PRESENTING PROBLEMS IN INFECTIOUS DISEASES

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MBBS, FCPS MEDICINE.

UNIVERSITY VISION AND MISSION

Vision and Values

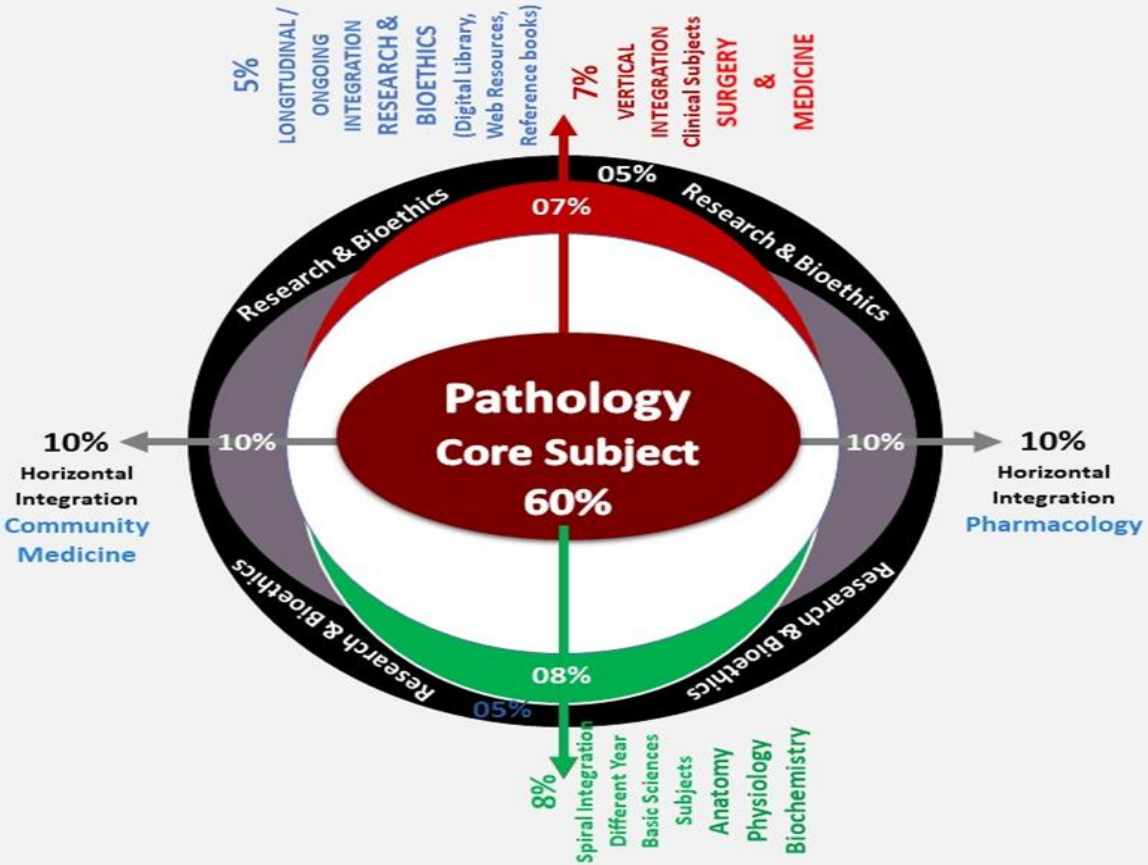
Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Mission

To impart evidence-based research-oriented health professional education, Best possible patient care, Mutual respect, ethical practice of healthcare and social accountability.

Prof. Umar, LGIS (Lecture) Model

Prof. Umar's Clinically Oriented Integration Model
For Basic Sciences Interactive Lectures



Model 3rd Year Pathology LGIS (≈30 slides)	
Core Subject – 60% (≈ 18-20 slides)	
Pathology (≈ 18-20 slides)	
Horizontal Integration – 20% (≈ 5-6 slides)	
Same Year Subjects	• Pharmacology (10%) (≈ 2-3 slides) • Community Medicine (10%) (≈ 2-3 slides)
Vertical Integration – 07% (≈ 2-3 slides)	
Clinical Subjects	• Medicine (3-5%) (≈ 1-2 slides) • Surgery (3-5%) (≈ 1-2 slides)
Spiral Integration – 08% (≈ 2-3 slides)	
Different Year Basic Sciences Subjects	• Anatomy (1-3%) (≈ 1-2 slides) • Physiology (1-3%) (≈ 1-2 slides) • Biochemistry (1-3%) (≈ 1-2 slides)
Longitudinal / Ongoing Integration – 05% (≈ 1-2 slides)	
Research & Bioethics (≈ 1-2 slides)	

RMU is thriving to upgrade the Integrated Clinical Oriented Modular Curriculum and Teaching. There are many deficiencies in this system which RMU has learned with five year experience of real ground experience. We have designed the teaching (lecture) model of integration, covering all components of vertical and horizontal and clinical integration along with continuous step ladder pattern of research, professionalism and ethic. This teaching strategy is in alignment with assessment principles of integrated modular curriculum.

LEARNING OBECTIVES

- To describe the clinical examination of the patients with infectious disease.
- To identify presenting complains/symptoms of patients suffering from infectious disease.
- To describe the different laboratory investigations for the diagnosis of infectious disease

AS IT TAKES TWO TO MAKE A QUARREL , SO IT TAKES TWO TO MAKE A DISEASE, THE MICROBE AND ITS HOST.

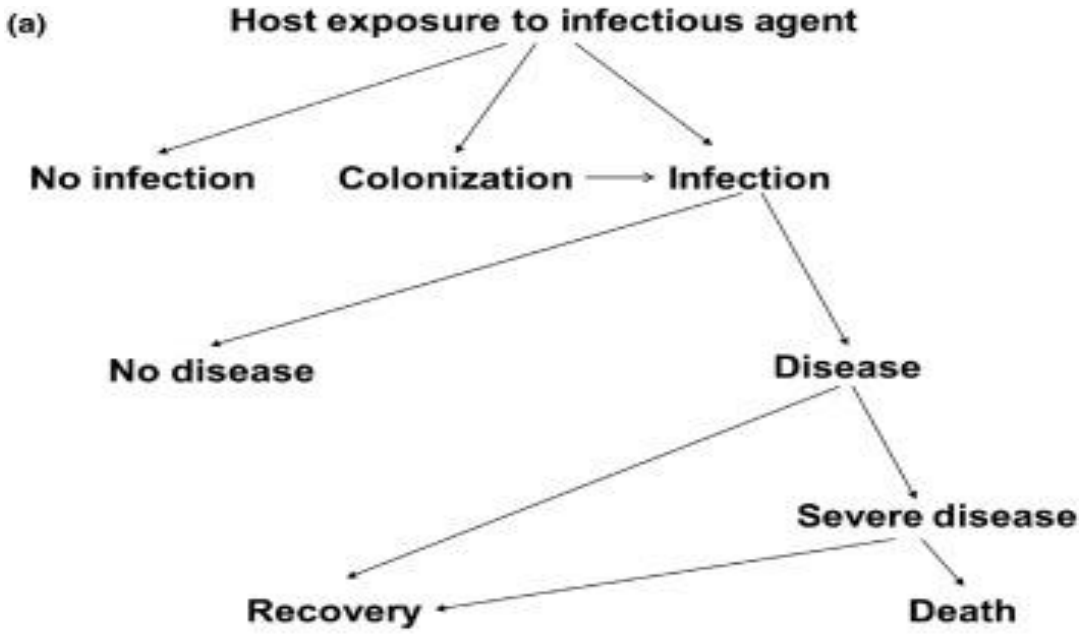
Charles Chaplain (1856- 1941)

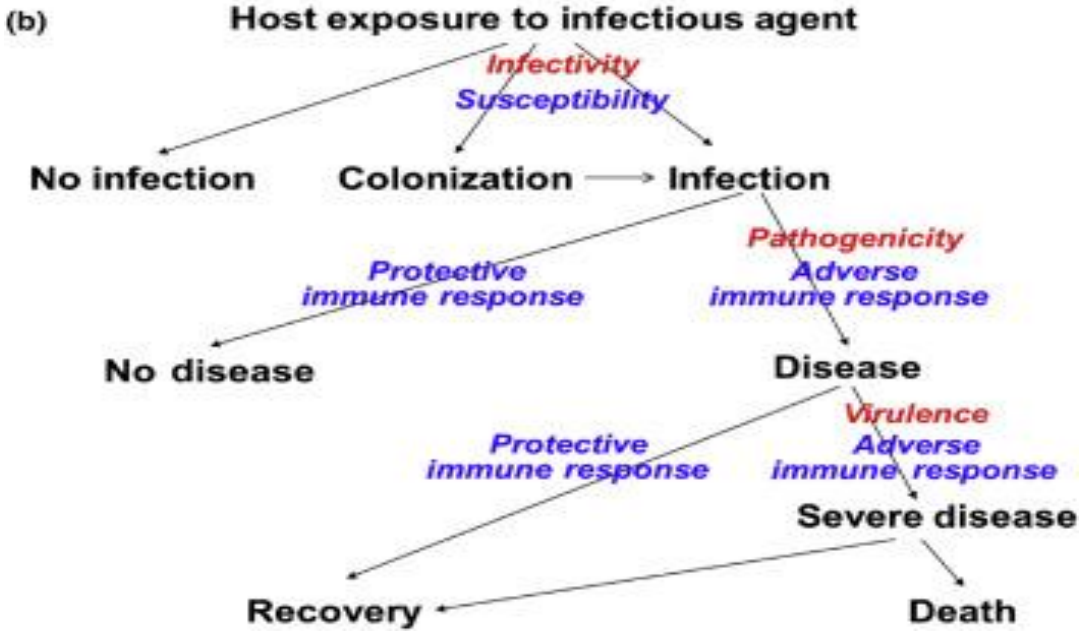
Infectious Disease (CORE CONCEPT)

- An infectious disease can be defined as an illness due to a pathogen or its toxic product, which arises through transmission from an infected person, an infected animal, or a contaminated inanimate object to a susceptible host.

From International Encyclopedia of Public Health (Second Edition) 2017.

HORIZONTAL INTEGRATION





Important Definitions (CORE CONCEPT)

- **INCUBATION PERIOD:** defined as the time from exposure to an infectious agent until the time of first signs or symptoms of disease.
- **PERIOD OF CLINICAL ILLNESS:** which is the duration between first and last disease signs or symptoms.
- **INFECTIOUS PERIOD:** the time period when an infected person can transmit an infectious agent to other individuals.

CORE CONCEPT

CLINICAL SYMPTOMS

Presenting Complains/ Symptoms

- **FEVER:** CDC considers a person to have a fever when he or she has a measured temperature of 100.4° F (38° C) or greater, or feels warm to the touch, or gives a history of feeling feverish.

- In physiological terms, fever has been defined as “a state of elevated core temperature, which is often, but not necessarily, part of the defensive response of multicellular organisms to invasion by live microorganisms or inanimate matter recognized as pathogenic or alien by the host”

Types Of Fever

Types	Character	Examples
Continued	Does not remit	Pneumonia, typhoid, urinary tract infection, infective endocarditis, brucellosis and typhus.
Intermittent	Temperature falls to normal each day	Pyogenic infections, TB
Remittent	Daily fluctuations > 2-degree, temperature does not return to normal	Typhoid, Brucellosis, Infective endocarditis
Relapsing	Temperature returns to normal days before rising again	Malaria, tick – born infections e.g., spirochete Borrelia

Constitutional symptoms associated with fever

1. Chills and rigors
2. Fatigue
3. Body aches and myalgias
4. Headache
5. Sweating
6. Weight loss
7. Loss of appetite

Skin Rash And Its Types

Color	Ranges from light-colored to red or pink, purple, or black, but can also be the same color as the person's skin tone.
Texture	Can be flat, raised, blister-like, or crusted. In some diseases, such as chickenpox, areas with more than one of these characteristics can be found at the same time.
Maculopapular	A red rash with both flat red areas (macules) and small bumps (papules) that may run together.
Vesicular/ Pustular	Small bumps filled with fluid that can be clear or cloudy (vesicles) or filled with a thick, opaque fluid (pustules).
Purpuric	Red or purple discolorations caused by bleeding under the skin or mucous membranes; they do not blanch or fade with pressure. Petechial lesions appear as small, reddish freckles, while purpuric lesions cover larger areas.

Skin Rash

Chickenpox

Measles

Herpes Zoster

Meningococcemia purpuric rash

Impetigo

Dengue fever rash

Cellulitis

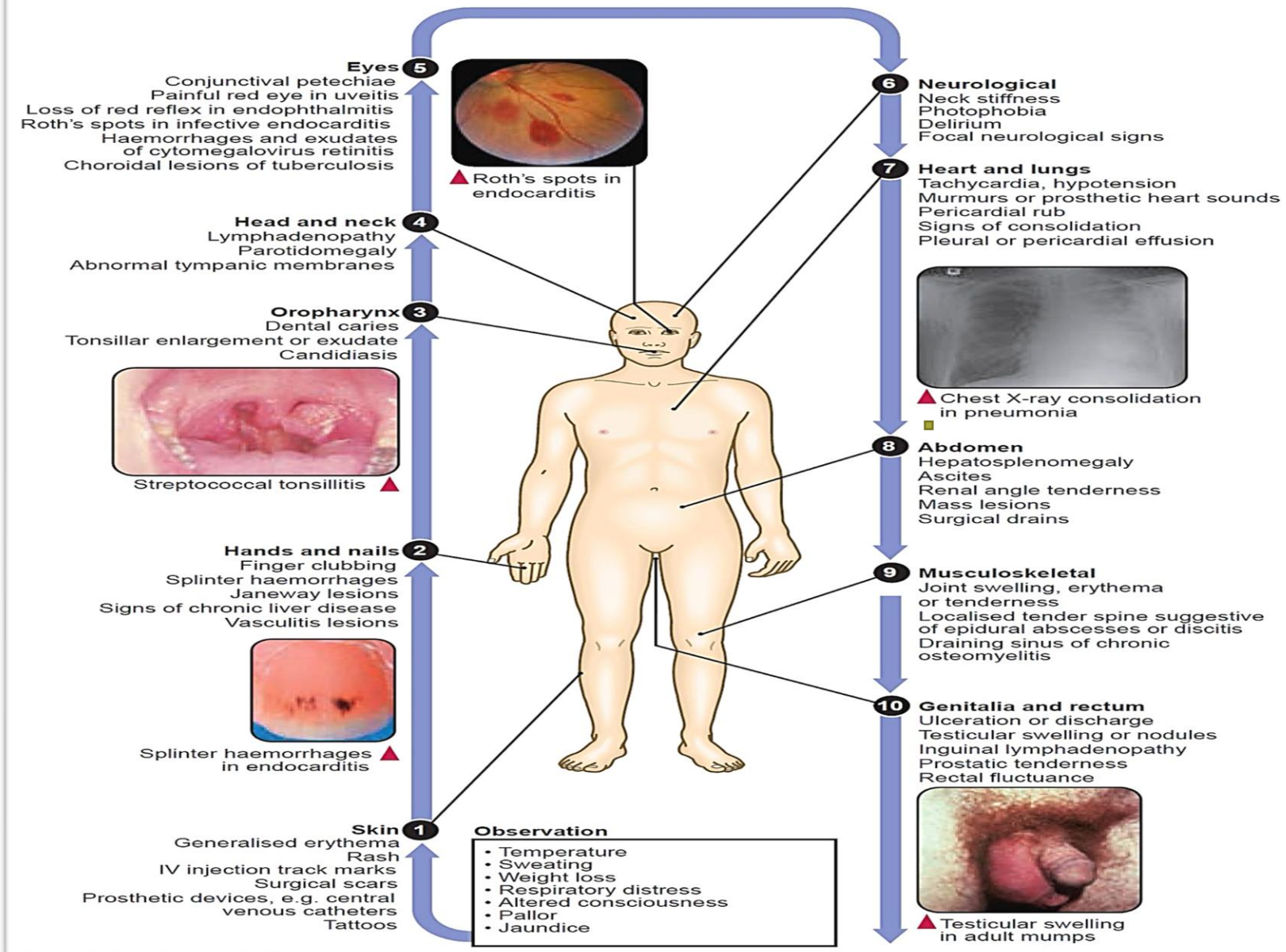
Organ Specific Symptoms

Specific Infection	Symptoms
Pneumonia	Pleuritic chest pain, productive cough
Hepatitis	Right hypochondrial pain, yellowish discoloration of sclera and mucous membrane
Gastroenteritis	Abdominal pain generalized, diarrhea
Meningitis	Severe headache associated with photophobia, rash and neck stiff- ness
Septic arthritis	Pain (localized to the joint) made worse by gentle passive motion. Swelling of the involved joint
UTI	Burning micturition, frequency, hesitancy, foul smelly urine

CORE CONCEPT

EXAMINATION

CLINICAL EXAMINATION OF PATIENTS WITH INFECTIOUS DISEASE



Source : Davidsons Essentials of Medicine, 2e

Taken from Davidson Essentials of Medicine, 24th Edition

VERTICAL INTEGRATION

LAB INVESTIGATIONS

Non- specific investigations

- Full blood count with differentials including eosinophils
- Inflammatory markers: ESR, CRP, Procalcitonin
- Urea and electrolytes, liver function tests (LFTs), blood glucose
- Muscle enzymes (CPK, LDH)

Diagnosis of infectious disease

Traditional/conventional methods

Serum

Immunology

Antibody detection
Radioimmuno assay
ELISA

Samples

Blood
Feces
Urine
Swabs

Microscopy
Culture (media)

Biochemical tests
Identification of pathogen
Antibiotic sensitivity test
Serotyping
Molecular identification

Molecular methods

Genomic analysis
Proteomics
PCR
Hybridisation
Microarray

Specific investigations to identify pathogen

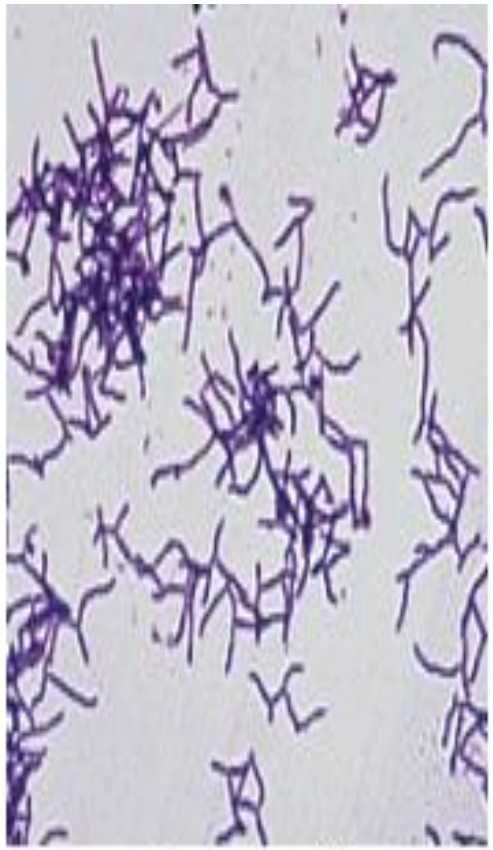
- **Microscopy and staining:** can be done quickly, but accuracy depends on the experience of the microscopist and quality of equipment.

E.g., Gram staining, Acid- fast staining, Fluorescent stains.

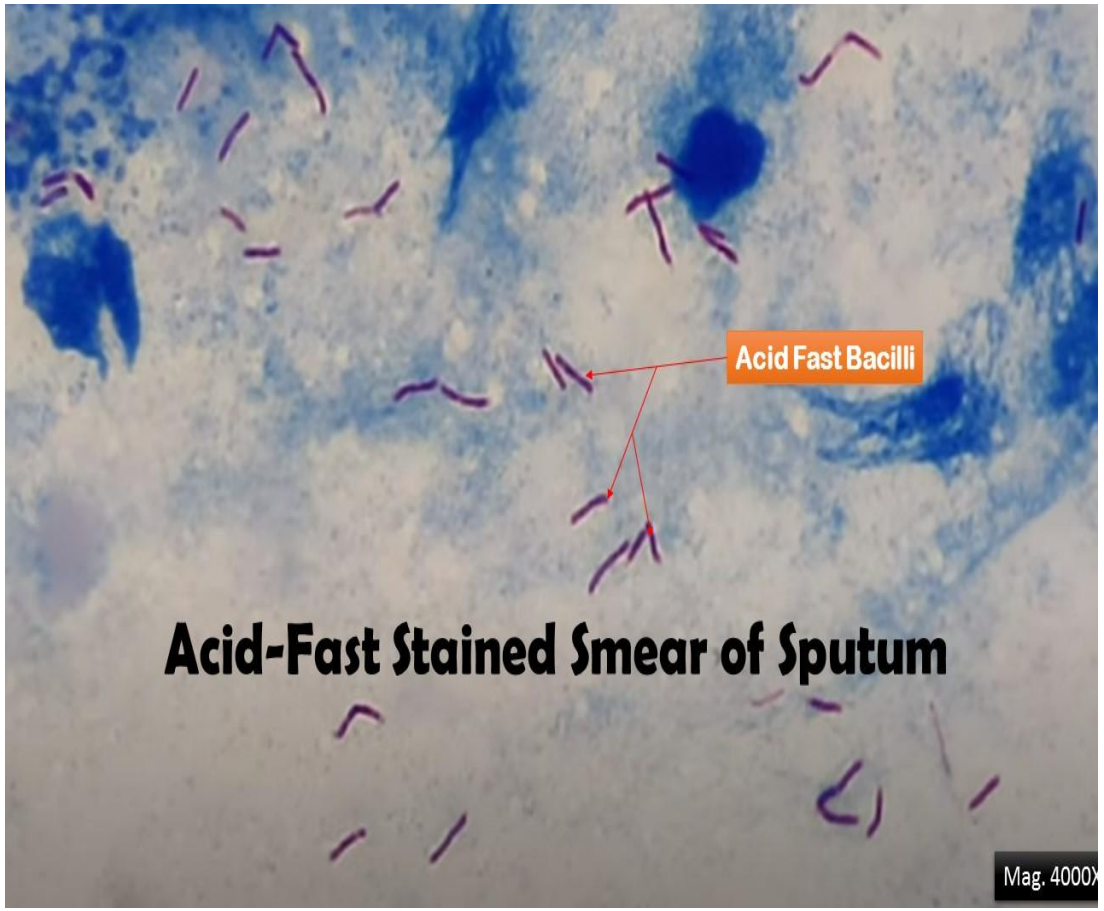
- **Cultures:** is microbial growth on or in a nutritional solid or liquid medium; increased numbers of organisms simplify identification. Culture also facilitates testing of antimicrobial susceptibility.

E.g., Lowenstein-Jensen agar for Mycobacterium tuberculosis

Gram Negative



Gram Positive

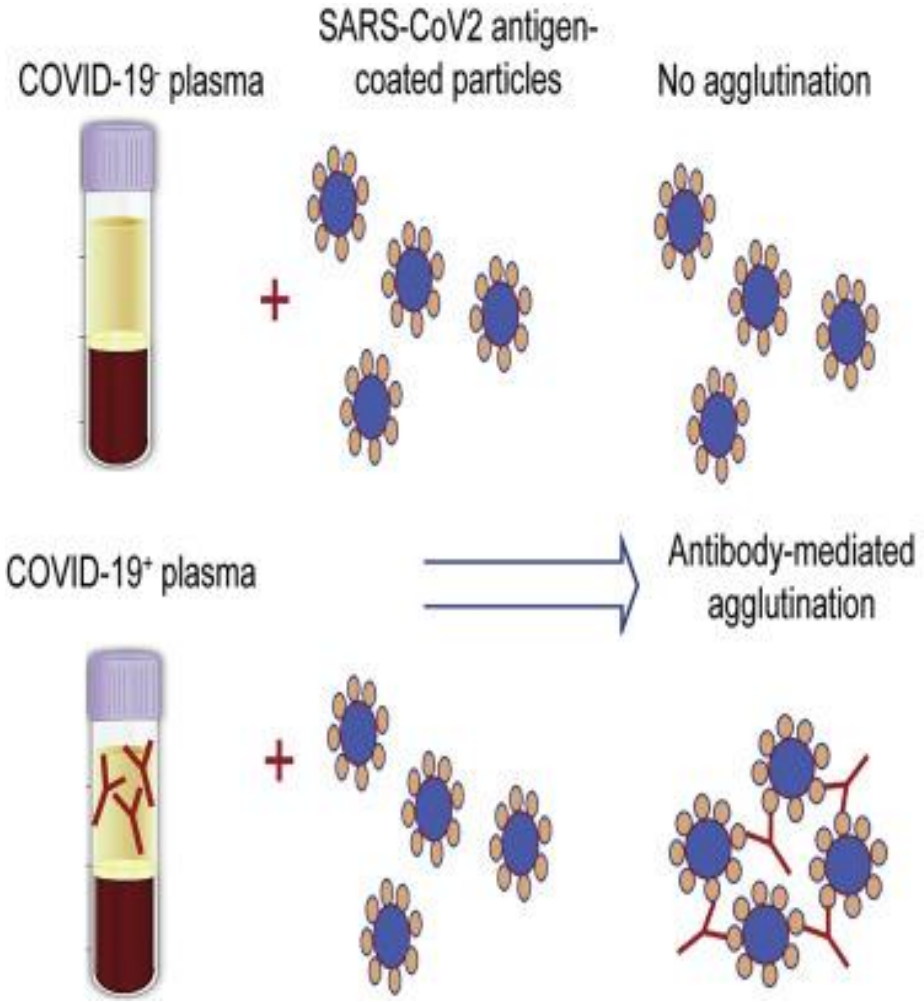


- **Immunologic tests** use one of the following:

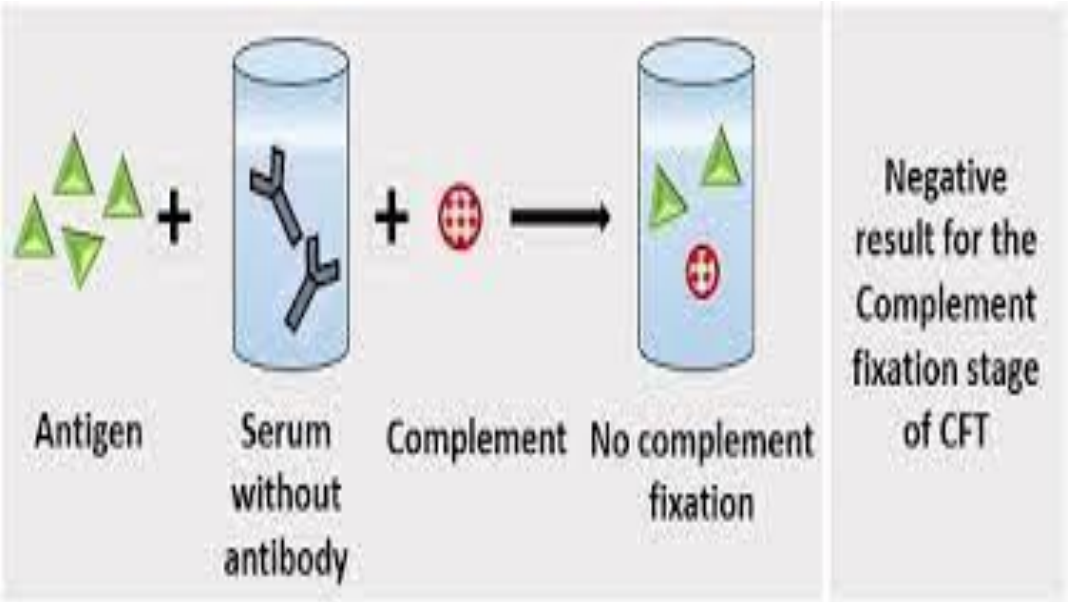
Antigen to detect antibodies to a pathogen in the patient's specimen

Antibody to detect an antigen of the pathogen in the patient’s specimen

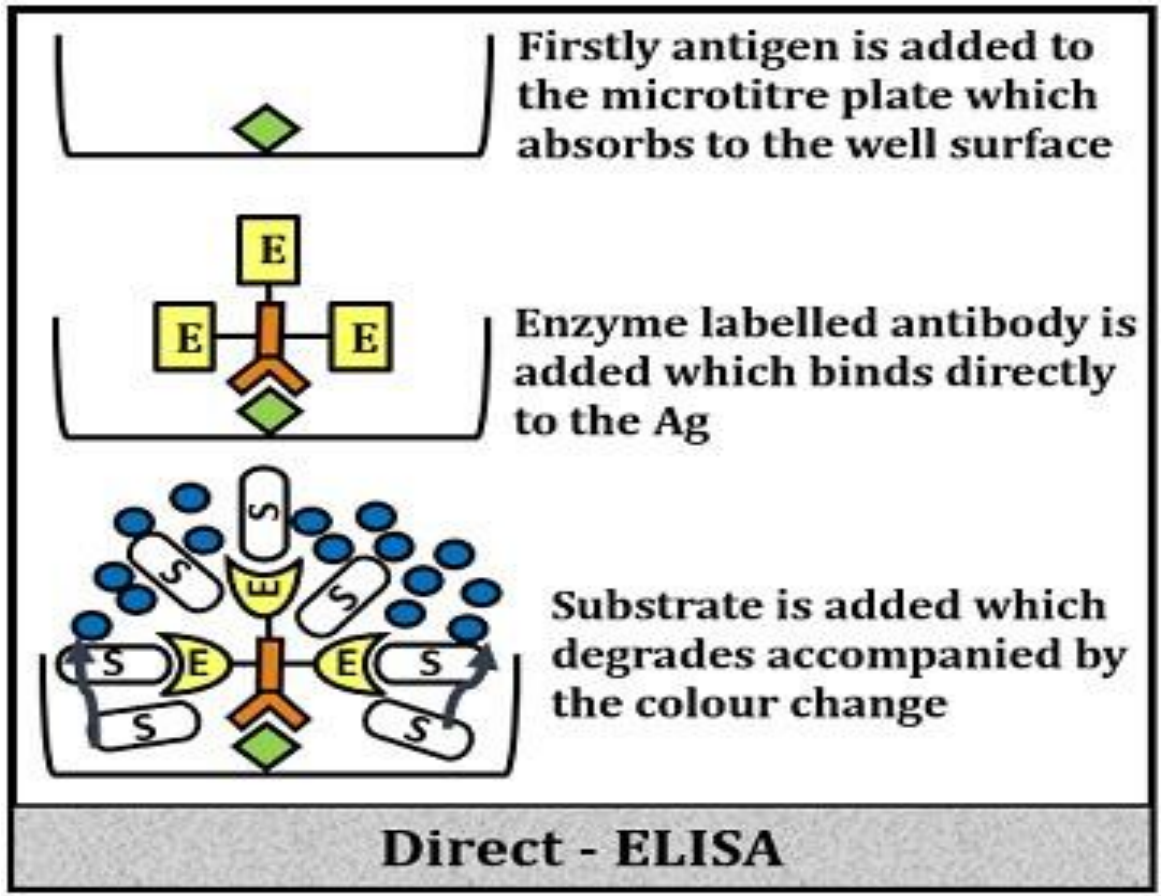
E.g., Agglutination tests, Complement fixation, Enzyme-linked immunosorbent assay (ELISA), and Western blot test.

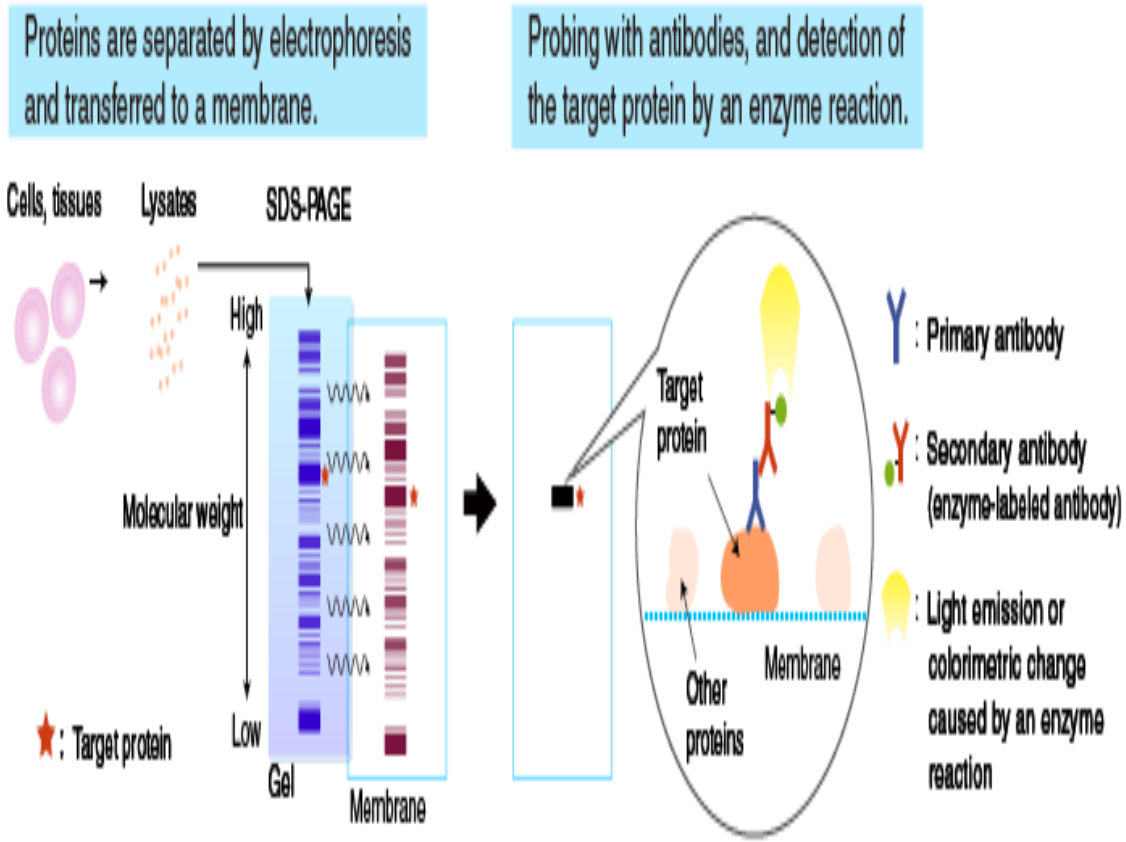


Agglutination test



Complement fixation test



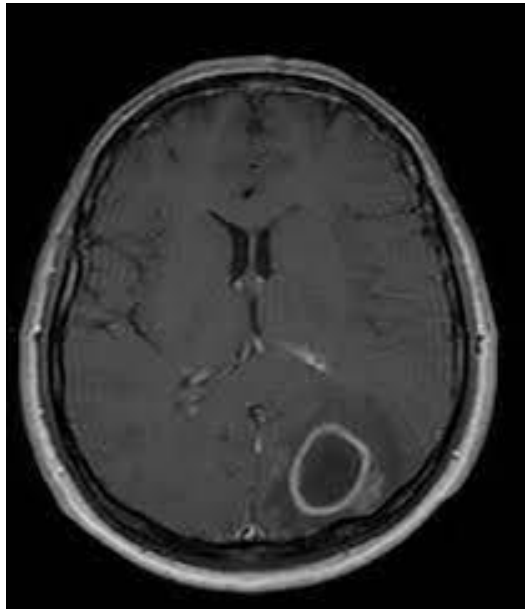


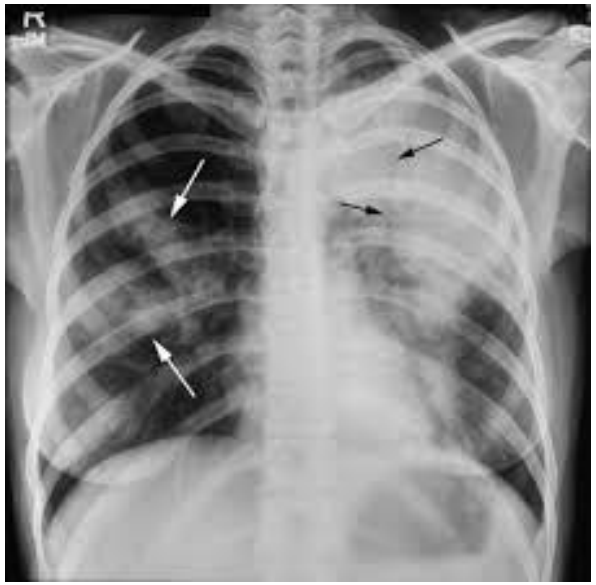
Western Blot

Nucleic acid amplification techniques take tiny amounts of DNA or RNA, replicate them many times, and thus can detect minute traces of an organism in a specimen, avoiding the need for culture. These techniques are particularly useful for organisms that are difficult to culture or identify using other methods (e.g., viruses, obligate intracellular pathogens, fungi, mycobacteria, some other bacteria) or that are present in low numbers.

Imaging

- Chest X-ray
- Ultrasound
- CT scan
- MRI





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Review Article

Antibiotic Resistance and Its Impact on Disease Management

Chinmayee A. Nadgir • Dalia A. Biswas

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Peer-Reviewed

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Thank you