FINAL EXAM

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BS IN MICROBIOLOGY

SEMESTER: 6TH

COURSE TITLE: CLINICLE BACTERIOLOGY

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ANSWER AND QUESTION

QUESTION NO: 1

Differentiate between gastroenteritis and GIT infection?

PART: A

ANSWER:

GASTROENTRITIS:

Gastroenteritis when stomach starts abnormal function and intestine become inflamed by various microorganism included virus bacteria etc. so due to viral and bacterial infection it can spread person to person after eating contaminated food and drinking contaminated water.

COMMON MICROORGANISM:

There are several microorganism included if gastroenteritis caused by virus included norovirus and rotavirus and also called viral gastroenteritis.

If caused by bacteria included salmonella, campylobacter and pathogenic strain E.coli called bacterial gastroenteritis.

CAUSES:

Mostly viral gastroenteritis is caused in children like Rota virus.

But less common in adults. Severe diarrhea can caused in both adults and children.

SIGN AND SYMPTOMS:

Having abdominal pain

Vomiting and nausea

Headache

Fever stomach pain.

TREATMENT:

This can be treated by drinking juices a lots of water and hydrated drinks to recover body.

GASTRO INTESTINAL INFECTION:

Gastro intestinal tract infection is that infection in which different microorganism involved like bacteria parasites and virus can cause infection and GIT become inflamed including stomach and small intestine.

CAUSES:

Gastro intestinal tract infection is caused by eating contaminated food and like raw meat under cooked food and drinking contaminated water and milk.

SYMPTOMS:

Diarrhea mostly bloody

Abdominal pain

Fever

Stomach pain and dehydration

Headache.

TREATMENT:

Treatment is like gastroenteritis to become hydrated. A lots of water and eating brat diet like banana rice bread etc.

PART: B

What are common cause of gastrointestinal disease caused by bacteria?

ANSWER:

BACTERIAL GASTROINTESTINAL TRACT INFECTION:

**Bacterial** toxins are ingested in contaminated food or water. Toxins and other virulence factors can produce gastrointestinal inflammation.

 Toxins and other virulence factors can produce gastrointestinal inflammation and general symptoms such as diarrhea and vomiting.

CAUSES:

* Major causes of gastrointestinal tract infection cause some pathogenic bacteria. Include *Salmonella* spp., *Staphylococcus* spp., *Helicobacter pylori*, *Clostridium perfringens*, *Clostridium difficile*, *Bacillus cereus*, and *Yersinia* bacteria.
* *C. difficile* is an important cause of hospital acquired infection.
* *Vibrio cholera* causes **cholera**, which can be a severe diarrheal illness.

SYMPTOMS:

* **Diarrhea**, which may range from mild and watery to severe and bloody.
* Abdominal cramping, pain or tenderness.
* Nausea and vomiting.
* Bleeding ulcers may produce dark stools. If no treatment is provided, the ulcers can become deeper, more tissues can be involved, and stomach perforation can occur.

TREATMENT:

**Antibiotics** can be used to treat the infection

Treatment with **omeprazole**, **amoxicillin**, and **clarithromycin** (14 days of treatment with **bismuth subsalicylate**, **metronidazole**, and **tetracycline** or 10 or 14 days of treatment with **lansoprazole**, **amoxicillin**, and **clarithromycin**.

PART: B

What are common cause of GIT infection caused by bacteria?

ANSWER:

PATHOGENIC BACTERIA CAUSED GIT INFECTION:

* ECOLI
* SALMONALLA
* SHLEGELLA
* BACCILUS CERUS
* VIBRIO CHOLERAE

BACILLUS CERUS:

* ***Bacillus cereus***, commonly found in soil, is a gram-positive endospore-forming bacterium that can sometimes cause foodborne illness.
* *B. cereus* endospores can survive cooking and produce **enterotoxins** in food after it has been heated; illnesses often occur after eating rice and other prepared foods left at room temperature for too long.
* The signs and symptoms appear within a few hours of ingestion and include nausea, pain, and abdominal cramps.

SALMONELLA:

* Some individuals carry *Salmonella typhi* without presenting signs or symptoms (known as asymptomatic carriers) and continually shed them through their feces.
* These carriers often have the bacteria in the gallbladder or intestinal epithelium.
* Individuals consuming food or water contaminated with these feces can become infected.
* The recommended antibiotic treatment involves **fluoroquinolones**, **ceftriaxone**, and **azithromycin**.

ECOLI:

E. coli is a type of bacteria that normally live in the intestines of people and animals. However, some types of E. coli, particularly E. coli O157:H7, can cause intestinal infection.

Symptoms of intestinal infection include [diarrhea](https://www.healthline.com/symptom/diarrhea), [abdominal pain](https://www.healthline.com/symptom/abdominal-pain), and [fever](https://www.healthline.com/symptom/fever).

More severe cases can lead to [bloody diarrhea](https://www.healthline.com/health/digestive-health/red-diarrhea), [dehydration](https://www.healthline.com/symptom/dehydration), or even [kidney failure](https://www.healthline.com/health/kidney-failure).

SHLIGELLA:

* When gastrointestinal illness is associated with the rod-shaped, gram-negative bacterium ***Shigella***, it is called **bacillary dysentery**, or **shigellosis**.
* Infections can be caused by *S. dysenteries*, that colonize the GI tract.
* Shigellosis can be spread from hand to mouth or through contaminated food and water.

Most commonly, it is transmitted through the fecal-oral route.

VIBRIO CHOLERAE:

**Cholera** is caused by the bacteria **Vibrio cholera**. These bacteria release a toxin that causes an increased amount of water to be released from cells that line the intestines. This increase in water produces severe **diarrhea.**

Which can lead to **dehydration** and even death if untreated. It is caused by eating food or drinking **water** contaminated.

QUESTION NO: 2

What are cause of UTI? Risk factors and sign and symptoms?

ANSWER:

URINARY TRACT INFECTION:

**A urinary tract infection** (**UTI**) is an **infection** in any part of your urinary system — your kidneys, ureters, bladder and urethra. Most **infections** involve the lower **urinary tract** — the bladder and the urethra

CAUSES OF UTI INFECTION:

The vast majority of urinary tract infections (UTIs) are caused by the bacterium Escherichia coli (E. coli), usually found in the digestive system. [Chlamydia](https://www.medicalnewstoday.com/articles/8181.php) and mycoplasma bacteria can infect the urethra but not the bladder.

* **Infection of the bladder (cystitis).** This type of UTI is usually caused by Escherichia coli (E. coli), a type of bacteria commonly found in the gastrointestinal (GI) tract. However, sometimes other bacteria are responsible.

Sexual intercourse may lead to cystitis, but you don't have to be sexually active to develop it. specifically, the short distance from the urethra to the anus and the urethral opening to the bladder.

* **Infection of the urethra (urethritis).** This type of UTI can occur when GI bacteria spread from the anus to the urethra. Sexually transmitted infections, such as herpes, gonorrhea, chlamydia and mycoplasma, can cause urethritis.

RISK FACTORS:

* **Female anatomy.** A woman has a shorter urethra than a man does, which shortens the distance that bacteria must travel to reach the bladder.
* **Sexual activity.** Sexually active women tend to have more UTIs than do women who aren't sexually active. Having a new sexual partner also increases your risk.
* **Certain types of birth control.** Women who use diaphragms for birth control may be at higher risk, as well as women who use spermicidal agents.
* **Menopause.** After menopause, a decline in circulating estrogen causes changes in the urinary tract that make you more vulnerable to infection.
* **A recent urinary procedure.** Urinary surgery or an exam of your urinary tract that involves medical instruments can both increase your risk of developing a urinary tract infection.
* **Blockages in the urinary tract.** Kidney stones or an enlarged prostate can trap urine in the bladder and increase the risk of UTIs.
* **A suppressed immune system.** Diabetes and other diseases that impair the immune system — the body's defense against germs — can increase the risk of UTIs.

SIGN AND SYMPTOMS:

Urinary tract infections don't always cause signs and symptoms, but when they do they may include:

* A strong, persistent urge to urinate
* A burning sensation when urinating
* Passing frequent, small amounts of urine
* Urine that appears cloudy
* Urine that appears red, bright pink or cola-colored a sign of blood in the urine
* Strong-smelling urine
* Pelvic pain, in women especially in the center of the pelvis and around the area of the pubic bone.

QUESTION NO: 3

PART: A

Describe any one bacteria can cause respiratory tract infection?

ANSWER:

STREPTOCOCCUS PNEUMONIAE:

Streptococcus pneumoniae, or pneumococcus, is a Gram-positive, spherical bacteria, alpha-hemolytic or beta-hemolytic, facultative anaerobic member of the genus Streptococcus. They are usually found in pairs and do not form spores and are non-motile.

*Streptococcus pneumoniae* resides asymptomatically in healthy carriers typically colonizing the respiratory tract, sinuses, and [nasal cavity](https://en.wikipedia.org/wiki/Nasopharynx).

The bacterium may become [pathogenic](https://en.wikipedia.org/wiki/Pathogen) and spread to other locations to cause disease. It spreads by direct person-to-person contact via [respiratory droplets](https://en.wikipedia.org/wiki/Respiratory_droplet) and by auto inoculation in persons carrying the bacteria in their upper respiratory tracts. Pneumonia is the most common of the *S. pneumoniae* diseases.

PNEUMOCOCCAL DISEASE:

Pneumococcal disease is caused by bacteria called Streptococcus pneumoniae (pneumococcus). People with pneumococcal disease can spread the bacteria to others when they cough or sneeze.

Symptoms of pneumococcal infection depend on the part of the body affected.

Symptoms can include fever,

* cough,
* shortness of breath,
* chest pain,
* stiff neck,
* confusion,
* increased sensitivity to light,
* Joint pain.

PART: B

Pathogenesis of that pathogen can cause RT infection?

ANSWER:

PATHOGENESIS OF S. PNEUMONIAE:

S. pneumoniae is carried in the upper respiratory tract by many healthy individuals. It has been suggested that attachment of pneumococci is mediated by a disaccharide receptor on fibronectin, present on human pharyngeal epithelial cells.

ADHERENCE:

Adherence of pneumococci to tracheal epithelial cells can be enhanced by prior influenza virus infection.

Thus, neuraminidase may expose other structures that function as receptors for adhering pneumococci.

MECHANISM:

* The mechanisms by which pneumococci translocate from the nasopharynx to the lung, thereby causing pneumonia, or migrate directly to the blood, giving rise to bacteremia or septicemia.
* Epithelial damage, caused by previous (viral) upper respiratory infections, also increases the opportunity of pneumococci to reach the bloodstream.
* From the blood, they may migrate to the meninges and, after disrupting the endothelium. Middle ear will result in pneumococcal lysis, with the release of cell wall products and pneumolysin.
* The presence of lysozyme in secretion fluids at the sites of infection may contribute to pneumococcal lysis
* Pneumococcal lysis will in turn trigger the inflammatory process. Such inflammation may be responsible for the morbidity and mortality of pneumococcal infection.

QUESTION NO: 4

Define following:

A conjunctivitis

CONJUCTIVITIS:

Definition:

**Conjunctivitis** is an inflammation or infection of the transparent membrane (conjunctiva) that lines your eyelid and covers the white part of your eyeball.

When small blood vessels in the conjunctiva become inflamed, they're more visible. This is what causes the whites of your eyes to appear reddish or pink.

B. keratitis

KERATITIS:

Definition:

**Keratitis** is an inflammation of the cornea, the outermost part of the **eye** that covers the pupil and iris (the colored ring around the pupil). The most common **causes** of **keratitis** are infection and injury. Bacterial, viral, parasitic and fungal infections can **cause keratitis.**

C. blepharitis

BLEPHERITIS:

Definition:

**Blepharitis** is inflammation of the eyelids. **Blepharitis** usually affects both eyes along the edges of the eyelids. **Blepharitis** commonly occurs when tiny oil glands near the base of the eyelashes become clogged, causing irritation and redness.

D. endophthalimitis

ENDOPHETHALMITIS:

Definition:

**Endophthalmitis** is an inflammation of the interior of the eye. It is a possible complication of all intraocular surgeries, particularly cataract surgery, with possible loss of vision and the eye itself.

Endophthalmitis may result from various causes such as retained native lens material after an operation or from toxic agents.

E. chlamydia trachomatis

CHLAMYDIA TRACHOMATIS:

Definition:

**C**. **trachomatis** cause different diseases. The most common strains cause disease in the genital tract, while other strains cause disease in the eye or lymph nodes.

The **Chlamydia trachomatis** bacterium is most commonly spread through vaginal, oral and anal sex. It's also possible for pregnant women to spread **chlamydia** to their children during delivery, **causing** pneumonia or a serious eye **infection** in the newborns.

QUESTION NO: 5

What are most common type of cardio vascular disease? Differentiate between septicemia bacteremia and toxemia?

ANSWER:

CARDIOVASCULAR DISEASE:

The infectious diseases of the cardiovascular system infect the blood, blood vessels, and heart. In many cases, the infections remain in these areas, but in others, the infections are spread to secondary organs. The diseases of the lymphatic system affect the lymph, lymph vessels, lymph nodes, and lymphoid organs, such as the spleen, tonsils, and thymus.

TYPES:

**Aorta Disease and Marfan syndrome**

The aorta is the large artery that leaves your heart and brings oxygen-rich blood to the rest of your body. These two conditions can cause the aorta to widen or tear. This raises the chance of things like:

* Atherosclerosis (hardened arteries)
* [High blood pressure](https://www.webmd.com/hypertension-high-blood-pressure/default.htm)
* Connective tissue disorders that can weaken your blood vessel walls, such as [scleroderma](https://www.webmd.com/pain-management/scleroderma), osteogenesis imperfecta, Ehlers-Danlos syndrome, and [polycystic kidney disease](https://www.webmd.com/a-to-z-guides/autosomal-dominant-polycystic-kidney-disease)
* Injury

If you have aorta disease, you’ll need a team of specialists and surgeons to take part in your treatment.

**Cardiomyopathies**

This is the term for diseases of the heart muscle. They’re sometimes simply called enlarged heart. People with these conditions have hearts that are unusually big, thick, or stiff. Their hearts can’t pump blood as well as they should. Without treatment, [cardiomyopathies](https://www.webmd.com/heart-disease/guide/diseases-cardiovascular#1-4)get worse. They can lead to heart failure and abnormal heart rhythms.

Cardiomyopathy may sometimes run in families, but it can also be caused by high blood pressure, diabetes, obesity, metabolic diseases, or infections.

## Congenital Heart Disease

This is a [problem in one or more parts of the heart](https://www.webmd.com/heart-disease/guide/congenital-heart-disease) or blood vessels. It happens before birth.

About 8 out of every 1,000 children get it. They may have symptoms at birth, but some people with it don’t have symptoms until childhood or even adulthood.

In most cases, we don't know why it happens. Genes may play a role, or it can happen if a baby is exposed to viral infections, alcohol, or drugs before it’s born.

## Coronary Artery Disease

You may hear this called [CAD](https://www.webmd.com/heart-disease/guide/heart-disease-coronary-artery-disease). It’s when plaque builds up and hardens the arteries that give your heart vital oxygen and nutrients. That hardening is also called atherosclerosis.

## Pericarditis

This condition is rare and means the lining surrounding your heart is inflamed. An infection often causes this.

## Rheumatic Heart Disease

This happens when rheumatic fever, an inflammatory disease that’s most common in children, damages your heart valves

B. septicemia

SEPTECEMIA:

Septicemia is a serious bloodstream infection. It’s also known as blood poisoning.

Septicemia occurs when a bacterial infection elsewhere in the body, such as the lungs or skin, enters the bloodstream. This is dangerous because the bacteria and their toxins can be carried through the bloodstream to your entire body.

Septicemia can quickly become life-threatening. It must be treated in a hospital. If left untreated, septicemia can progress to sepsis. Septicemia is caused by an infection in another part of your body. This infection is typically severe.

[Chills](https://www.healthline.com/symptom/chills), [fever](https://www.healthline.com/symptom/fever), breathing, very fast rapid heart rate, inadequate blood flow, [shock](https://www.healthline.com/symptom/shock).

BACTEREMIA:

Bacteremia is when there are bacteria present in our bloodstream. Another term that you may have heard for bacteremia is “[blood poisoning](https://www.healthline.com/health/blood-poisoning),” however this isn’t a medical term.

In some cases, bacteremia can be asymptomatic, meaning there are no symptoms. In other cases, symptoms may be present and there’s a potential risk for serious complications.

Some cases of bacteremia are asymptomatic. In these cases, your immune system will often clear the bacteria without you knowing it.

When bacteremia results in a bloodstream infection, you’ll likely experience symptoms like:

* [fever](https://www.healthline.com/health/fever-symptoms)
* [chills](https://www.healthline.com/health/chills)
* Shaking or [shivering](https://www.healthline.com/health/shivering).

TOXEMEIA:

 A condition in pregnancy, also known as pre-eclampsia (or preeclampsia) characterized by abrupt hypertension (a sharp rise in blood pressure), albuminuria (leakage of large amounts of the protein albumin into the urine) and edema (swelling) of the hands, feet, and face.

**Symptoms:**Hypertension.

**CAUSES:**

* Preeclampsia, formerly called **toxemia**, is when a **pregnant** woman has high blood pressure, protein in her urine, and swelling in her legs, feet, and hands. It can range from mild to severe. ... Women with preeclampsia who have seizures have eclampsia. The only cure for preeclampsia is to give birth.
* There are two possible measures to **treat** the disease: The first is to reduce the ewe's glucose requirements, either by cesarean section or by artificially inducing parturition using corticosteroids. ... The second is to increase blood glucose using various remedies.