**SPREAD OF INFECTIONS**

1. Blood circulation ( through the circulatory system)
2. Through the lymphatic system
3. Spread to the neighbouring tissue e.g in cellulitis.
4. Spread of infection to the blood stream causes:
5. **Bacteraemia:** The presence of bacteria in the blood which spreads in the body.
6. **Septicaemia:** Is the presence of microorganisms in the bloodstream.

**Signs and symptoms of infection spread**

1. High swinging temperature
2. The full bouncing rapid pulse
3. The pulse later becomes weak and irregular
4. The patient is anxious and delirious and in the end comatose (coma).
5. The tongue is dry and cracked
6. Loss of appetite (anorexia) and constipation.
7. Complain of headaches, nausea and vomiting.

**Diagnosis of infection spread**

* From the signs and symptoms which can be confirmed by:
* Blood culture
* Full haemogram

**TREATMENT**

1. Administer appropriate broad spectrum antibiotics e.g penicillin and sulphonamides, gentamycin 80mgs.
2. **Toxaemia:** A condition occurring due to poisonous toxins produced by microorganisms in the blood stream. **Toxins** can be:
3. **Endotoxins:** Produced from the destruction of microorganisms which contain them.
4. **Exotoxins:** Are the waste products produced the microorganisms present in the body
5. **Pyaemia:** Presence of pus forming bacteria (pyogenic bacteria) in the blood.They initially lead to formation of small abscesses in the blood stream. This condition is difficult to treat because the antibiotics are not able to penetrate through the abscess and break them but flow straight through the blood vessels.
6. **Embolism:** Obstruction of the blood vessel by a travelling blood clot or particle of matter.

**TETANUS**

**OUTLINE**

1. DEFINITION
2. CHARACTERISTICS OF C.T
3. PATHOPHYSIOLOGY OF TETANUS
4. S & S
5. PROGNOSIS
6. PREVENTION/PROPHYLAXIS
7. RISKY GROUPS
8. TREATMENT

* This is a toxaemia of the nervous system arising from a local infection with *clostridium tetani.*
* **Characteristics of *Clostridium tetani* bacteria**

1. Anaerobic
2. Produces spores
3. Gram positive bacilli
4. Secretes exotoxins.

* Clostridium tetani produces two types of toxins namely:

1. **Neurotoxins: e.g tetanospasmin** which affect the nervous system.
2. **Haemolytic toxins: e.g tetanolysin** which affects blood causing haemolysis.

**Conditions necessary for *Clostridium tetani* growth**

1. Dirty wounds
2. Wounds with foreign body.
3. Wounds with pathogenic microorganisms (infected wounds)

* The intestines of animals including man act as resoviour for the bacteria.

**PATHOPHYSIOLOGY OF TETANUS**

* After inoculation of the bacteria at the injured site, multiplication occurs leading to increased bacterial population at the site.
* The bacteria then produces exotoxins in the surrounding tissues which eventually spread to the blood stream causing toxaemia.
* These toxins then excite the motor nerve cells of the body especially the spinal cord and the brain causing tetanospasms.

**Signs and symptoms of tetanus**

1. Spasms of the muscles around the wound
2. Severe lock-jaw
3. Dysphagia- difficulty in swallowing
4. Dyspnoea- difficulty in breathing
5. Dysphonia- difficulty in producing voice

**Read on other signs and symptoms of tetanus- google**.

**N/B-The incubation period of tetanus depends on the severity of the infection.**

**For mild tetanus, the incubation period is 3 weeks.**

**For severe tetanus, the incubation period is 1-2 days.**

* Death rate of tetanus is high depending on the severity of the disease and is often due to asphyxia (difficulty in breathing), pneumonia (lung infection) and heart failure.

**PROGNOSIS**

* Prognosis is the end result of a disease.
* For tetanus:

1. Concurrent infections make the prognosis poor e.g bronchitis and empyema.
2. The disease is fatal in the new-born and the elderly.

**PREVENTION OR PROPHYLAXIS**

* Can be either active or passive prophylaxis.
* **Active prophylaxis** is when a child is given three (3) doses of 0.5mls D.P.T to make the body produce its own antibodies against the disease. It is preferably given to children because children are more affected by the disease. The vaccine is given when a child is over 6 weeks and not more than 6 years of age. After this, tetanus toxoid is given to protect the child from getting the disease. The vaccine is usually given 3 doses at an interval of 4-6 weeks. Booster dose is usually given at the age of 2-5 years.
* Anybody above 5 years is given tetanus toxoid of 0.5mls 3 doses at interval of 4-6 weeks.
* **Passive prophylaxis** is when an antitoxin is given to a patient who is likely to get the disease in order to neutralize the tetanus toxins. The antibody given is anti-tetanus serum. The dose usually given is 1500 I.U.
* For infected wounds, the dose is 10,000 I.U.
* Tetanus toxoid should not be given together with antitetanus serum because they antagonize each other and cause some reactions.

**RISKY GROUPS LIKELY TO GET TETANUS**

1. Workers in the farms
2. Workers who come in contact with domestic animals.
3. All those who are likely to get wounds e.g army men, policemen and children and pregnant women. All these people should be immunized against tetanus.

**TREATMENT OF TETANUS**

* General nursing care includes:

1. Bed rest in dark room/dimly lighted room: This because patients with tetanus are usually stimulated to spasms by any external stimulus or light (are photophobic). Preferably the patient should be in a single room.
2. The patient should have a particular nurse to attend to him/her whenever necessary.
3. The feeding is through naso-gastric tube. The diet should be fluids containing glucose and some high protein diet.

* Specific treatment includes:

1. A high dose antitetanus serum given to neutralize the toxins circulating in the body. The dose should be 100,000 to 200,000 I.U. This can be repeated weekly but the dose is increased to 250,000 I.U intravenously.
2. Remove any foreign bodies from the wound.
3. Antitetanuserum can be injected locally.
4. Antibiotics are given to the patient e.g penicillin or tetracyclines.
5. In severe cases when the respiration is difficult, the patient should be taken to a unit with mechanical ventilators to assist in breathing e.g I.C.U.
6. Any existing symptoms should be treated by giving some anti-spasm drugs e.g valium and tranquilizers.