

**STD 10-BIOLOGY-FIRST BELL-CLASS-33 Dated 03/12/2020**  
**Chapter – 5**  
**Soldiers of Defense**

- Is it possible to acquire immunity artificially? Which are the methods?



**Immunization**

- **What is Immunization?**
- When the pathogen enters the body defense mechanism of the body will be stimulated.
  - When the germs enter the body and if the defense mechanism slows down it causes the spread and multiplication of the germs.
  - **Immunization is the artificial method to make the defense cells alert against the attack of pathogens.**
  - Vaccines are the substances used for artificial immunization.
  - Edward Jenner, an English doctor started immunization in 1778.
  - Edward Jenner is known as **Father of Immunology**

**Experiments of Jenner :**

- He observed that people affected by cowpox escaped from the attack of smallpox.
- He injected the pus taken from a cowpox patient into the body of an 8 year old boy.
- The boy was affected by cowpox and recovered.

- After two months the pus taken from a smallpox patient was injected into the boy.
- He was not affected by smallpox.
- The immunization programmes got the name vaccination from the Latin word 'vacca' meaning cow, in memory of the cowpox experiments of Jenner.

### Components of vaccine

- Any one of the components from alive or dead or neutralised germs,
- Neutralised toxins
- Cellular parts of the pathogen.

#### ➤ How do vaccines work in the body?

- Components of the vaccine act as antigens and stimulate the defense mechanism of the body.
- Antibodies are formed in the body against them.
- These antibodies are retained in the body which in future protects the body from the pathogen responsible for the same disease.

### For Example:



Disease :Diphtheria

Pathogen: Corynebacterium diphtheriae

- Toxins produced by the bacteria causes fever, throat pain and inflammation in the lymph glands of the throat.
- Cells in the mucus membrane which are destroyed by the toxins produce an ash coloured thick coating in the throat within two or three days.
- Gradually brain ,heart ,kidneys are effected.

- Antitoxins which act against the toxins are used to protect the uninfected cells.
- *If the disease become severe the patient cannot be recovered through medication.*
- *Vaccination is the best preventive method.*
- *The components of diphtheria vaccines are neutralised toxins.*
- *When component of vaccine enter the body it simulate the defense mechanism.*
- *Antibodies are produced against antigens.*
- *The antibodies are retained in the body which in future protects the body from the pathogen responsible for the same disease.*

***National Immunization Schedule of preventive vaccines to be taken at different stages of childhood from birth.***

Eligibility	Vaccine/s
At Birth	BCG OPV – 0 Hepatitis – B
6 weeks of age	DPT – 1 OPV – 1 Hepatitis B – 1
10 weeks of age	DPT – 2 OPV – 2 Hepatitis B – 2
14 weeks of age	DPT – 3 OPV – 3 Hepatitis B – 3
9 months of age	Measles Vitamin A – first dose
16 – 24 months of age	DPT – first Booster OPV booster Measles 2 <sup>nd</sup> dose Vitamin A – second dose followed by every 6 months till 5 yr. age JE (in endemic districts only)
5 – 6 years of age	DPT second booster
10 and 16 years of age	TT

Vaccine	Disease
B.C.G.	Tuberculosis
O.P.V.	Polio
Pentavalent	Diphtheria, Tetanus, pertussis HepatitisB, Hib (Haemophilus influenza type B)
M.M.R.	Measles Mumps Rubella
T.T.	Tetanus

### ***EVALUATION***

- 1) Prepare a short note on immunization.*
- 2) Prepare an awareness pamphlet and poster about vaccination.*

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