthrax
Anthrax
Carbuncle – hyperemia and dark red infiltration with black bottom in the center
STI – live attenuated vaccine
Askoli test – for animal products
G- small rods, capnophilic
For treatment – antibiotics
Brucella
Specimen – blood serum
Serological test – Wright's test

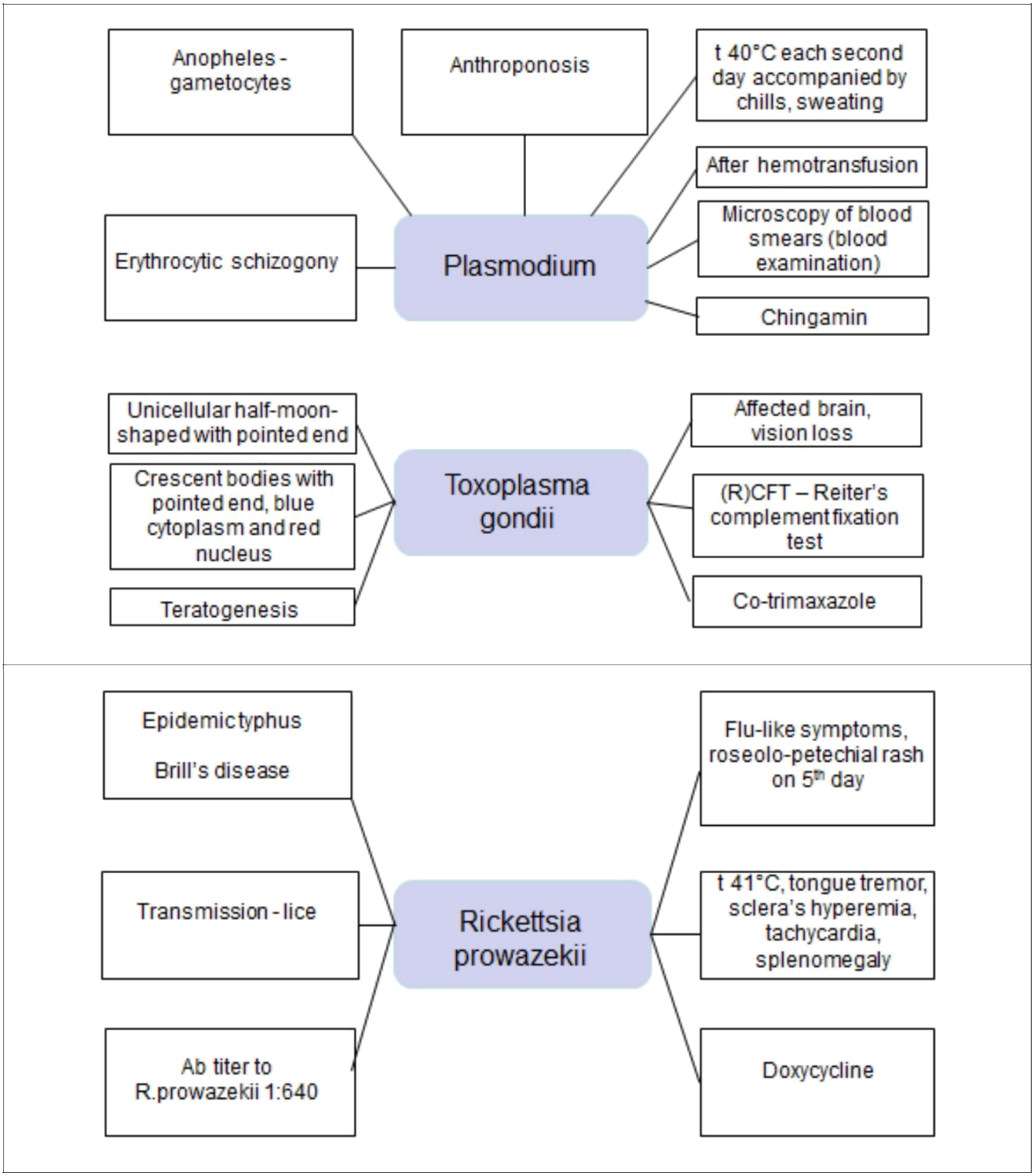

G+ fusiform spore-forming rods; Lack of peroxidase and catalase
Clostridia
Kitt-Tarozzi media (cultivation of obligate anaerobes)
Food poisoning
Anaerobic wound infection (Gas gangrene)
Spores appear in soil with feces
Clostridium perfringens
Bacteriological method
Metronidazole (is also effective against anaerobes)
G+ rods with terminal spores in drumstick appearance
Clostridium tetani
Spores store in soil for a long time
Limited (difficult) mouth opening – trismus, lockjaw
Tetanus
Bezredka method of serum injection – binding of IgE fixed to mast cells
After minor trauma – high body t, feeling of compression, tension, muscular twitching
After trauma and no vaccination before – Antitetanus Ig (IgG) and Antitetanus toxoid ('anatoxin')
Serum sickness (Immune complex type of hypersensitivity)
G+ rods spore-forming like tennis rackets
Clostridium botulinum
Growth on Kitt-Tarozzi media
Homemade canned meat, Tinned food
Botulism
Polyvalent antibotulinic serum
Exotoxin action – double vision (diplopia), abnormal functioning of swallowing and breathing
Biological and bacteriological method
Neutralization test

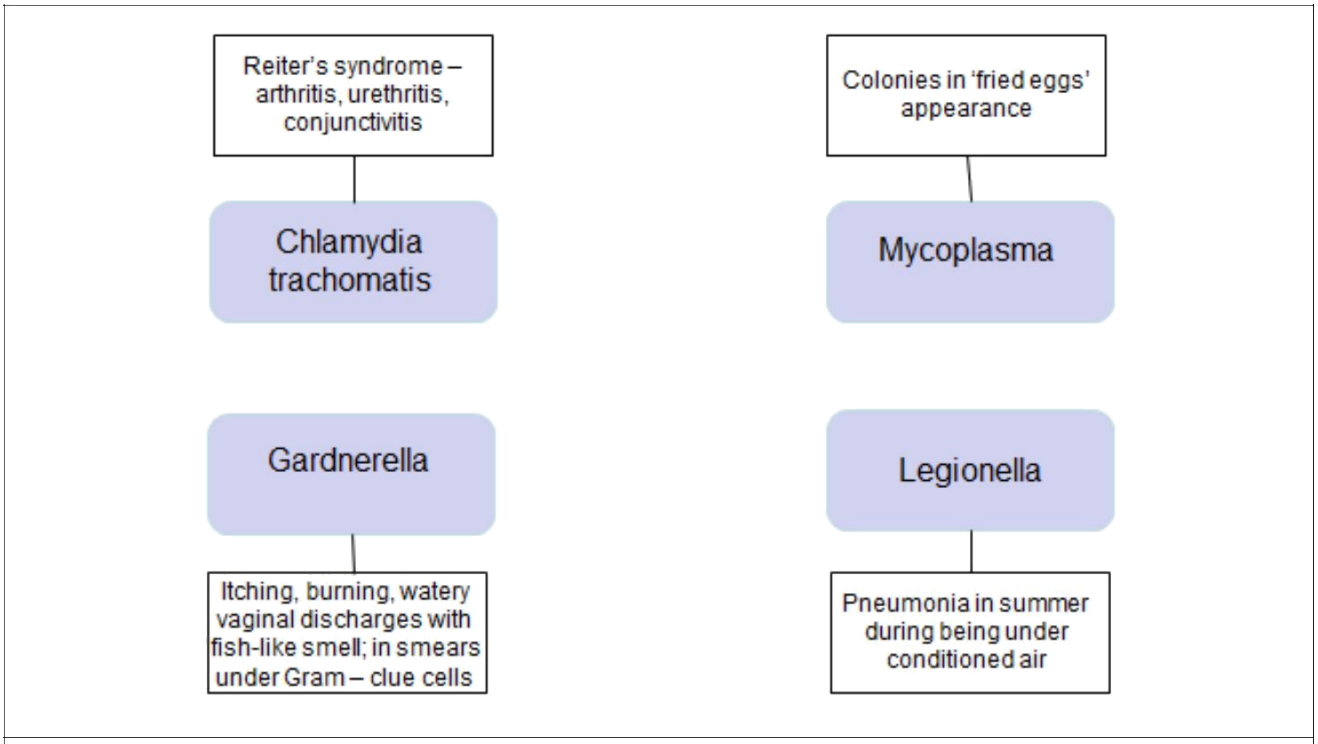

G- small rods
Bordet-Gengou agar – mercury-drop like colonies
Casein-charcoal agar – small glossy smooth colonies
Bordetella pertussis
Whooping cough
Typical cough for 7-10 days
Agglutination test – large-scale reaction to detect agglutinins

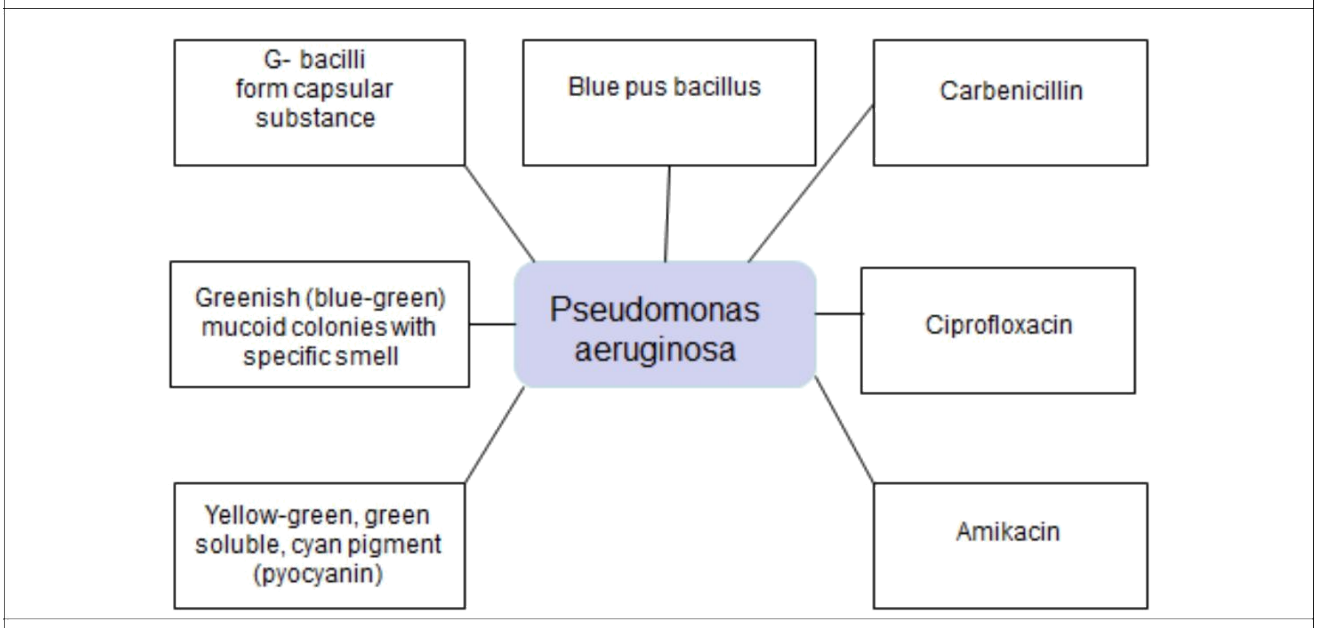

Ulcer with thickened edges and 'laquer' bottom
Saddle nose, high-arched palate, notiform skull, peg-shaped maxillary incisors – late congenital syphilis
Hutchinson triad: barrel-shaped incisors, keratitis, deafness
Wasserman test (CFT), IF; Treponema immobilization test
Reinfection
Syphilis
Geimza stain – pale-pink
Treponema pallidum
8-14 regular spiral coils (equal ringlets), motile
Benzylpenicillin – blocks peptidoglycan synthesis

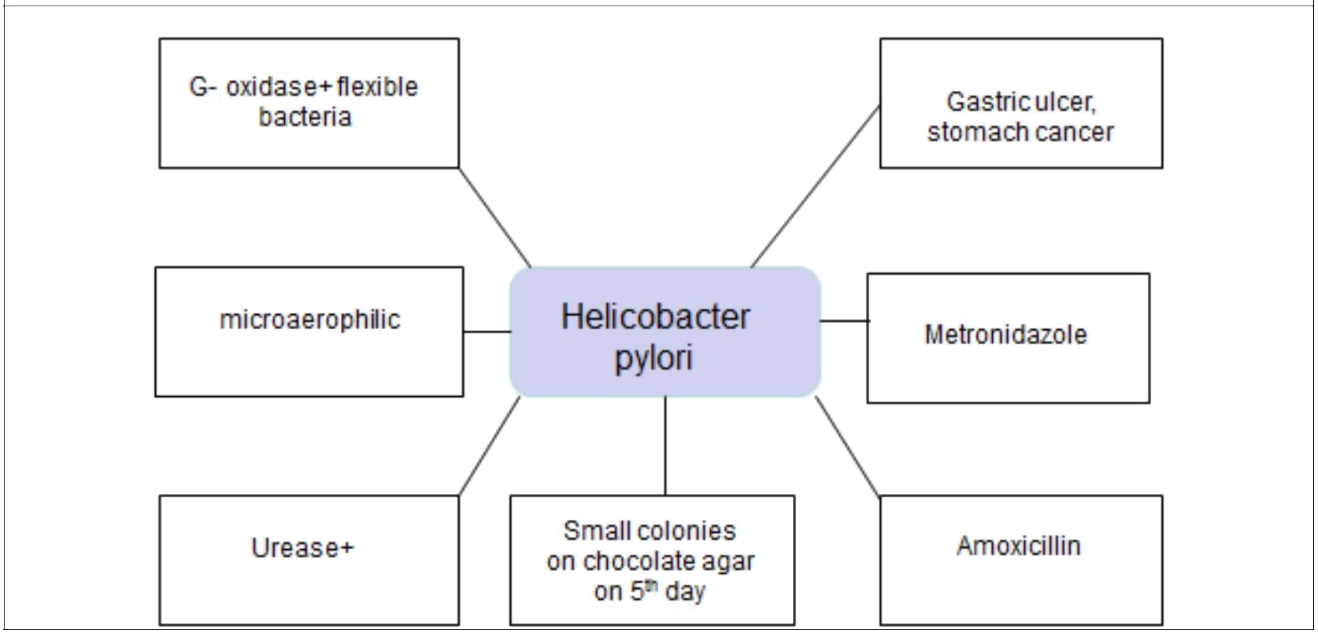

Convoluted bacteria looking like C and S
Dark-field microscopy of blood drop
Leptospira interrogans
Leptospirosis
Jaundice, muscle aching, chill, nose bleeding
High t, icteric scleras, pain in muscles (especially calf), hemorrhagic rash, bloody urine (dark)


Large mononuclear cells with engulfed erythrocytes
Amebiasis, amebic dysentery
Acute gastrointestinal disorder, liver abscess
"Raspberry jelly" stool
Immediate hospitalization
Metronidazole
Cysts with four nucleus
Entamoeba histolytica ('Dysenteric amoeba')
Unicellular organisms with pseudopodia in dental plague (carious cavity)
Entamoeba gingivalis
Sarcodina class
Pyriform protozoa with two nuclei, four pairs of flagella, two axostyles
Giardia lamblia
Duodenal content
Metronidazole
Oval unicellular organisms with cilia
Balantidium coli
Oval cysts 50-60 micron in diameter with 2 nuclei (macro- and micronuclues)
Ulcers on skin of gerbils, mosquitoes are carriers
Leishmania
Roundish ulcers on face, inflammation and enlargementof lymph nodes (dermatotropic)
Earthy colored skin, loss of appetite, enlarged liver, spleen, peripheral glands (visceral)
Chagas disease
Trypanosoma
Sleeping sickness (bug's bite)
Flagellates class
Monocellular, pear-shaped, big nucleus, undulating membrane
Trichomonas vaginalis
Urogenital trichomoniasis
Purulent vaginal discharge
Discharge from gums
Trichomonads

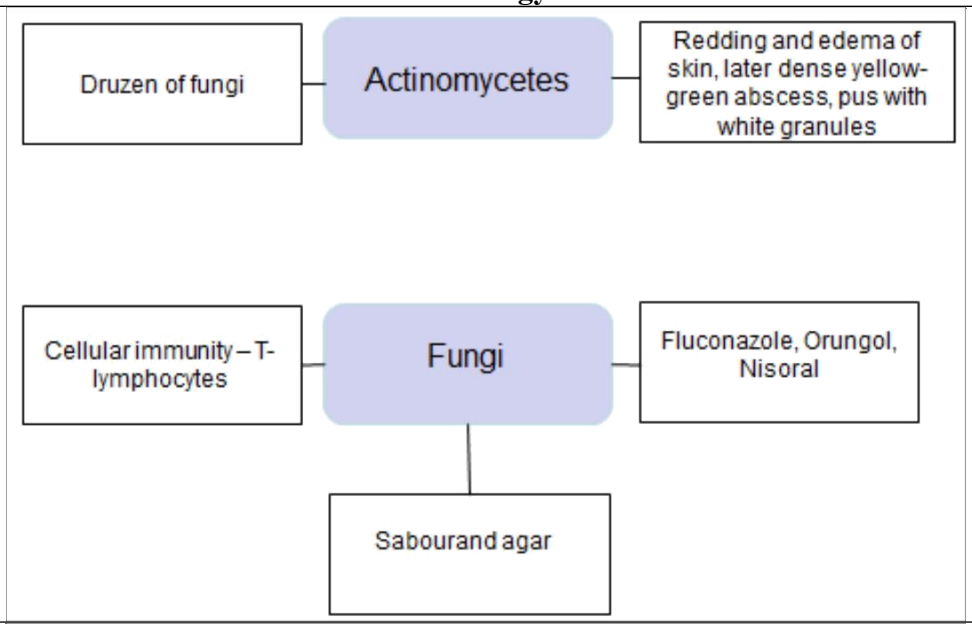

Anopheles - gametocytes
Anthroponosis
t 40°C each second day accompanied by chills, sweating
After hemotransfusion
Microscopy of blood smears (blood examination)
Chingamin
Erythrocytic schizogony
Plasmodium
Unicellular half-moon-shaped with pointed end
Crescent bodies with pointed end, blue cytoplasm and red nucleus
Teratogenesis
Toxoplasma gondii
Affected brain, vision loss
(R)CFT – Reiter's complement fixation test
Co-trimaxazole
Epidemic typhus
Brill's disease
Transmission - lice
Ab titer to R.prowazekii 1:640
Rickettsia prowazekii
Flu-like symptoms, roseolo-petechial rash on 5th day
t 41°C, tongue tremor, sclera's hyperemia, tachycardia, splenomegaly
Doxycycline

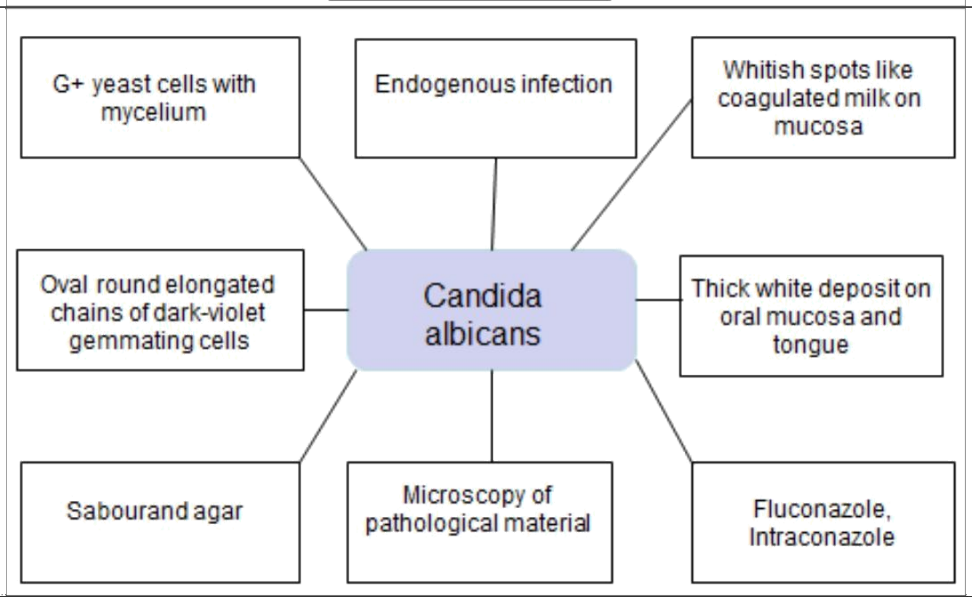

Reiter's syndrome – arthritis, urethritis, conjunctivitis
Chlamydia trachomatis
Colonies in 'fried eggs' appearance
Mycoplasma
Gardnerella
Itching, burning, watery vaginal discharges with fish-like smell; in smears under Gram – clue cells
Legionella
Pneumonia in summer during being under conditioned air


G- bacilli form capsular substance
Blue pus bacillus
Carbenicillin
Greenish (blue-green) mucoid colonies with specific smell
Pseudomonas aeruginosa
Ciprofloxacin
Yellow-green, green soluble, cyan pigment (pyocyanin)
Amikacin

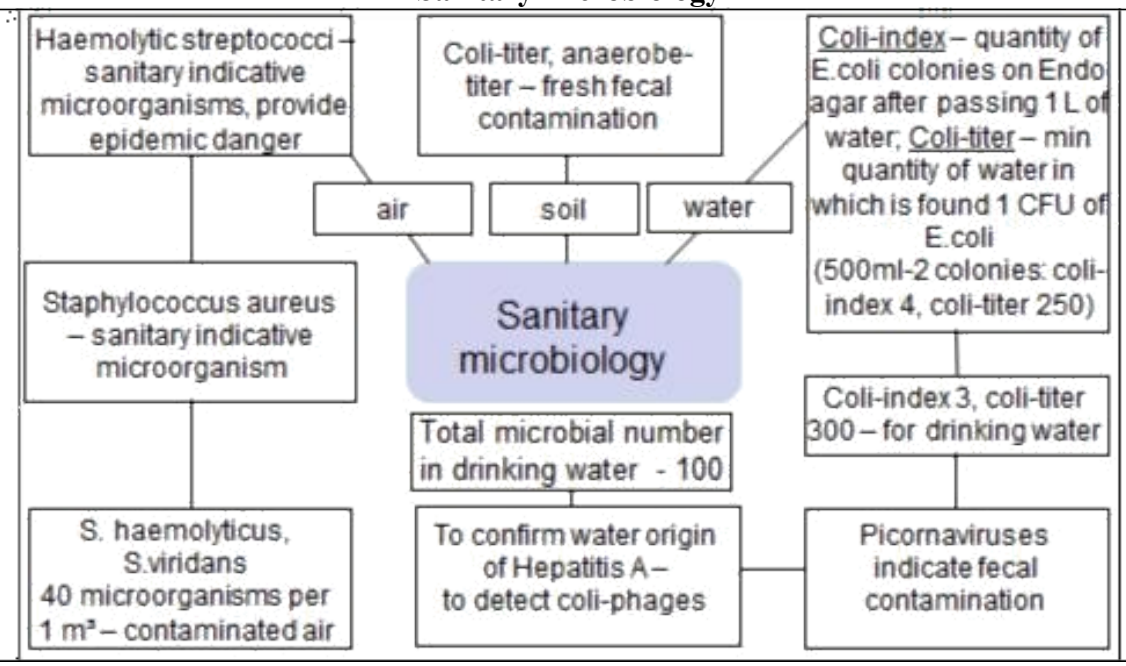

G- oxidase+ flexible bacteria
Gastric ulcer, stomach cancer
microaerophilic
Helicobacter pylori
Metronidazole
Urease+
Small colonies on chocolate agar on 5th day
Amoxicillin

Micology





Sanitary microbiology



References:

https://testkrok.org.ua
https://testcentr.org.ua
https://www.google.ru
www.microbiologybook.org
http://www.eurolab.ua
https://ru.wikipedia.org
www.who.int
www.medportal.ru
http://encephalitis.ru
www.infectology.ru