

INTRODUCTION TO MEDICAL SURGICAL NURSING

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COURSE OUTLINE

- **Basic concepts in Medical Surgical Nursing**
- **History of Medical Surgical Nursing**
- **Body's response to infection**

- **Wound Healing**
- **Fluid and Electrolyte imbalance**
- **Acid Base imbalance**
- **Classification of Diseases**
- **Shock**
- **Burns**
- **Introduction to Nursing Care Study**

MEDICAL SURGICAL NURSING

□ Medicine

- It is the field of applied sciences related to art of healing by diagnosis, treatment and prevention of disease
- **Medical wards** are where patients are admitted and treated conservatively

- **Surgical** comes from the word surgery.
- It is a branch of medicine which deals with physical manipulation of body structures to diagnose, prevent or cure disease.
- **Surgical wards** are places where patients are admitted and treated both conservatively and surgically.

Reasons for performing surgery

- **Separate that which has been mal – united**
- **Assist in delivery**
- **Restore that which has been dislocated**
- **Restore that which has been broken**
- **Eliminate that which has been destroyed**
- **Repair defects of nature**

Basic Concepts Of Medical Surgical Nursing

- **This course builds upon the core educational competence introduced during the fundamental course using the framework of nursing process**
- **The student is able to assist the patient or client to achieve an optimum state of health or wellness.**
- **The course prepares the learner/student to apply knowledge and Basic Nursing Skills when providing care in meeting patient/client needs**

BASIC CONCEPTS

- **Medical /surgical nursing-** broad nursing specialty that provide care for adult patients with either /both acute and chronic conditions.
- This requires broad knowledge on body system, surgical and medical pathologies, clinical skills, clinical decision making as well as collaborative skills.
- **Nursing** –According to Florence Nightingale, the goal of nursing was to put the patient in the best condition for nature to act upon him.

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- **The American Nurses Association (ANA)**, in its Social Policy Statement (ANA, 2003), defined nursing as “the diagnosis and treatment of human responses to health and illness”

Roles of the Nurse in medical surgical nursing

- **Nurse practitioner**-makes interventions, teaches patient, families and communities and also collaborates care
- **Leadership role**- this role demands ,decision making, facilitation, influencing and relating with other nurses in order to meet patients, families and community health needs.
- **Advocate role** – He is the liaison(go in) between the patients and the doctor and health care facilities . The nurse protect the rights ,health and safety of patients

Roles of the Nurse in medical surgical nursing

- **Researcher role-** every nurse should participate in research in order to answer the questions and improve on the practice and hence the need to understand research methods
- **Expanded nursing roles-** an increase in health care demands leads to the need for ability to independent decision making hence the need for specialization e.g. critical care nursing, family health nursing, orthopedic nursing among many others.
- **Educator role-** guiding students in the clinical area. Education of patients on nutrition, medications and safety precautions
- **Primary health care provider:** delivers and assist minor and chronic conditions diagnosis and treatments

Models of Nursing Care Delivery

- **Task based/functional**
- **Primary nursing**
- **Team nursing**
- **Case based management**
- **Community-based / community health–
Public health nursing**

NURSING CARE MODALITIES

□ Functional Nursing Model

- The functional nursing method is a decades-old, traditional form of patient care.
- The model relies on a hierarchy of nurses who **perform different tasks** depending upon their level of education, training and experience.

CONT'

- The team leader, a registered nurse (RN), collaborates with physicians to determine the needs of a patient.
- The head nurse then delegates tasks to nurses under her supervision. For example, she might assign another registered nurse to administer treatments, while a licensed practical nurse (LPN) monitors blood pressure and a nurse's aide assists the patient with an exercise regime.

CONT'

- Functional nursing applies an assembly-line method of patient care, which can offer economic advantages for the hospital because it maximizes each team member's skill set.
- This nursing model works well in periods of high demand, such as wartime or during epidemics.
- However, functional nursing does not provide the holistic care that many patients need, because the nurses focus on their individual tasks rather than the overall condition or progress of the patient.

2. Team Nursing Model

- Developed in the 1950s, the team nursing model is similar to the functional nursing method, but provides care on a larger scale.
- The team nursing model assigns an RN as the group leader who delegates tasks to a team of medical professionals who care for multiple patients.

CONT'

- Teams contain at least two nurses, typically with different experience, education and skill levels.
- An RN team member might dispense medications, while an LPN monitors patient blood pressure.
- The team might also include a nurse's aide, who carries out tasks such as bathing and dressing the same group of patients. Inexperienced nurses appreciate the opportunity to work with and learn from their experienced colleagues.

CONT'

- Experienced nurses report that they feel more supported in their duties under a team nursing model.
- The team nursing approach also benefits medical facilities by enabling inexperienced nurses to learn more quickly, giving them increased value as employee assets.
- The method also promotes and improves communication among team members, which can result in improved patient care.

CONT'

- Team nursing relies on team leader RNs with good management and leadership skills.
- Patient needs can impact the success of the team nursing method.
- Designed to provide care for numerous patients, the team nursing model does not offer appropriate coverage for patients who need constant care and attention.

3. Primary Nursing Model

- The primary nursing model assigns patients to a primary RN, who takes responsibility for their care throughout the hospital stay.
- By following a patient's progress, the RN can provide a more holistic level of care, while offering the patient the comfort of having a primary caregiver among the nursing staff.

CONT'

- The primary nursing method developed in the 1970s and quickly gained popularity.
- It addressed the shortcomings of older models such as functional and team nursing, which left gaps in patient care because of task-oriented approaches.
- Primary nursing has proven particularly successful in meeting the needs of patients with complex medical conditions.

- For example, a patient with diabetes might have heart problems, tissue damage and dietary restrictions, which require the type of comprehensive care a primary nurse can provide.
- Patients respond well to the primary nursing model, because it provides them with a knowledgeable medical contact and a sense of continuous care.

- Nurses appreciate the feeling of autonomy primary nursing offers, while enabling them to provide patients with a high level of care.
- Flexible work schedules, which allow nurses to work three consecutive days of 12-hour shifts, followed by four days off, create a disadvantage to the primary nursing model, particularly for patients who require long-term hospital stays

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- The primary nursing model has remained relatively unchanged since its conception.
 - Most studies indicate that it provides a higher level of job satisfaction for nurses and is popular among patients.

4. Total Patient Care Model

- Total patient care is the grandfather of nursing models.
- It requires a patient to receive all nursing care from one nurse.
- In today's medical industry, total patient care can only be applied in certain types of situations, including critical care and home health care.

- In the total patient care model, the attending nurse typically provides care for the patient from the beginning to the end of his medical care episode.
- For example, a nurse might provide a few weeks of around-the-clock, in-home care for an elderly patient who has broken a hip.
- The patient might deal with more than one nurse due to work schedules, but he does not receive care from multiple nurses during a work shift.

CONT'

- Total patient care requires nurses to assume all care for their patients.

- They closely monitor the patient's condition and communicate closely with the patient's physicians.
- Patients respond favorably to total patient care, because their nurses attend quickly to their needs.
- Patient and nurse develop a friendship, which makes the experience less stressful and more meaningful for the patient.

CONT'

- In home health care settings, a patient might face a disadvantage if he needs medical care the nurse cannot readily provide.
- For example, if an in-home patient suddenly develops a breathing problem, the nurse cannot quickly summon a respiratory therapist.
- Nurses enjoy autonomy that total patient care offers them though focusing effort on one patient can lead to burnout.

Definitions

❑ **The patient/client:**

- The one with health care needs.
- Care should be focused on the patient /client. Identification of the immediate health care need is fundamental nursing requirement

❑ **Health**-state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity.

❑ **Health–Illness continuum** - Considers a person as having neither complete health nor complete illness.

- Instead, a person's state of health is ever-changing and has the potential to range from high-level wellness to extremely poor level wellness

Health care delivery system

□ **Changes in delivery of health care have been propelled by:**

- **Demographic changes**-increase in population due to improved health care, expanded lifespan, flexible global movement, urbanization etc. Emerging and reemerging diseases
- **Aging population**- Health promotion, disease prevention and rehabilitative services led to prolongation of life as well as reduction in acute illnesses but an increase in chronic illnesses
- **Technological advances**- Faster diagnostic and therapeutic equipment. Generation, Storage , retrieval and communication of information e.g. Electronic medical recording systems, telemedicine

5. Case Management

- Case management focuses on the administrative issues of health care, rather than the actual delivery of health care.
- An RN case manager evaluates a patient's care to determine her healthcare costs and the likelihood that the insurer will provide coverage.
- Case managers follow the progression of a patient's care to determine the likely discharge date and her care needs after discharge.

- The case management model stems from the complexity of third party health-care payers and the rising costs of health care.
- A case manager serves as an intermediary between the patient and third party payers, which may include insurance companies and Medicare.
- They also ensure that third party payers will reimburse the health-care facilities for services.

- Case managers often deal with 12 to 28 patients per day.
- In the past, they reviewed patient charts and communicated with third party payers every three to seven days.
- But in today's digital age, case managers communicate daily with attending doctors, nurses and third party payers.

- Effective case management benefits everyone involved.

- The case manager communicates with the patient to inform her about approvals or denials from her healthcare provider.
- Likewise, the case manager can help prevent health-care facilities from losing money because of unexpected coverage denials.

- Case managers must stay abreast of every aspect of the patient's care, from diagnostic tests to surgery schedules and from outpatient therapies to home health-care requirements. For example, a case manager must keep track of the number of days a patient's insurance company will pay for inpatient care..

- If a patient experiences a discharge delay due to a rescheduled surgery, the case manager must communicate with the third party payer and coordinate new surgery and discharge dates with health-care staff.
- A case manager must work closely with the patients to assess the effectiveness of treatments and help devise self-care plans for after discharge

Health care delivery system

- ❑ Changes in delivery of health care have been propelled by:
 - **Economical changes**- high costs of health care as dictated by the care provider led to formation of organizations like NHIF and other non governmental medical cover organisations.
 - **Demand for quality care**- patient/client awareness demands more patient involvement in informed decision making.
 - **Quality Assurance and Evidenced based practice**: the demand by the consumer for quality and accountability. The national health care organizations has spelt out their standard operating procedures and aligned them to international standards e.g ISO, ICN

NURSING

- **Defined as the protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, communities and populations.**

Focal Points For Nursing Care, Education And Research

- **Promotion of health and wellness**
- **Promotion of safety and quality of care**
- **Care, self – care processes and care coordination**
- **Physical, emotional and spiritual comfort, discomfort and pain**
- **Adaptation to physiological and pathophysiological processes**
- **Emotions related to the experience of birth, growth and development, health, illness and other concepts**

- **Language and cultural sensitivity**
- **Health literacy**
- **Decision making and the ability to make choices**
- **Relationships, role performance, and change processes within relationships**
- **Social policies and their effects on health**
- **Healthcare systems and their relationships to access, cost and quality of health care**
- **The environment and the prevention of disease and injury**

History Of Medical Surgical Nursing

- Human societies had a medical belief that provided explanation of birth, death and disease (illness)
- Illness was associated with witchcraft, demon and will of gods
- Those societies which attributed the cause of illness was not due to the above mysteries used the following to heal the disease and illness
 - Plant roots, leaves, herbalist to try and heal the disease, which some are still in use today

HISTORY OF SURGICAL NURSING

- **1840s - Operate on a client who was free from pain. It was a revolution for surgery.**
- **Development of safer anaesthetic gases allowed surgeons to conduct longer operative procedures.**
- **All the surgery was conducted in hospital setting and nurses required special training for new responsibilities such as assisting, preparing, caring for a patient in surgical unit.**

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- **1876s- In Massachusetts, general hospital provided the first operating room education for nurse's.**
 - **The trend continued to 1900s as nursing schools included operating room experience in each nurses clinical instruction.**

- **1956- The association of operating room nurses was formed to gain knowledge of surgical principles and explore methods to improve nursing care of surgical clients.**
- **The associations of operating room nurses overcame the idea that operating room nurses were only technically skilled practitioners.**
- **This organization also developed standard of nursing practice to establish the need for registered nurses in the operating room**

- 1970s-A change occurred in nursing education with a focus on the importance of nurses acquiring a broad knowledge base, resulted in less emphasis on operating room techniques.
- There has also been a new development in the setting for operative procedures:
 - **Ambulatory surgery:** It was also referred to as outpatient.
 - **One-day surgery:** This health care service is presently growing rapidly in numbers and various types of procedures such as invasive non invasive procedures are performed.
- Ambulatory surgery is a scheduled surgical procedure provided for a client who does not remain overnight in a hospital, e.g. biopsies, cosmetic surgery, cataract extractions.

- **God's powers: faith praying to God to heal the illness.**
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- **The above was common in Egypt, India, China, Greece and Africa**
 - **460 BC a physician in Greece invented hypocrates oath for physicians which is still relevant in use today and is considered the father of modern medicine.**

Trends in medical surgical nursing

- ❑ Recent trends affecting nursing as a whole have also affected medical-surgical nurses, including:
 - the increasing use of nursing case management,
 - expansion of advanced practice nursing,
 - total quality improvement,
 - development of clinical pathways,
 - changes in the professional practice model to include greater numbers of nonprofessional staff,
 - health care reform, and the rise of managed care.

Influences on future nursing practice

- **Expanding knowledge technology**
- **Healthy people initiatives**
- **Evidence based practice**
- **Standardized nursing terminologies**
- **Health care informatics**
- **Nursing informatics**

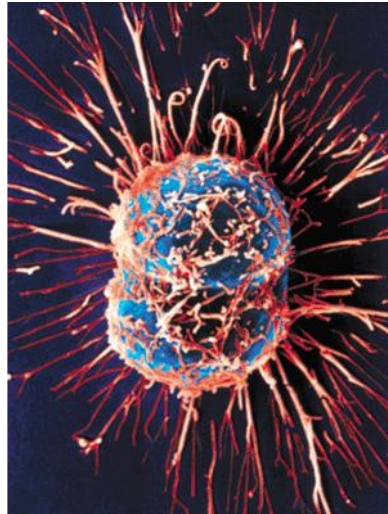
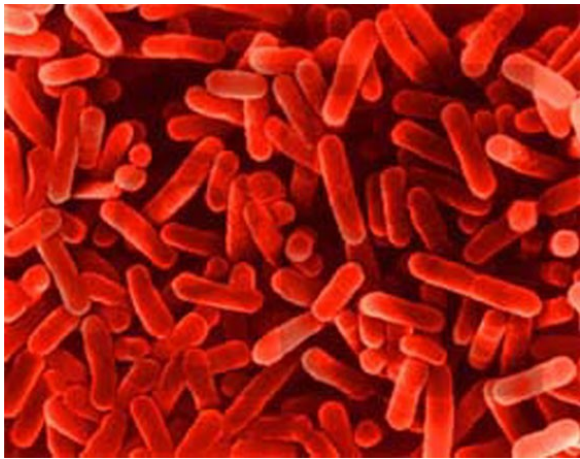
BODY'S RESPONSE/DEFEN CE AGAINST INFECTION

The Human Immune System



What is the immune system?

- The body's defense against disease causing organisms, malfunctioning cells, and foreign particles



FIRST LINE OF DEFENCE

The First Line of Defense

~Skin~

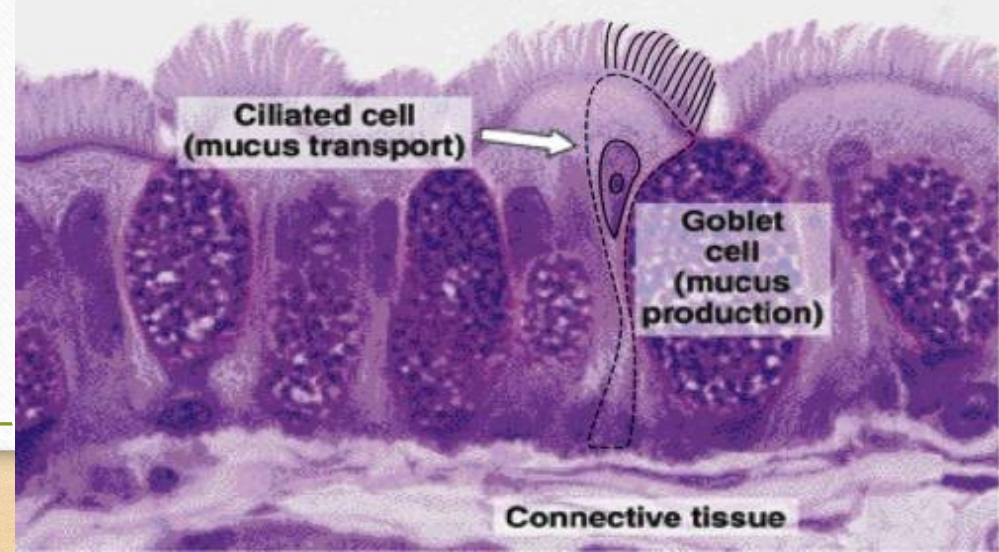
- The dead, outer layer of skin, known as the **epidermis**, forms a shield against invaders and secretes chemicals that kill potential invaders
- You shed between 40 – 50 thousand skin cells every day!



The First Line of Defense

~Mucus and Cilia~

- As you breathe in, foreign particles and bacteria bump into **mucus** throughout your respiratory system and become stuck
- Hair-like structures called **cilia** sweep this mucus into the throat for coughing or swallowing



The First Line of Defense

~Saliva~

What's the first thing you do when you cut your finger?

- **Saliva** contains many chemicals that break down bacteria
- Thousands of different types of bacteria can survive these chemicals, however



The First Line of Defense

~Stomach Acid~

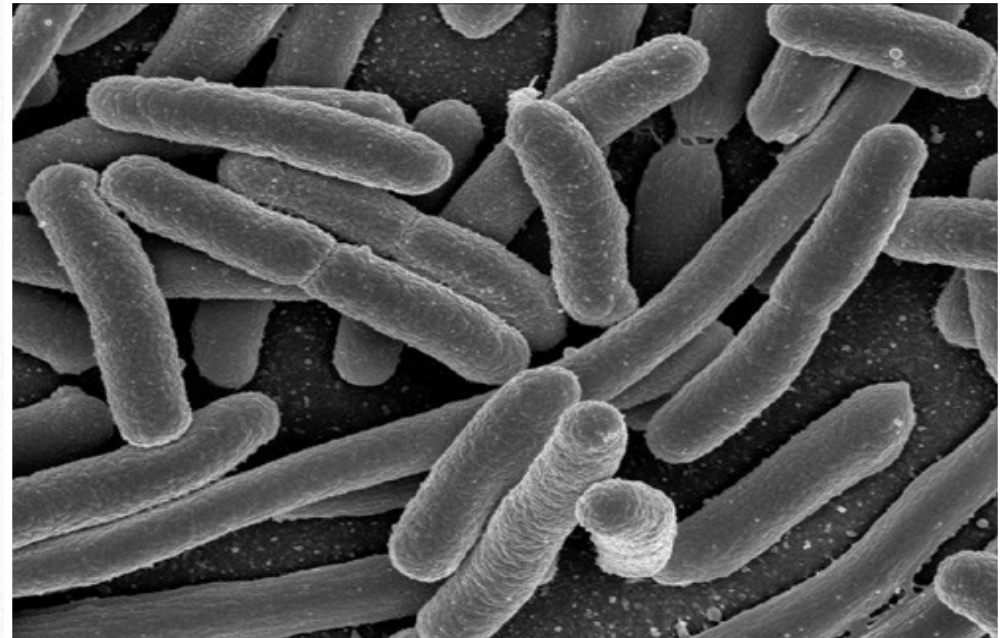
- Swallowed bacteria are broken down by incredibly strong acids in the stomach that break down your food

- The stomach must produce a coating of special mucus or this acid would eat through the stomach!



Escherichia coli
is common and plentiful in all of our digestive tracts. Why
are we all not sick?

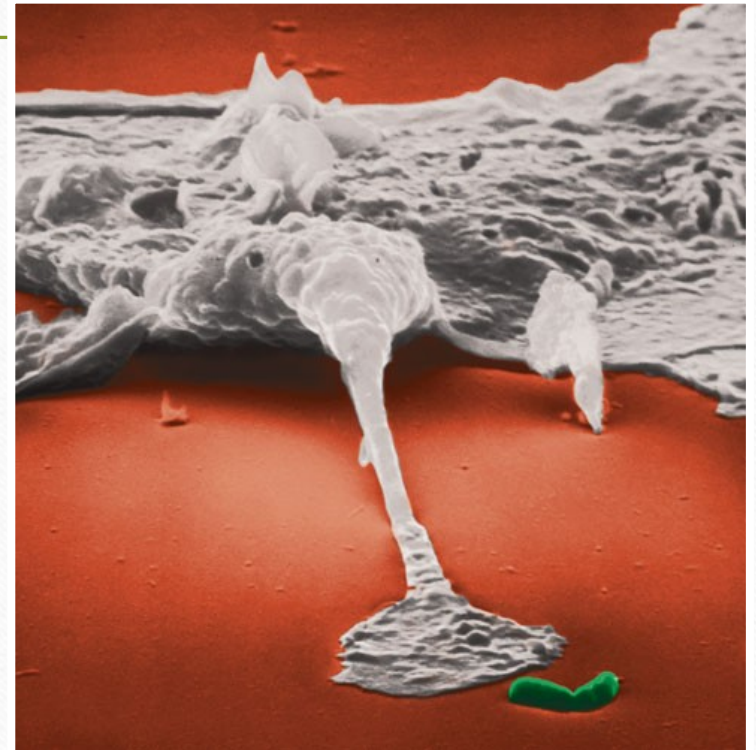
- **These bacteria are technically outside the body and aid in digesting material we cannot**
- **Only if E.Coli are introduced in an unnatural manner can they break through the first line of defense and harm us**



The Second Line of Defense

~White Blood Cells~

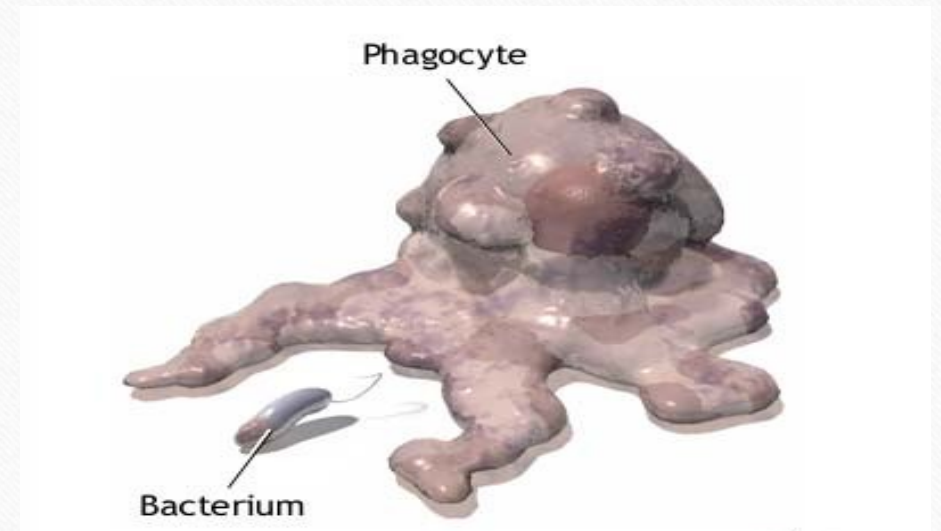
- If invaders actually get within the body, then your white blood cells (WBCs) begin their attack
- WBCs normally circulate throughout the blood, but will enter the body's tissues if invaders are detected



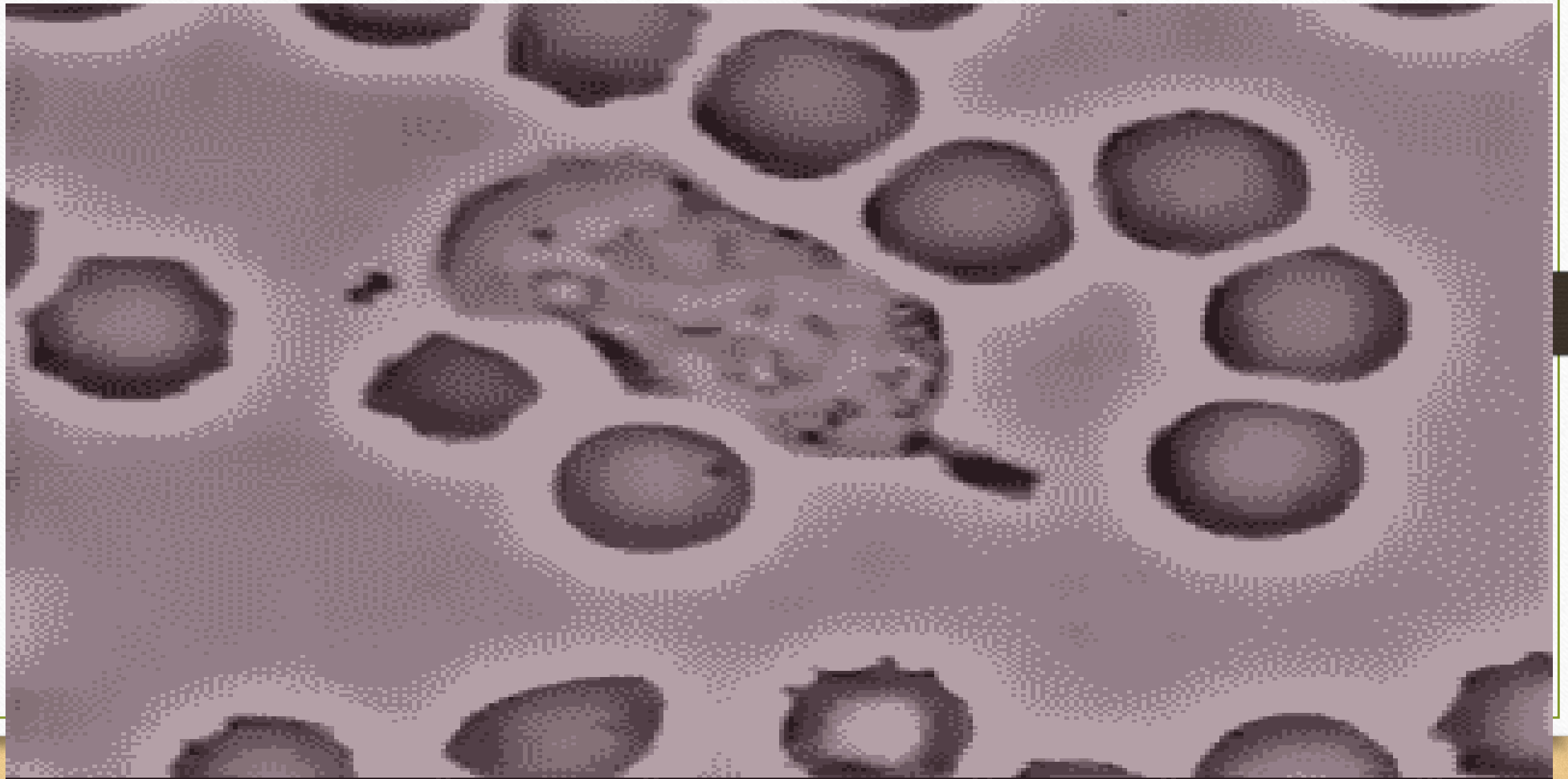
White Blood Cells

~Phagocytes~

- These white blood cells are responsible for eating foreign particles by engulfing them
- Once engulfed, the phagocyte breaks the foreign particles apart in organelles called lysosomes

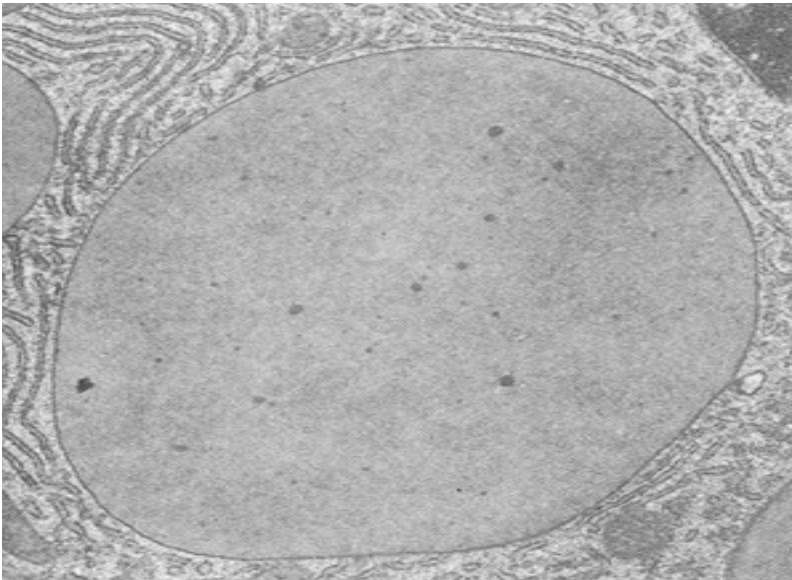


Where could invaders
hide from
phagocytes?

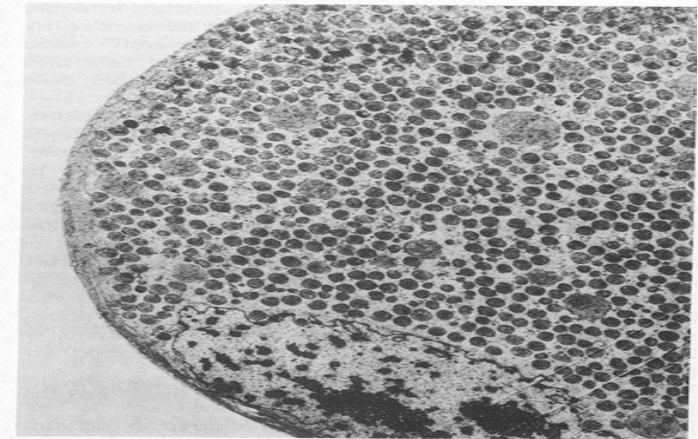
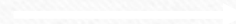


Viruses

Viruses enter body cells, hijack their organelles, and turn the cell into a virus making-factory. The cell will eventually burst, releasing thousands of viruses to infect new cells.



Cell before infection...



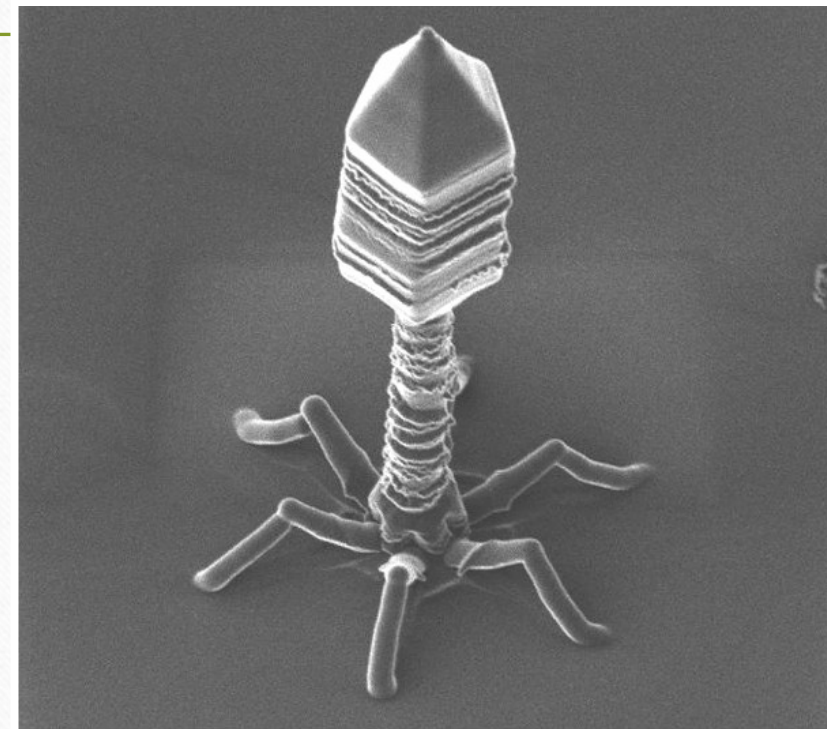
...and after.

The Second Line of Defense

~Interferon~

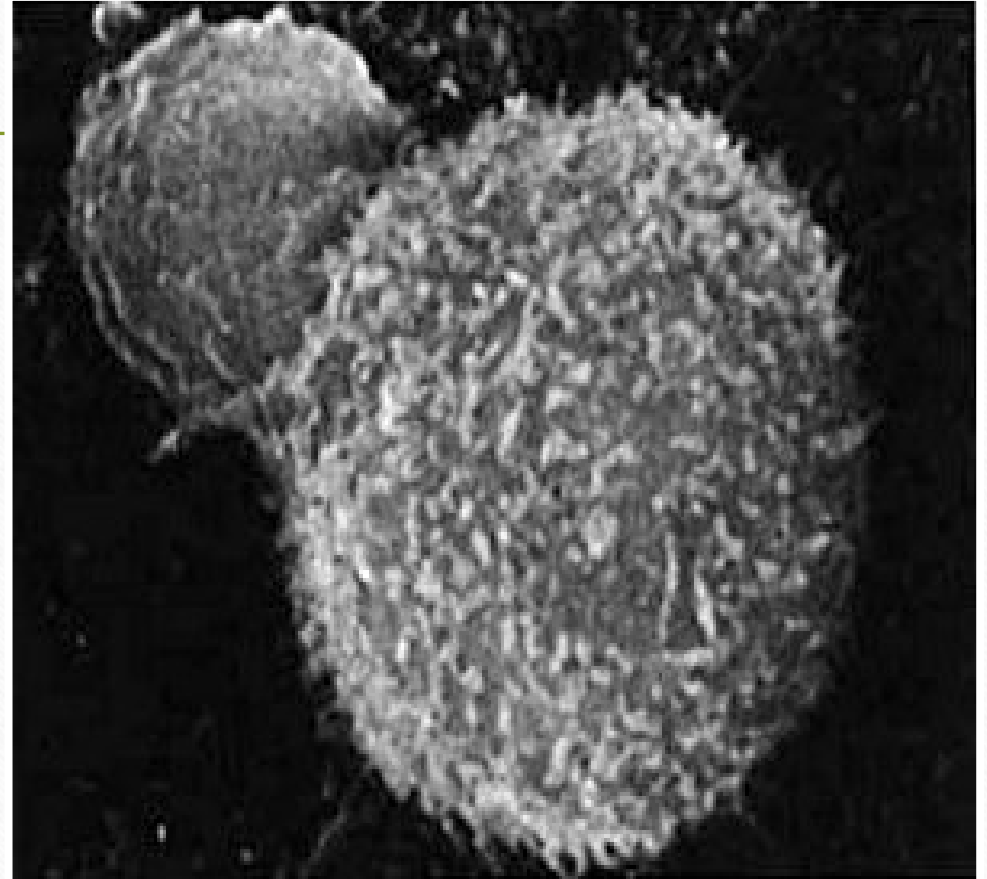
**Virus-infected body cells
release interferon when
an invasion occurs**

**Interferon – chemical
that interferes with the
ability to viruses to
attack other body cells**



White Blood Cells ~ T-Cells~

- T-Cells, often called “natural killer” cells, recognize infected human cells and cancer cells
- T-cells will attack these infected cells, quickly kill them, and then continue to search for more cells to kill



The Second Line of Defense

~The Inflammatory Response~

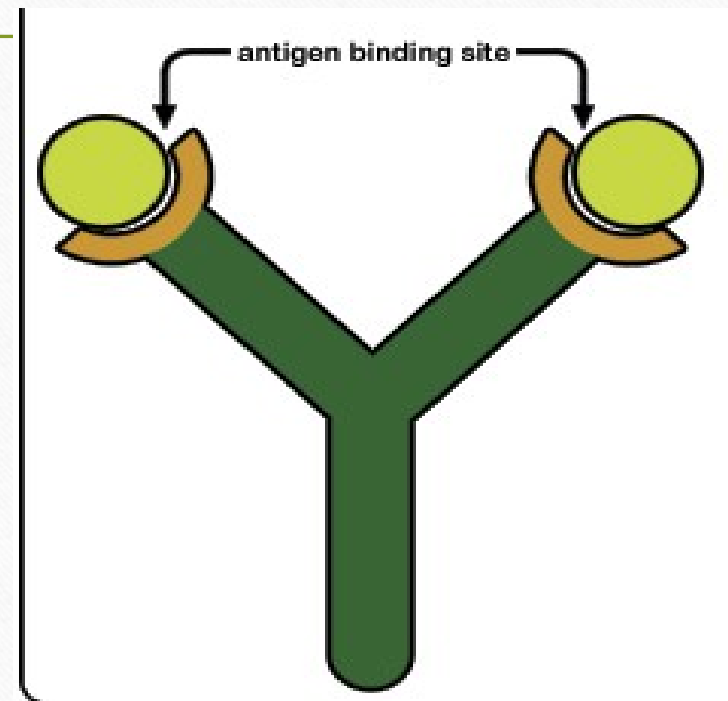
- Injured body cells release chemicals called histamines, which begin inflammatory response
 - Capillaries dilate
 - Pyrogens released, reach hypothalamus, and temperature rises
 - Pain receptors activate
 - WBCs flock to infected area like sharks to blood



The Third Line of Defense

~Antibodies~

- Most infections never make it past the first and second levels of defense
- Those that do trigger the production and release of antibodies
 - Proteins that latch onto, damage, clump, and slow foreign particles
 - Each antibody binds only to one specific binding site, known as an antigen



Antibody Production

- **WBCs gobble up invading particles and break them up**
- **They show the particle pieces to T-cells, who identify the pieces and find specific B-cells to help**
- **B-cells produce antibodies that are equipped to find that specific piece on a new particle and attach**

Factors determining severity of the microorganism

- The number of microorganism that entered the body
- The strength of the microorganism
- The strength of the person

Function of protection

- The body's protection functions in three ways:
 - **Hypo – active** – inefficient protection therefore defeated by microorganism (immunodeficiency)
 - **Hyper – active** – the body destroying its own cells (auto immune disease)
 - **Normally** – defeating the microorganism

Signs & Symptoms Of An Infection

- **Fever**
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- **General malaise**
 - **Anorexia**
 - **Septicemia**
 - **Edema**
 - **Impaired infection**

INFLAMMATION

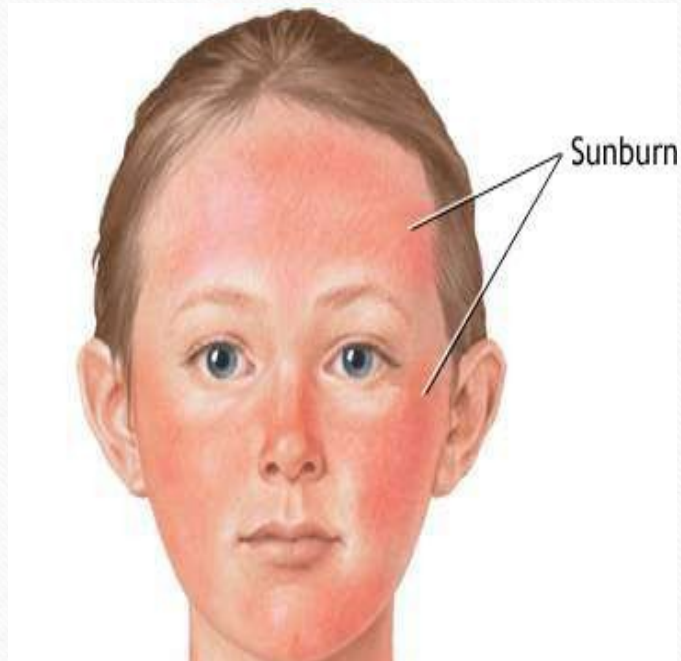


PROCESS OF INFLAMMATION

□ INFLAMMATION:

- Definition 1: the local response of living body tissues to injury due to any agent.
- Definition 2: The complex biological response of body tissues to harmful stimuli, such as pathogens, damaged cells, or irritants

INFLAMMATION:



❑ Inflammation is a protective response involving;

- Immune cells,
- Blood vessels,
- Molecular mediators

❑ It is also the body defense reaction – to eliminate or limit the spread of injurious agent

Causes of Inflammation

- Infective agents like bacteria, viruses, fungi, parasites (and their toxins).
- Immunological agents like cell-mediated and antigen antibody reactions.
- Physical agents like heat, cold, radiation, mechanical trauma.
- Chemical agents like organic and inorganic poisons.
- Inert materials such as foreign bodies (chemically

Signs of inflammation

❑ 4 cardinal signs- (according to Celsus)

- Redness
- Swelling
- Heat
- Pain

❑ 5th sign

- Loss of function – (according to Virchow)

Types of inflammation
□ Mainly of 2 types i.e. acute and chronic

❖ **Acute Inflammation**

- short duration
- represents the early body reaction- followed by healing
- **Chronic inflammation**
- longer duration
- causative agent of acute inflammation persists for a long time

INFLAMMATORY RESPONSE/ PROCESS OF INFLAMMATION

Involves the following events:

❖ VASCULAR EVENTS/RESPONSE

- Hemodynamic changes
- Altered vascular permeability

❖ CELLULAR EVENTS/RESPONSE

- Exudation of leukocytes
- Phagocytosis

VASCULAR EVENTS/RESPONSE

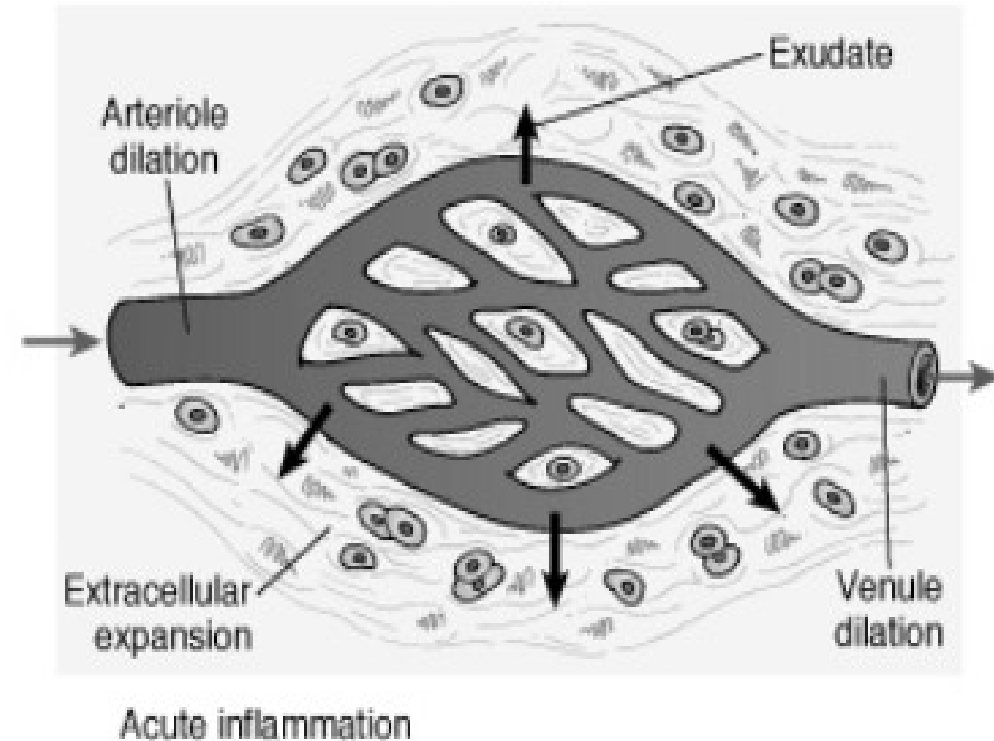
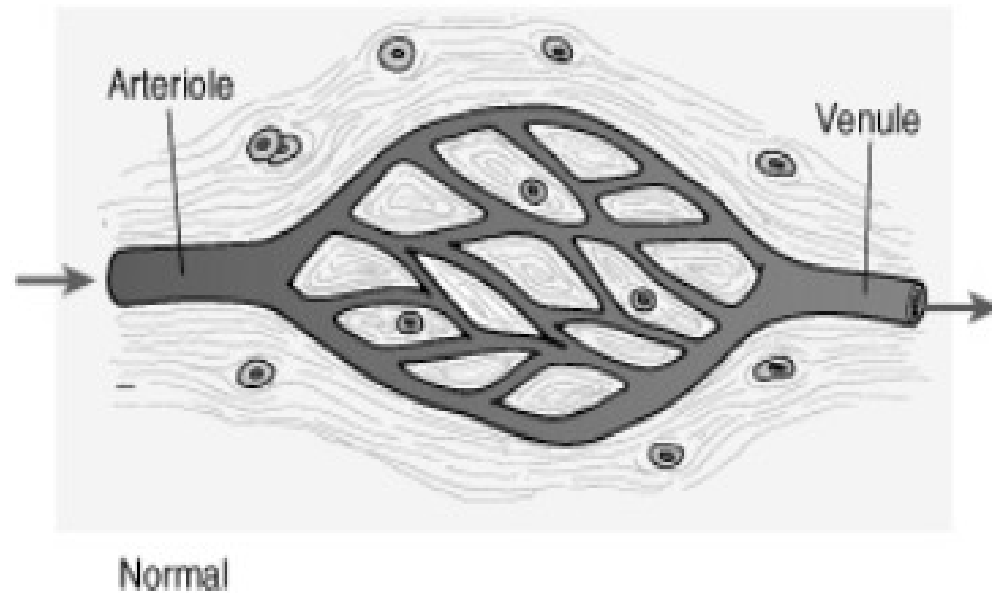
a) Hemodynamic changes

Transient vasoconstriction: Is the immediate vascular response to achieve hemostasis irrespective of type of injury .

Persistent progressive vasodilation: Involves mainly arterioles but to a lesser extent, capillaries. It results in increased blood volume in the micro-vascular bed of the site of acute inflammation.

Elevated local hydrostatic pressure: Caused by progressive vasodilation which results in transudation of fluid into the local site causing edema

Slowing/stasis of microcirculation follows, causing increased concentration of RBCs and thus raised blood viscosity.



b) Altered vascular –permeability

□ There are two mechanisms –:

- i.** Chemical mediators of acute inflammation may cause retraction of endothelial cells, leaving intercellular gaps (chemical mediated vascular leakage).
- ii.** Toxins and physical agents may cause necrosis of vascular endothelium, leading to abnormal leakage (injury induced vascular leakage).

CELLULAR EVENTS/RESPONSE

Includes:

i) Formation of the Cellular Exudate

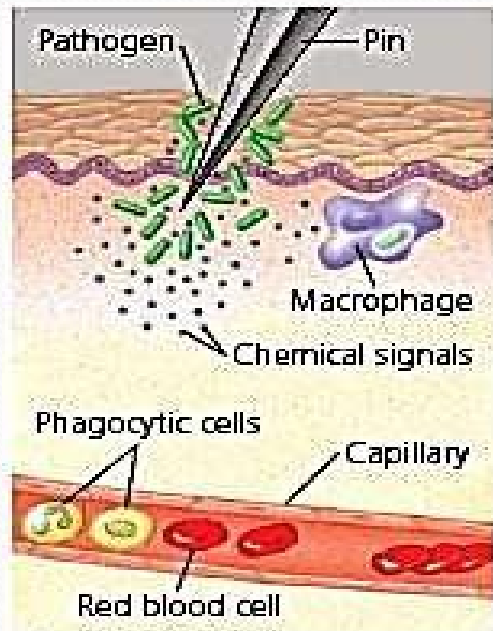
- ❑ How do white blood cells get out of the circulation and into the area where they are needed?
- ❖ The movement of leukocytes from the vessel lumen in a directional fashion to the site of tissue damage is called chemotaxis.
- ❖ All granulocytes and monocytes respond to chemotactic factors and move along a concentration gradient (from an area of lesser concentration of the factor to an area of greater concentration of the factor).

ii) **Phagocytosis**

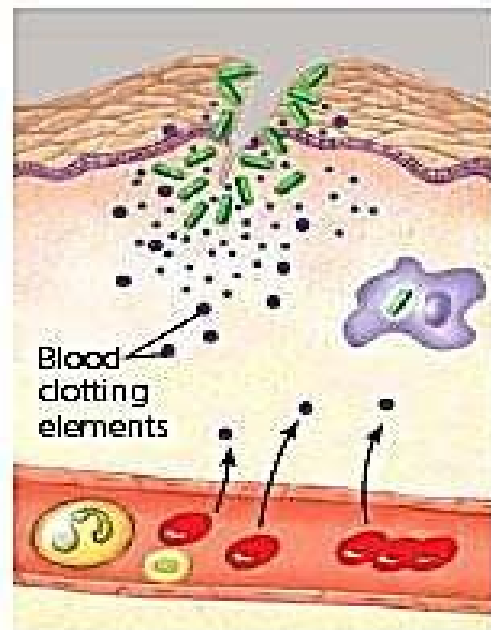
□ The process whereby cells ingest solid particles is termed phagocytosis.

- The first step in phagocytosis is adhesion of the particle to be phagocytosed to the cell surface.
- The phagocyte ingests the attached particle by sending out pseudopodia around it.
- These meet and fuse so that the particle lies in a phagocytic vacuole (also called a phagosome) bounded by cell membrane.
- Lysosomes, then fuse with phagosomes to form phagolysosomes. It is within these that intracellular killing of microorganisms occurs

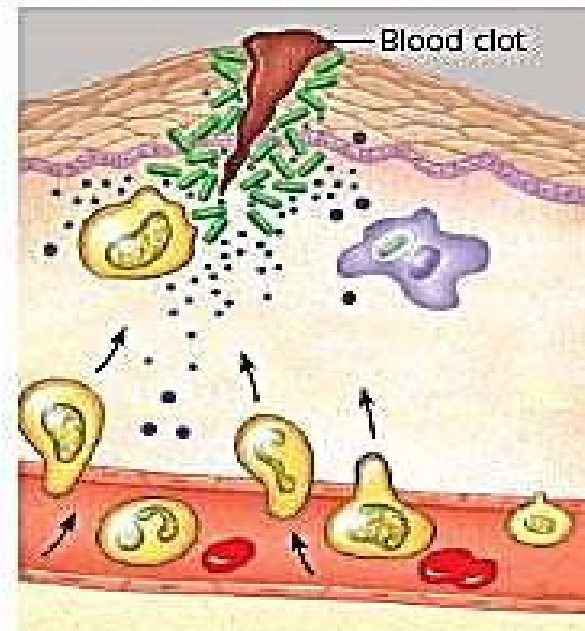
INFLAMMATION PROCESS



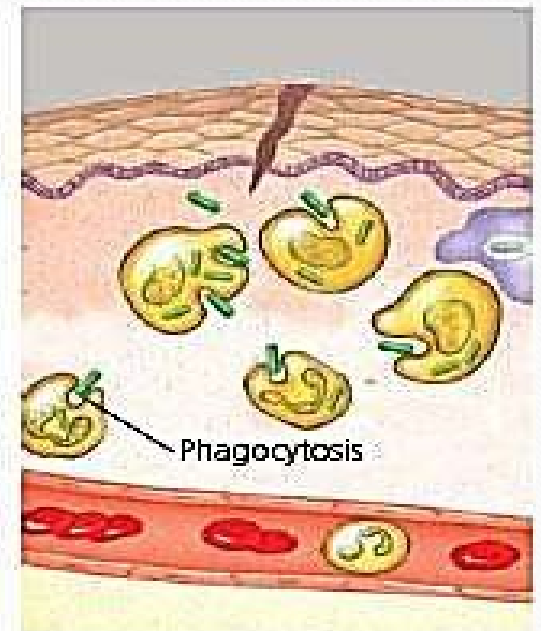
- 1 Chemical signals released by activated macrophages and mast cells at the injury site cause nearby capillaries to widen and become more permeable.



- 2 Fluid, antimicrobial proteins, and clotting elements move from the blood to the site. Clotting begins.



- 3 Chemokines released by various kinds of cells attract more phagocytic cells from the blood to the injury site.



- 4 Neutrophils and macrophages phagocytose pathogens and cell debris at the site, and the tissue heals.

Factors that can influence chronic inflammation;

- Dietary factors,
- Physical activity,
- Smoking
- Obesity
- Alcohol consumption
- Stress can affect inflammation.

DISORDERS OF INFLAMMATION

❑ Inflammatory abnormalities are a large group of disorders that underlie a vast variety of human diseases.

❑ Examples of disorders associated with inflammation include:

- Acne vulgaris
- Asthma
- Autoimmune diseases
- Chronic prostatitis
- Diverticulitis
- Glomerulonephritis
- Hypersensitivities

MANAGEMENT OF PATIENTS WITH INFLAMMATION

- FEVER/PYREXIA: Occurs due to bacteremia.
Administer prescribed antipyretics e.g. paracetamol. Give high calorie diet in the form of carbohydrates. This is to meet the increased metabolic demand in patients with fever.
- LEUCOCYTOSIS: Usually in bacterial infections there is neutrophilia, viral infections cause lymphocytosis, parasitic infections cause eosinophilia. Administer prescribed antibacterial agents.

- DIET: Provide easily digestible diet (light diet), keep the fluid balance, and give high protein diet for the formation of new tissue to build up the destroyed tissue
- SEDATION: Inflammation will produce pain, therefore sedative drugs may be given to induce sleep.
- SHOCK: Systematic activation of coagulation pathway may occur leading to microthrombi throughout the body and results into DIC, bleeding and death. Severe tissue injury results in profuse systemic vasodilation, increased vascular permeability and intravascular volume loss causing hypotension and shock. Give plenty of I.V fluids.

- PAIN: Immobilize the affected limb, administer prescribed analgesics. Give anti-inflammatory agents e.g. ibuprofen, indomethacin, steroids e.g prednisone and dexamethasone.
- REST: Elevate the affected limb. The inflamed part is rested by elevation. In case of arms use splints, and for lower limbs use pillows and clear.
- LOCAL TREATMENT: If the inflammation is broken and septic, use antiseptics to kill the pathogenic microbes in in the wound. Examples of antiseptics include: hydrogen peroxide, hibitane (Chlorexidine).

Systemic effects of inflammation

- Fever : infectious form of inflammation
- Anaemia
- Leucocytosis
- Septic shock

Assignment

- State the roles of a nurse in med surgical nursing

END

THANKS