



# **Expanded Program on Immunization (EPI)**

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**Course name: Community Health Nursing**

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**At the end of this Lecture, the students are able to:**

- Define disease prevention
- Define vaccine and Immunization .
- Describe the types of vaccination

**Disease Prevention** is a procedure through which individuals, particularly those with risk factors for a disease, are treated in order to prevent a disease from occurring.

**Vaccines** are available for 18 dangerous or deadly diseases. Over the years, these vaccines have prevented countless cases of disease and saved millions of lives. Infants, children, adolescents, teens and adults need different vaccinations, depending on their age, location, job, lifestyle, travel schedule, health conditions or previous vaccinations.

The Centers for Disease Control and Prevention (CDC) offers similar definitions:2

**Vaccination** is the act of introducing a vaccine into the body to produce immunity to a specific disease.

**Immunization** is a process by which a person becomes protected against a disease through vaccination.

The **Expanded Program on Immunization (EPI)** was established in 1976 to ensure that infants/children and mothers have access to routinely recommended infant/childhood vaccines.

Six vaccine-preventable diseases were initially included in the EPI: tuberculosis, poliomyelitis, diphtheria, tetanus, pertussis and measles.

# Active VS Passive Vaccine

## Active

1. Killed or live attenuated organism injected which can induce immune response.
2. Long term
3. Immune system plays role
4. Ex-Hepatitis B vaccine

## Passive

1. Transfer of antibodies
2. Short term
3. No role of immune system
4. Ex- Anti Tetanus

# Importance of vaccination

1. Effective protection from dangerous diseases and better health
2. Eradicating diseases and saving lives
3. Lower medical bills and higher life expectancy
4. Prevention of related diseases
5. Childhood vaccinations secure health and development
6. Available, accessible and affordable



# Types of Vaccines

- 1. Inactivated vaccines**
- 2. Live-attenuated vaccines**
- 3. Messenger RNA (mRNA) vaccines**
- 4. Subunit, recombinant, polysaccharide, and conjugate vaccines**
- 5. Toxoid vaccines**

# 1. Inactivated Vaccines

**Inactivated vaccines** use the killed version of the germ that causes a disease. Inactivated vaccines use the killed version of the germ that causes a disease.

Inactivated vaccines usually don't provide immunity (protection) that's as strong as live vaccines. So you may need several doses over time (booster shots) in order to get ongoing immunity against diseases.



## Inactivated vaccines are used to protect against:

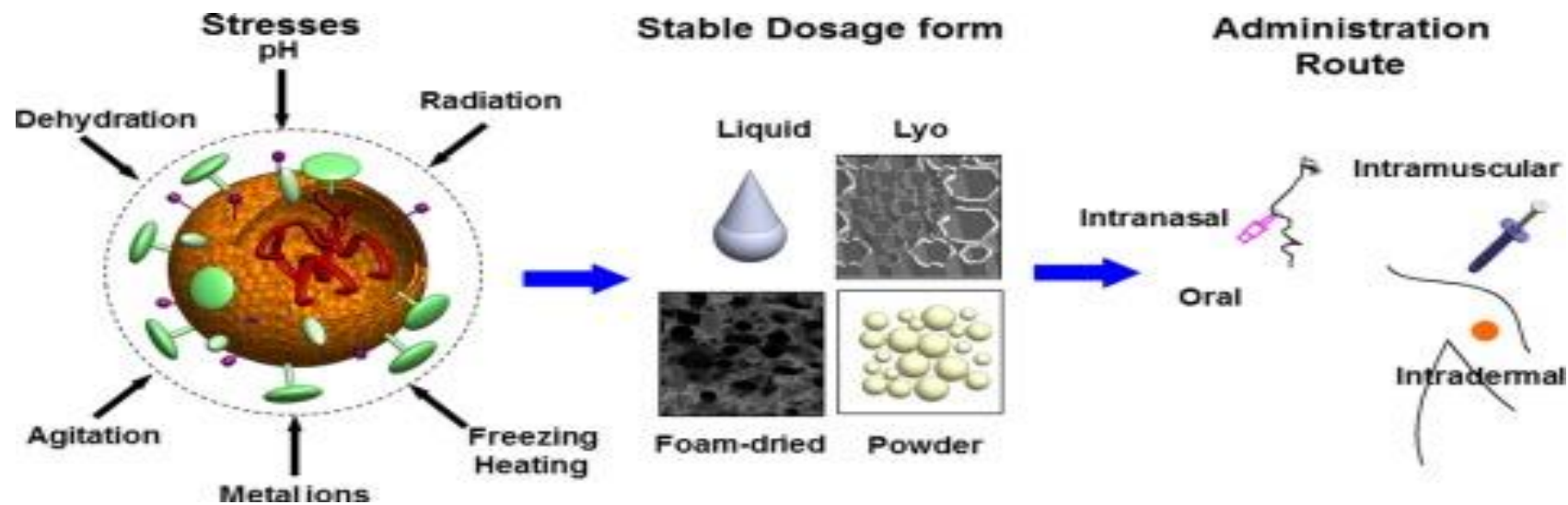
- Hepatitis A
- Flu (shot only)
- Polio (shot only)
- Rabies

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## 2. Live attenuated Vaccines

**Live attenuated vaccines** contain whole bacteria or viruses which have been “weakened” so that they create a protective immune response but do not cause disease in healthy people.



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# Live vaccines are used to protect against:

- Measles, mumps, rubella (MMR combined vaccine)
- Rotavirus
- Smallpox
- Chickenpox
- Yellow fever



### 3. Messenger RNA vaccines—also called mRNA vaccines

Researchers have been studying and working with mRNA vaccines for decades and this technology was used to make some of the COVID-19 vaccines. mRNA vaccines make proteins in order to trigger an immune response.

mRNA vaccines have several benefits compared to other types of vaccines, including shorter manufacturing times and, because they do not contain a live virus, no risk of causing disease in the person getting vaccinated.

**mRNA vaccines are used to protect against:**

**COVID-19**

## 4. Subunit, recombinant, polysaccharide, and conjugate vaccines

Subunit, recombinant, polysaccharide, and conjugate vaccines use specific pieces of the germ like its protein, sugar, or capsid (a casing around the germ).

### **These vaccines are used to protect against:**

- Hib (Haemophilus influenzae type b) disease
- Hepatitis B
- HPV (Human papillomavirus)
- Whooping cough (part of the DTaP combined vaccine)
- Pneumococcal disease
- Meningococcal disease
- Shingles

Continue



## 5. Toxoid vaccines

**Toxoid vaccines** use a toxin (harmful product) made by the germ that causes a disease.

They create immunity to the parts of the germ that cause a disease instead of the germ itself. That means the immune response is targeted to the toxin instead of the whole germ.

**Toxoid vaccines are used to protect against:**

- Diphtheria
- Tetanus





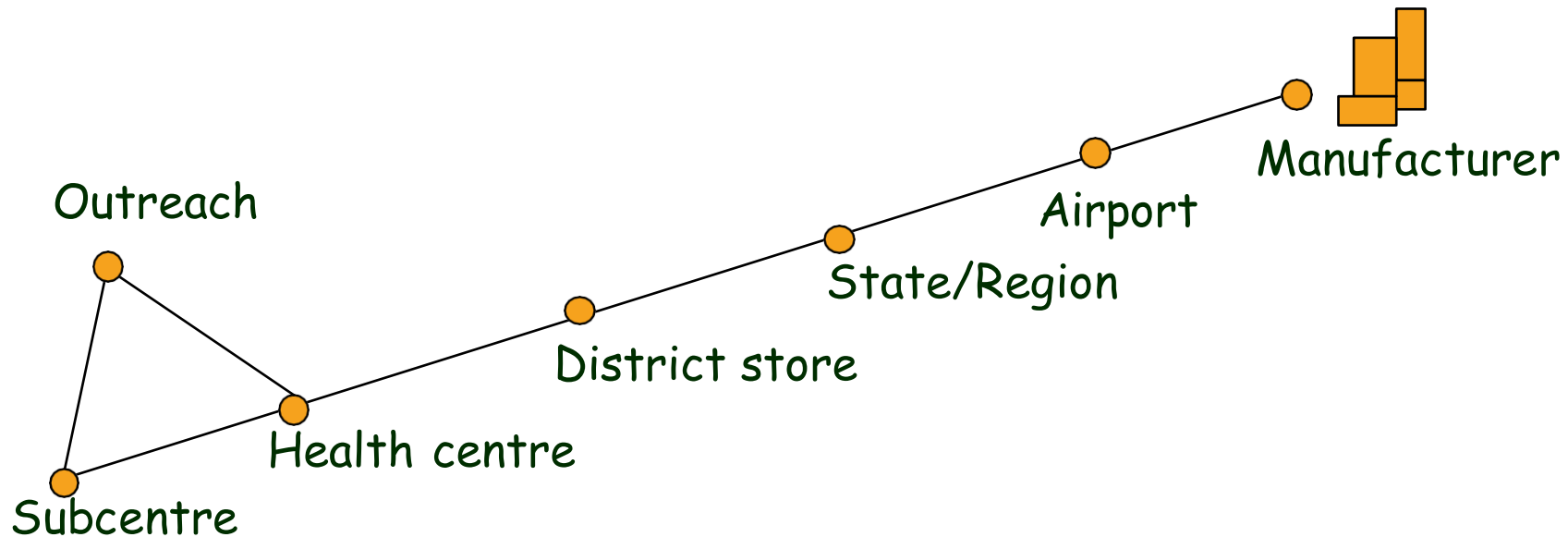
**Combination vaccines** take two or more vaccines that could be given individually and put them into one shot. Children get the same protection as they do from individual vaccines given separately but with fewer shots

**Most common combination vaccines for children are:**

1. **Pediarix**, which combines **DTaP**, **Hep B**, and **IPV (polio)**
2. **ProQuad**, which combines **MMR** and **varicella** (chickenpox)
3. **Kinrix**, which combines **DTaP** and **IPV (polio)**
4. **Pentacel**, which combines **DTaP**, **IPV (polio)**, and **Hib**

System of storage & transport of vaccines at low temp.  
from the manufacturer to the actual vaccination site.

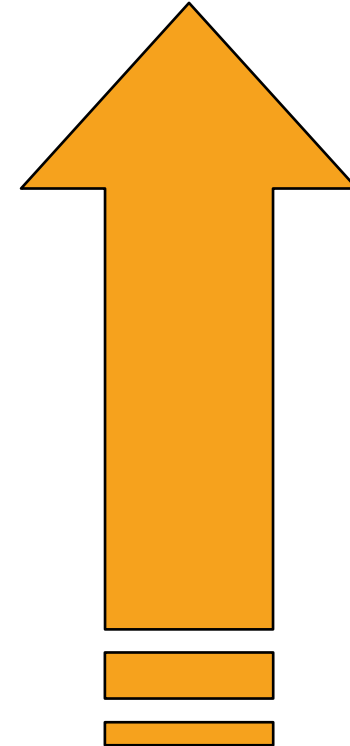
# Cold Chain



# Heat Sensitivity

- BCG (after reconstitution)
- OPV
- Measles (before and after reconstitution)
- DPT
- BCG (before reconstitution)
- DT
- TT
- HepB

**MOST SENSITIVE**

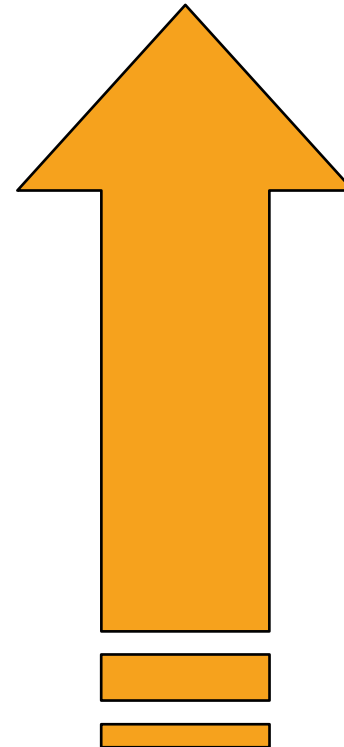


**LEAST SENSITIVE**

# Sensitivity From Freezing

**MOST SENSITIVE**

- Hep B
- DPT
- DT
- TT



**LEAST SENSITIVE**

- ★ **All vaccines tend to lose potency on exposure to heat above +8<sup>0</sup> C**
- ★ **Some vaccines (Hep B, TT, DPT) lose potency when exposed to freezing temperatures**
- ★ Some vaccines are sensitive to light (BCG, Measles).
- ★ The damage is irreversible
- ★ Physical appearance of the vaccine may remain unchanged but potency might be lost.



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