

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the name of Allah, Most Gracious, Most Merciful.

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Immunology

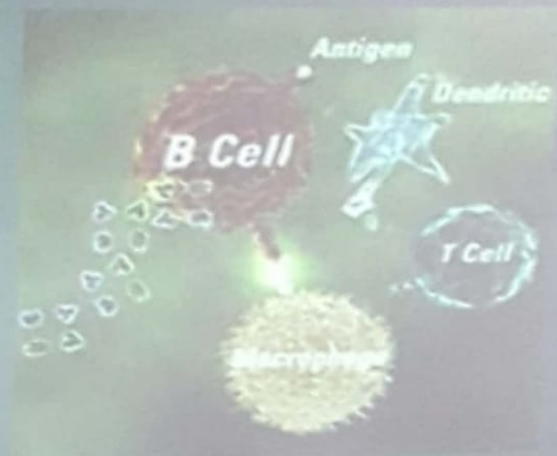
IMMUNOLOGY

DR. MEHJABEEN QURESHI

DEFINITIONS

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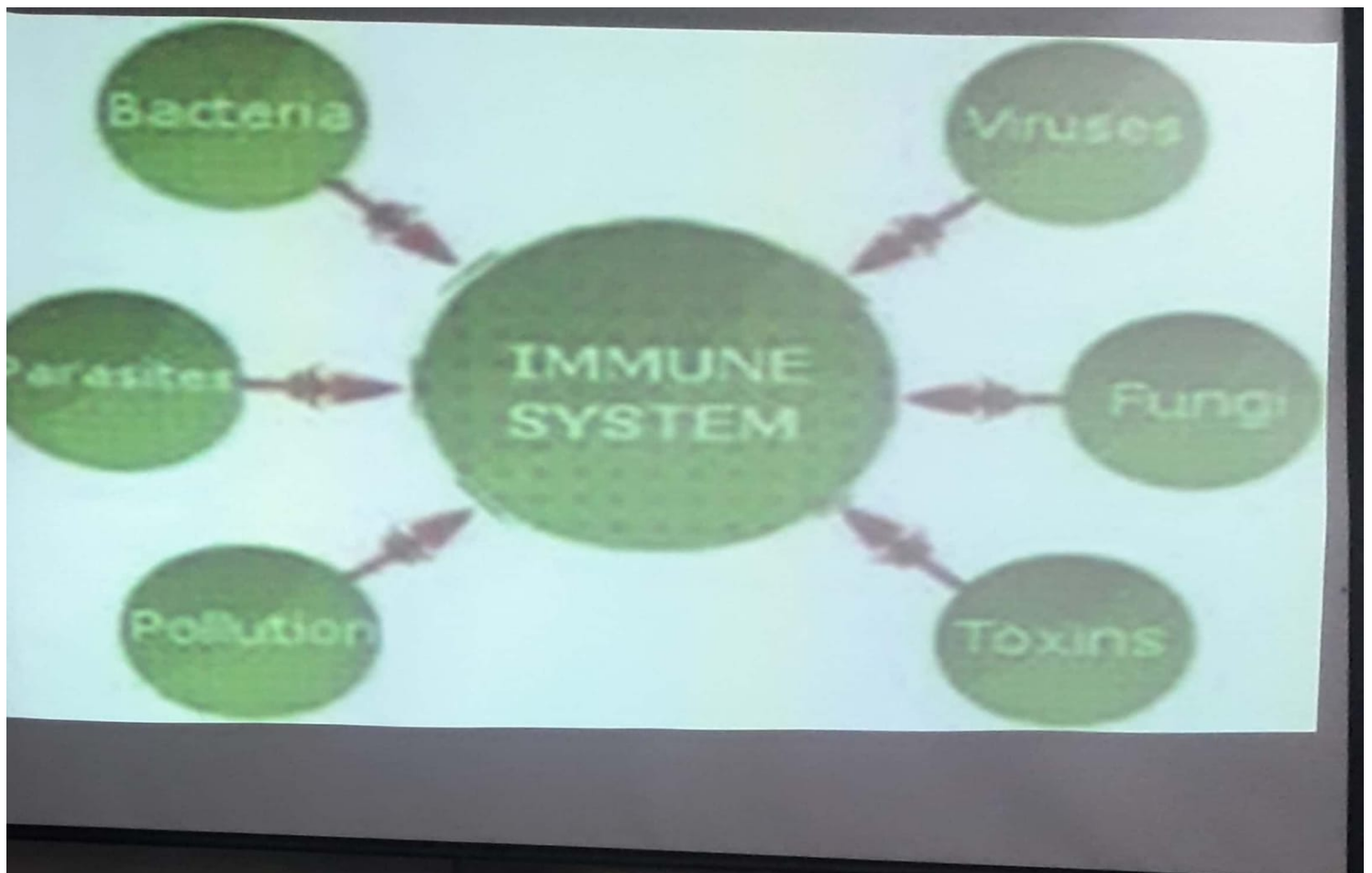
- ▶ Infection
- ▶ Contamination
- ▶ Infestation
- ▶ Host
- ▶ Epidemic
- ▶ Endemic
- ▶ Pandemic
- ▶ Sporadic
- ▶ Opportunistic infection
- ▶ Elimination
- ▶ Eradication

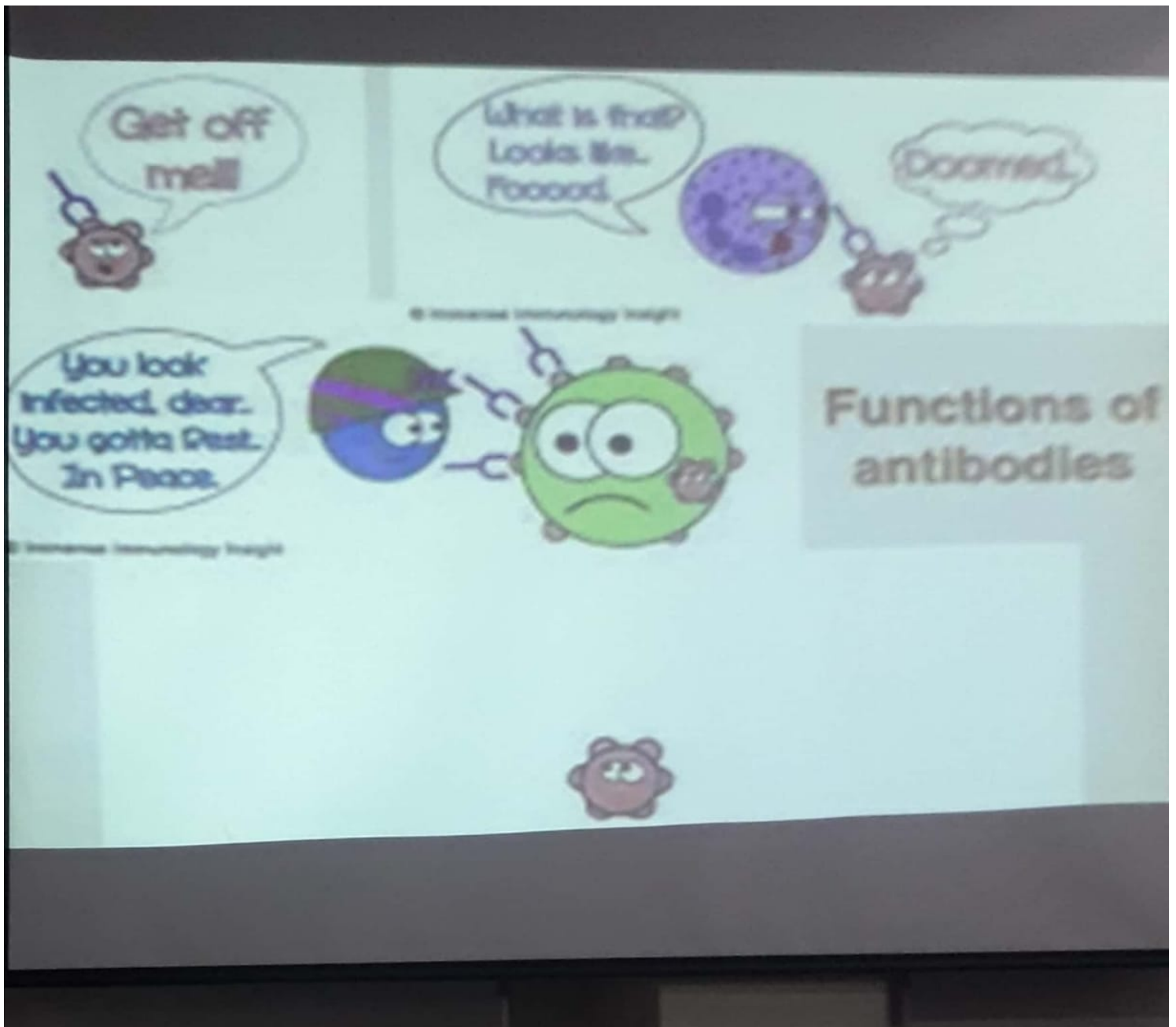


Immunology

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- ▶ Immunology = study of structure and function of the immune system
- ▶ Immune system = cells, tissues, and molecules that mediate resistance to infections
- ▶ Immunity = resistance of a host to pathogens and their toxic effects
- ▶ Immune response = collective and coordinated response to the introduction of foreign substances in an individual mediated by the cells and molecules of the immune system





Types of Immunity

1. Innate (non-adaptive)
 - ▶ first line of immune response
 - ▶ relies on mechanisms that exist before infection
2. Acquired (adaptive)
 - ▶ Second line of response (if innate fails)
 - ▶ relies on mechanisms that adapt after infection
 - ▶ handled by T- and B- lymphocytes
 - ▶ one cell determines one antigenic determinant

Innate immunity

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- ▶ Based on genetic make-up
- ▶ Relies on already formed components
- ▶ Rapid response: within minutes of infection
- ▶ Not specific
 - ▶ same molecules / cells respond to a range of pathogens
- ▶ Has no memory
 - ▶ same response after repeated exposure

Factors effecting innate immunity

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- ✓ Genetic Factors
- ✓ Age
- ✓ Hormones
- ✓ Fatigue/stress
- ✓ Temperature
- ✓ Nutrition (Undernutrition, malnutrition)
- ✓ Injuries, surgical operations, malignancies
- ✓ Debilitating conditions like:
Diabetes, Pregnancy, chronic condition

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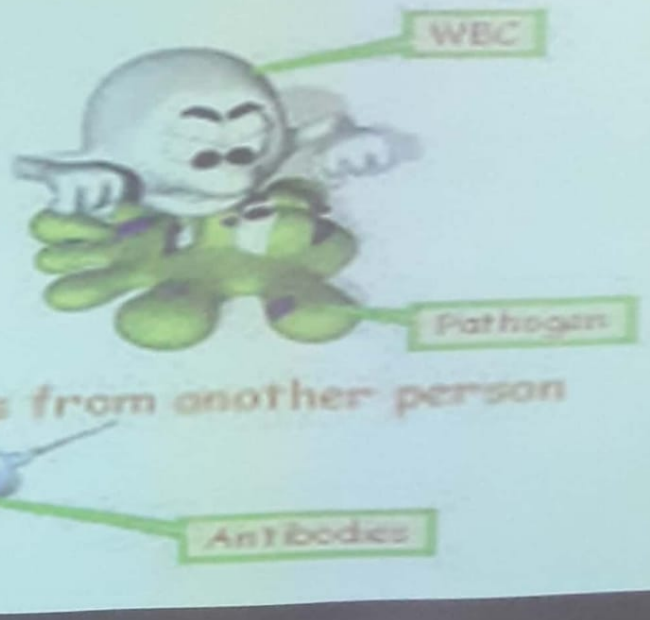
Types of adaptive immunity

- **Active**

- reaction of your own system

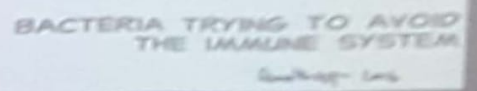
- **Passive**

- borrow immune agents from another person



Adaptive Immunity: Active and passive

	Active Immunity	Passive immunity
Natural	clinical, sub-clinical infection	via breast milk, placenta
Artificial	Vaccination: Live, killed, purified antigen vaccine	immune serum, immune cells

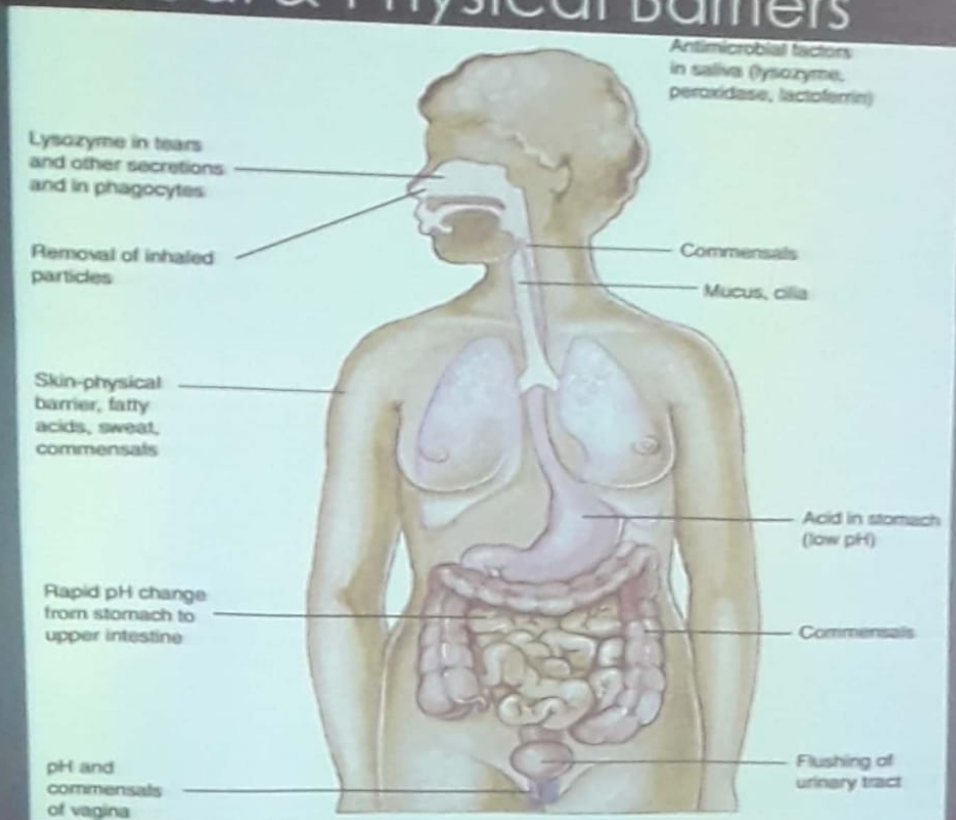


Outer Defenses

- ◆ Mechanical Barriers
 - ◆ Skin
 - ◆ Mucous Membrane
- ◆ Mechanical Removal
 - ◆ Coughing
 - ◆ Sneezing
 - ◆ Sniffing
 - ◆ Blinking, sweating etc.

First line of defense- Chemical & Physical Barriers

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HERD IMMUNITY

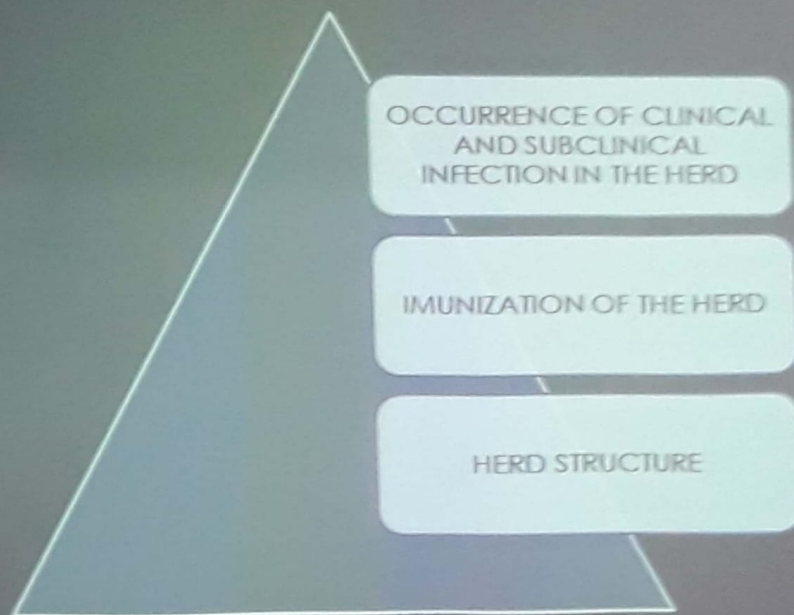
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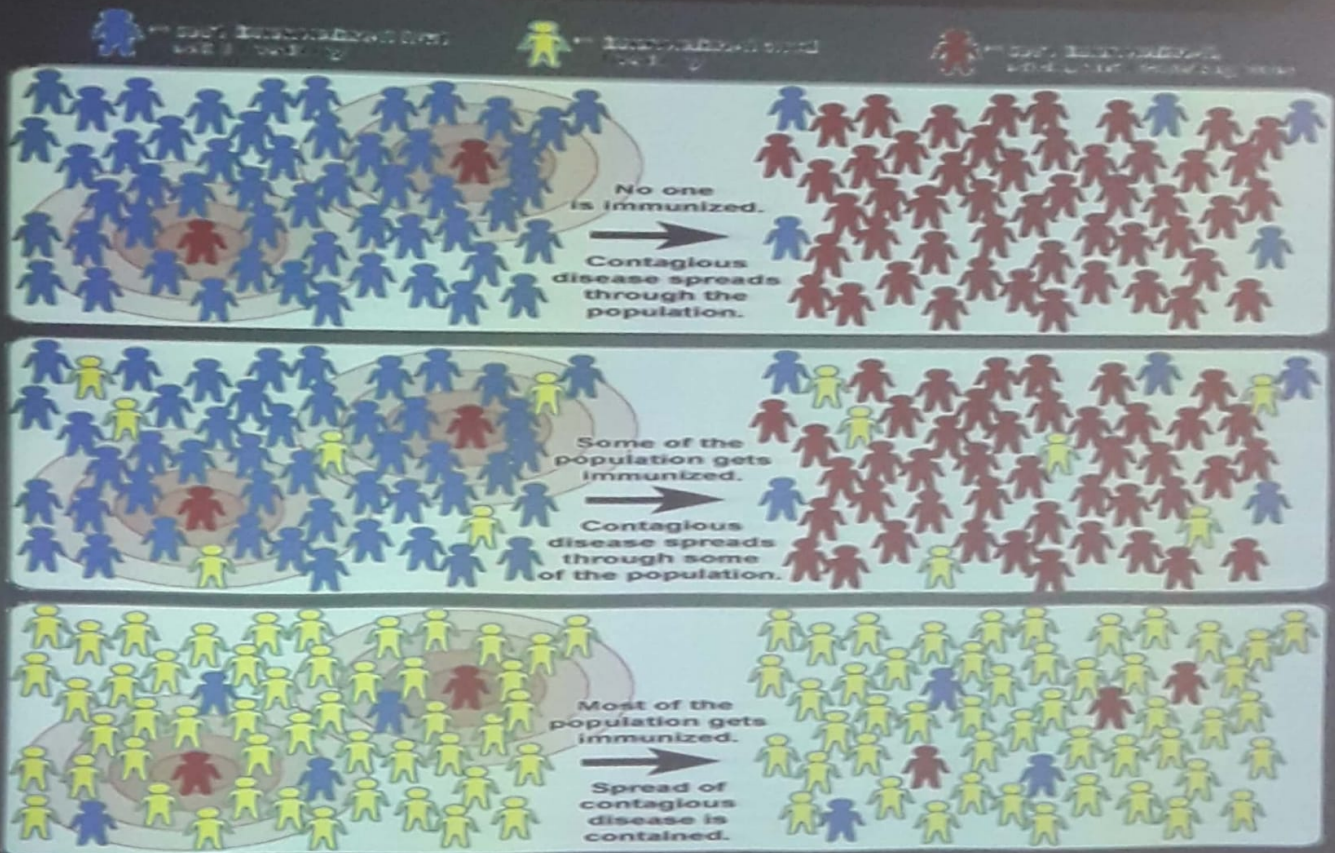


- ▶ Community immunity
- ▶ Vaccinated individuals provide immunity to non-vaccinated individuals
- ▶ Elements involved
 - ▶ Clinical & subclinical infection
 - ▶ Immunization
 - ▶ Herd structure (host)
- ▶ Ongoing immunization play vital role
- ▶ Polio, measles, diphtheria etc
- ▶ Tetanus

HERD IMMUNITY

ELEMENTS CONTRIBUTING TO HERD IMMUNITY





Ring immunity

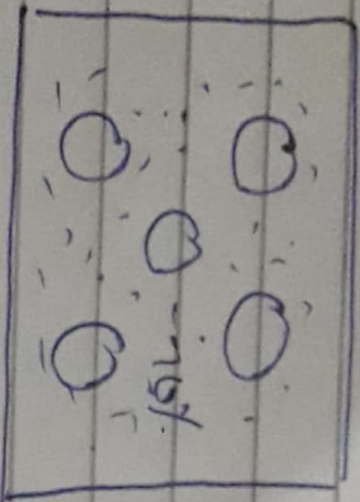
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- ▶ Develop a barrier between protected & unprotected individuals
- ▶ Play a vital role in spread of epidemic

Community Medicine

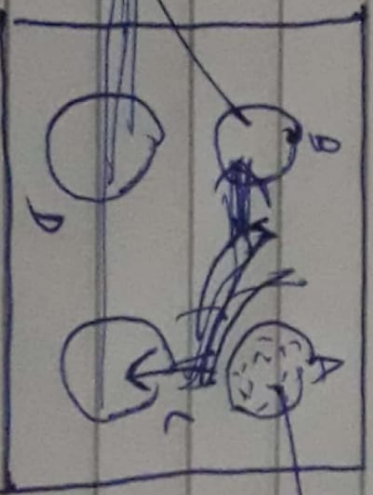
Saturday

⇒ RING IMMUNITY :-



Community
70% immunized
30% are secured
(Herd immunity)

(B, C, D)
These 3 communities
have limited
disease.



Community A which has
one disease in common.
All population can't be
vaccinated bcz of limited
resources.

Ring
~~population~~
immunity.

{ So we will immunize only these communities which are in direct with community A, i.e. (B+C).
be joined around population or community away from community A - i.e. community D.
On one side of ring is immunized community S_1 on other side is infected immunity.