

# DEFINITION

- “A system of storing and transporting the vaccine, at a low temperature from the place of manufacture to the actual vaccination site is called cold chain.”

# Importance of cold chain

1. Obtaining the vaccines from the manufactures.
2. Storing and transporting the vaccine.
3. Maintaining the supply of vaccines.
4. Having information about essential equipments, supply of electricity etc.
5. Keeping the vaccine at low temperature
6. Protecting the vaccine from sunlight exposure
7. Maintaining the potency of vaccines

# COMPONENTS OF COLD CHAIN

1. Apparatus/equipment
2. Supplies
3. Manual efforts
4. Transportation
5. communication

# apparatus

- 2 categories
  1. Apparatus which keep the vaccine at 4-8 degree celsius
  2. Equipment which freezes the vaccine

# Types of equipments

1. Vaccine carriers
2. Cold packs
3. Day carriers
4. Refrigerators
5. Walk in cooler
6. Others



# Vaccine carrier

- They are suitable to carry small quantities of vaccine to health sub centers village and small town i.e. 16 -20 vial at a time
- A square box made up of heat resistant material and light in weight
- Four packs of ice are kept in these, along all four sides
- Vaccines can kept up to 2-3 days



INDICATEUR DU SEAL  
DE TEMPERATURE



INSTRUCTIONS

Utilisez l'indicateur comme suit :

1. Insérer les vials dans le compartiment de la gauche.
2. Appuyer sur le bouton "Statuer le cas" ou "Ajouter à la liste".
3. Insérer la seringue dans le compartiment de la droite.



Statuer le cas



Ajouter à la liste

Si le bouton "Statuer le cas" est actif,  
le PMS (PMS) des vials est activé et les vials  
sont activés.





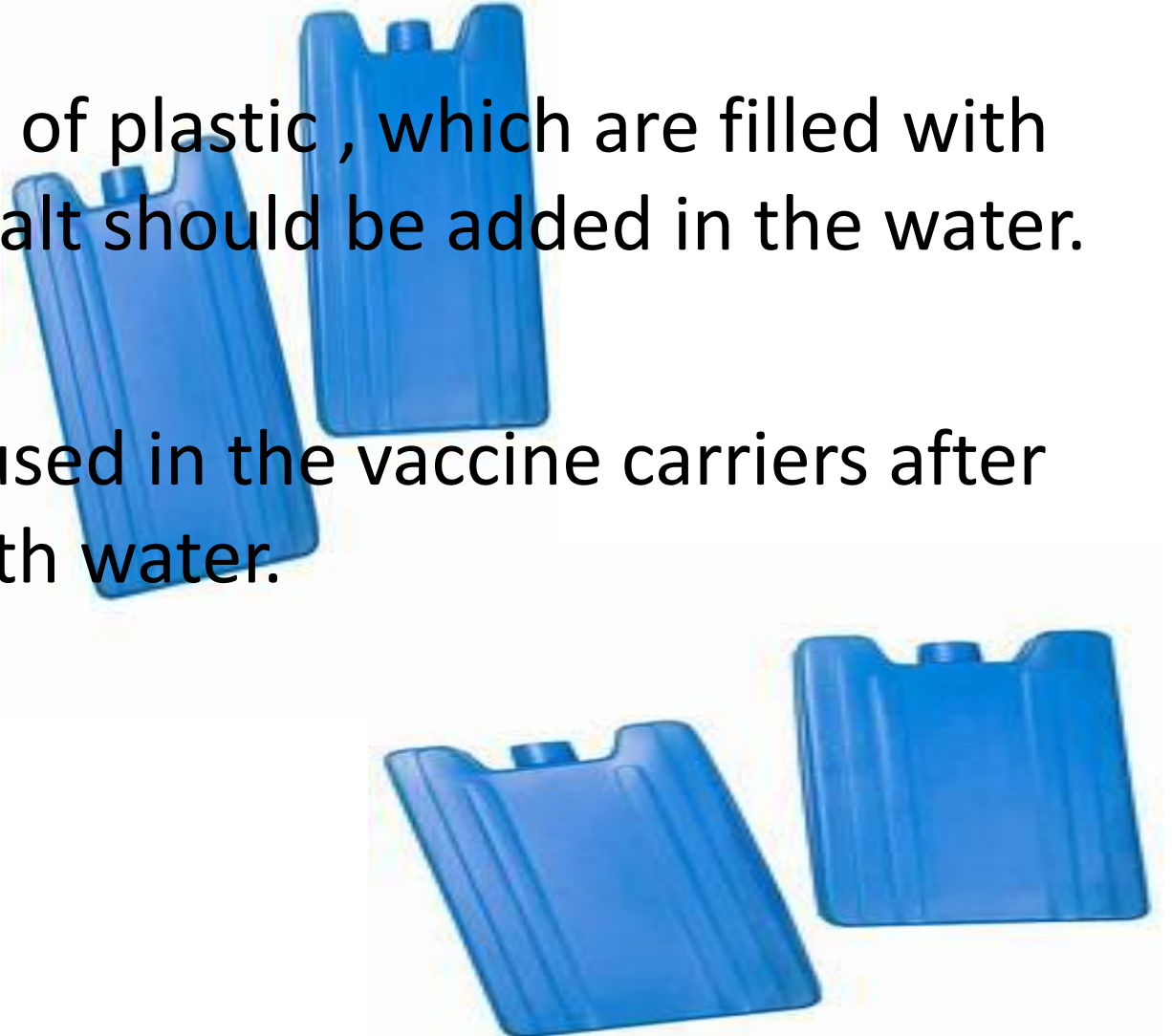
# Cold boxes

- This can transport large quantities of vaccines by vehicle to outreach sites.
- Box sizes are 5 liters and 20 liters.
- It can preserve vaccine for up to 1 week without any power supply.



# Cold packs/ice packs

- Flat bottles of plastic , which are filled with water. No salt should be added in the water.
- These are used in the vaccine carriers after freezing with water.



# Day carriers

- These equipments are used to keep the vaccine for A DAY.



- Capacity is hold 6-8 vials for 12 hours.

- These include boxes of thermocol and thermos flasks contain 2 ice packs.



# Refrigerator

Types: deep freezer, small deep freezer or ILRs



# TYPES

- Deep freezer: 300 liters
- ILR 300/240 liters

- Used in all district level.
- It is also used to make ice packs and for storing OPV & measles vaccines

the same time without any hazard.

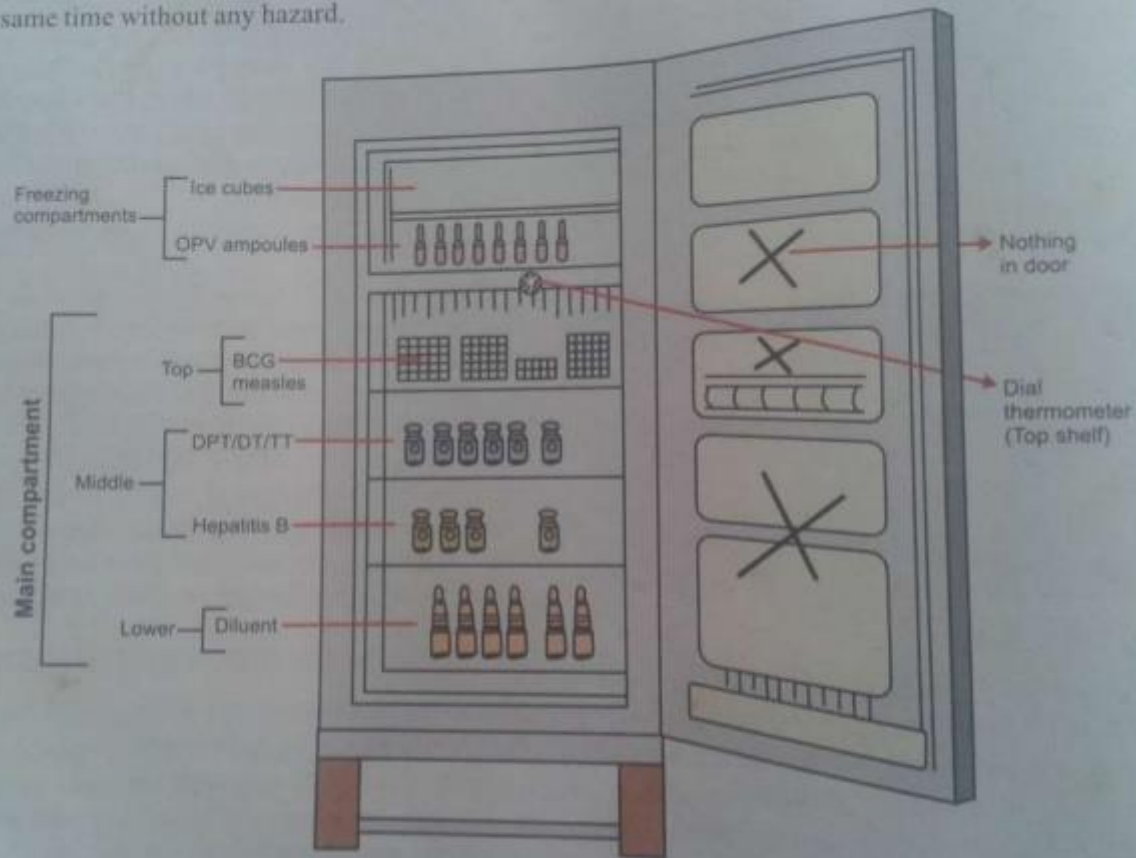


Fig. 7.1: Correct storage of vaccines in a refrigerator

# Walk in cooler

- This is refrigerator of the size of a room in which all types of vaccine can be kept safe.
- It is used in district health centers





# transportation

- To maintain the potency of vaccine rapid means of transport should be used in a specific temperature.
- Refrigerator should be arranged in the trucks with a heat resistant equipments.
- Aeroplanes are used to save time.

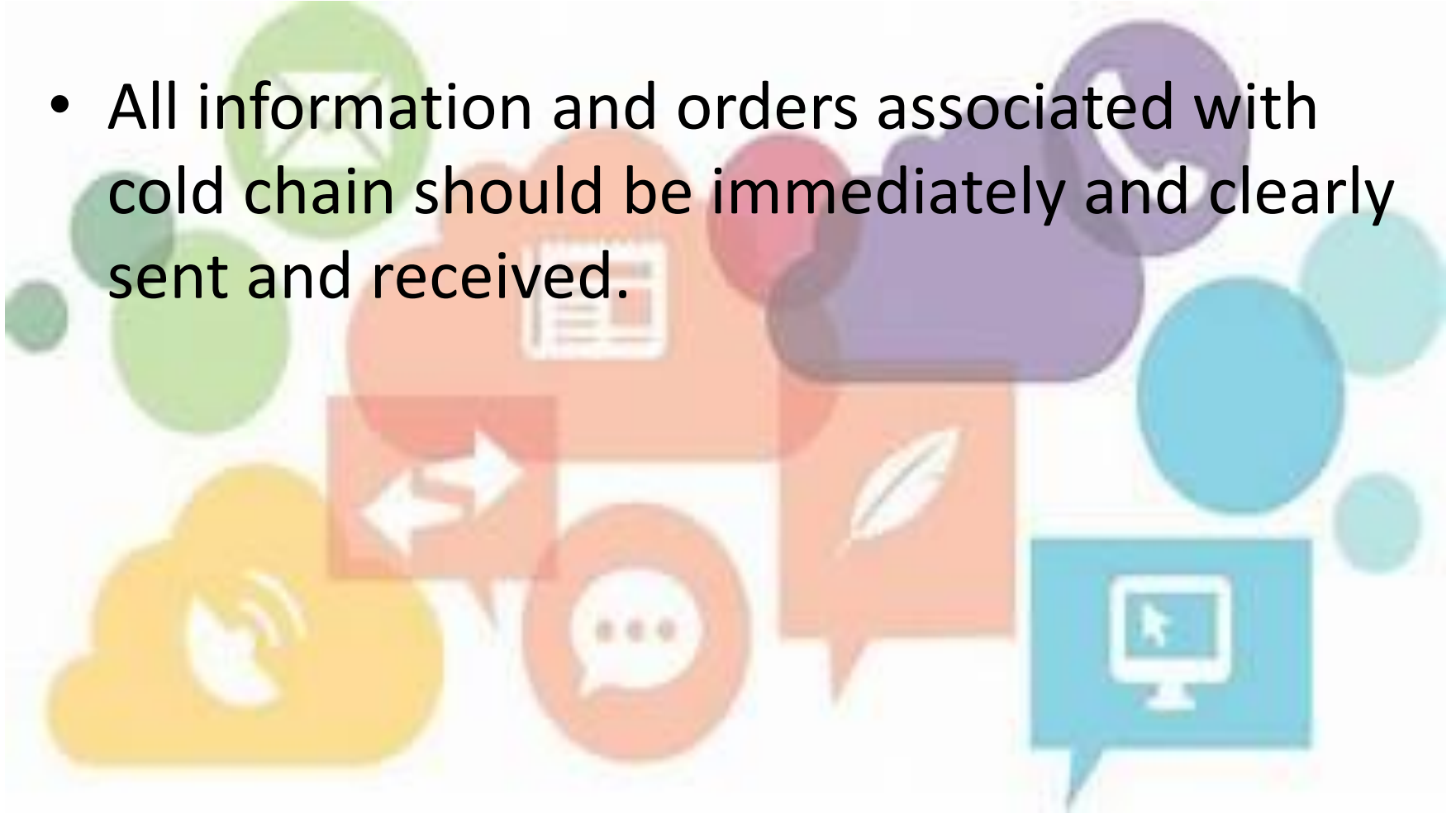


# Inside of a truck



# communication

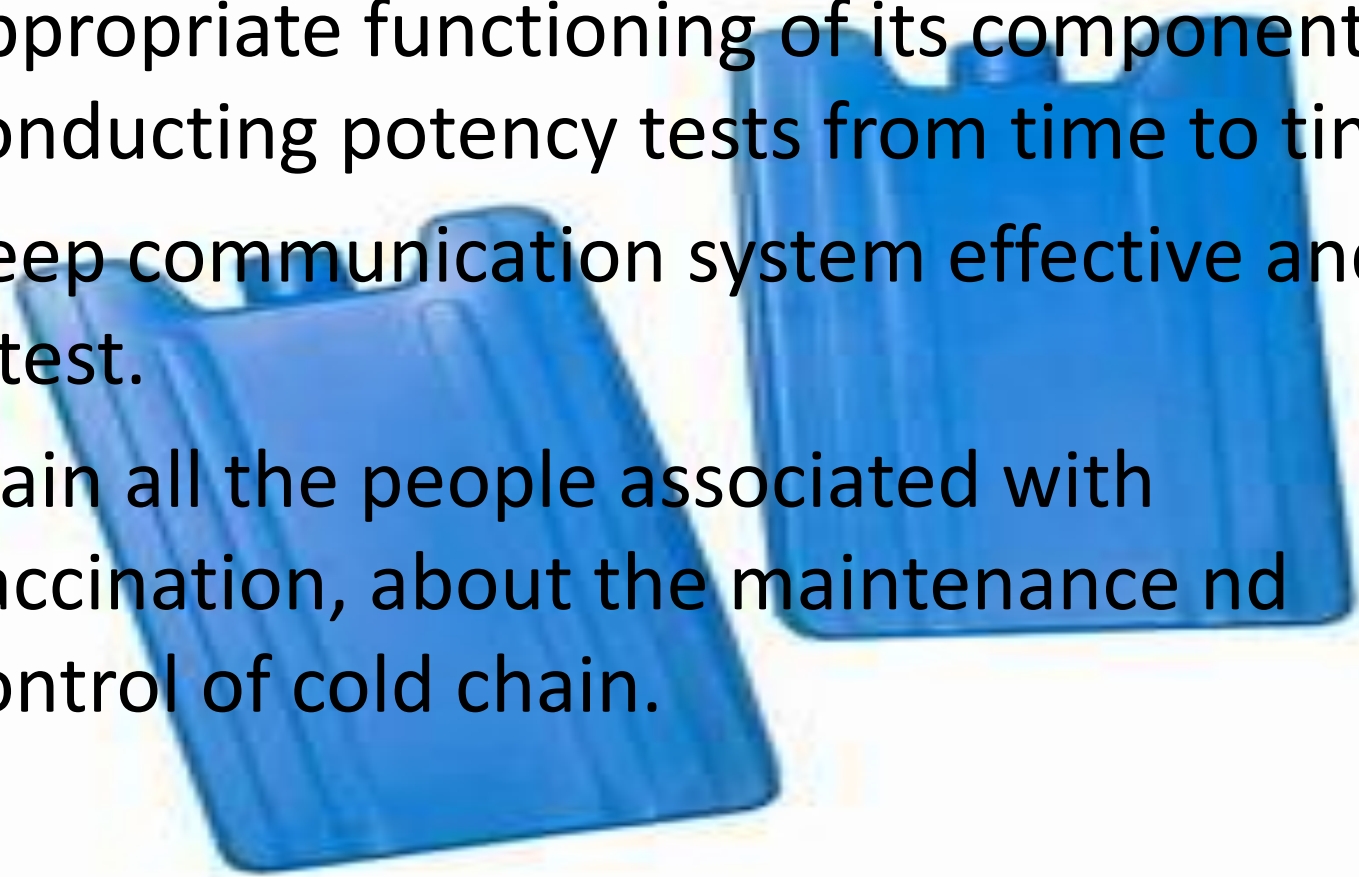
- All information and orders associated with cold chain should be immediately and clearly sent and received.



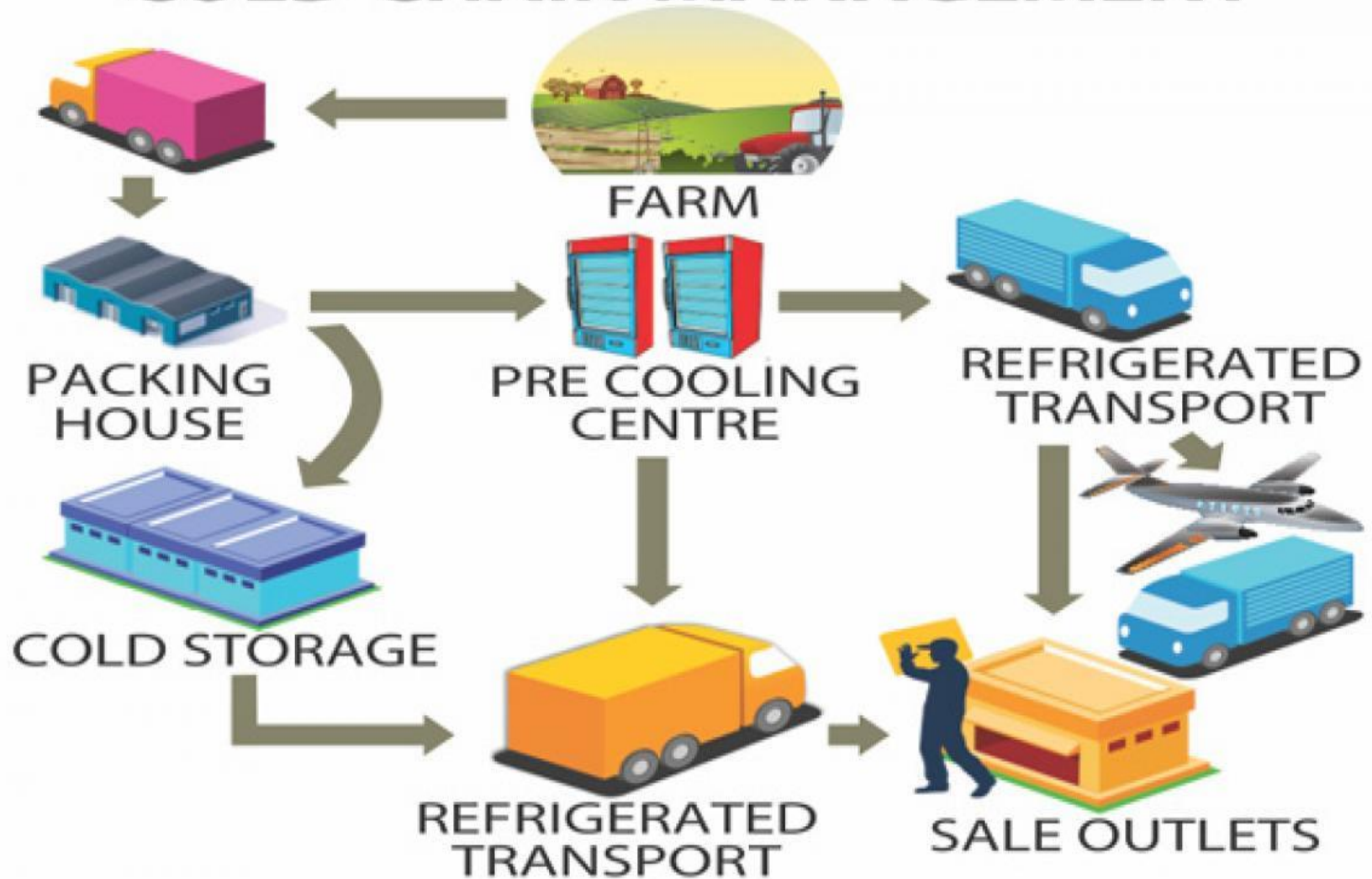
# Methods of controlling cold chain

- Keep the vaccine in appropriate conditions as suggested by manufacturer.
- Follow all the precautions while transporting vaccines.
- Record the temperature of storage place twice a day and preparing the temperature chart.

- Maintain the equipment of cold chain and the appropriate functioning of its components, conducting potency tests from time to time.
- Keep communication system effective and latest.
- Train all the people associated with vaccination, about the maintenance and control of cold chain.



# COLD CHAIN MANAGEMENT





# Vaccine Storage Temperatures

**Vaccine Storage Temperature Recommendations**

Vaccine(s)	Vaccine Storage Temperature	Diluent Storage Temperature	Comments
Diphtheria, tetanus, pertussis-containing vaccines (DTaP, DT, Tdap, Td)	35°F-46°F (2°-8°C) Do not freeze.	No diluent	Irreversible loss of potency occurs with exposure to freezing temperatures. (Triptedia is sometimes used as a diluent for ActHIB.)
Hepatitis A	35°F-46°F (2°-8°C) Do not freeze	No diluent	Irreversible loss of potency occurs with exposure to freezing temperatures.
Hepatitis B	35°F-46°F (2°-8°C) Do not freeze	No diluent	Irreversible loss of potency occurs with exposure to freezing temperatures.
Hib (ActHIB)	35°F-46°F (2°-8°C)	35°F-46°F (2°-8°C) Do not freeze	The lyophilized pellet may be stored at freezer temperature; the reconstituted vaccine should be stored at refrigerator temperature. Protect from light.
Hib (PevaxHIB)	35°F-46°F (2°-8°C)	No diluent	
HPV	35°F-46°F (2°-8°C) Do not freeze	No diluent	Irreversible loss of potency occurs with exposure to freezing temperatures. Protect from light.
Influenza (LAIV)	35°F-46°F (2°-8°C)	No diluent	Do not expose to temperatures above the recommended range.
Influenza (TIV)	35°F-46°F (2°-8°C)	No diluent	Protect from light.
Meningococcal (MCV4 – Menactra)	35°F-46°F (2°-8°C)	No diluent	Protect from light.
Meningococcal (MCV4 – Menveo)	35°F-46°F (2°-8°C)	35°F-46°F (2°-8°C)	Protect from light.



## Potency & Temperature for storage of Vaccines

Vaccine	Temperature	Potency maintained for
<b>Oral Polio (OPV)</b>	<b>-20°C 4°C to 8°C</b>	<b>1 Year 3 months</b>
<b>Bacillus Calmette Guerine (BCG)</b>	<b>4°C to 8°C</b>	<b>1 Year</b>
<b>Diphtheria, Pertusis, Tetanus (DPT)</b>	<b>4°C to 8°C</b>	<b>2 Years</b>
<b>Measles</b>	<b>0°C to 2°C</b>	<b>2 Years</b>
<b>Typhoid (TAB)</b>	<b>4°C to 8°C</b>	<b>8 months</b>
<b>Tetanus toxoid (TT) Hepatitis B</b>	<b>4°C to 8°C</b>	<b>4 Years</b>



# Vaccine Vial Monitor



Stage 1 = good:  
Utilize

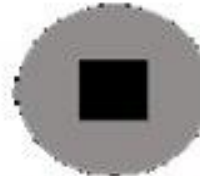


Stage 2 = good:  
Utilize

The central square is lighter  
than the surrounding circle



Stage 3 = bad:  
Don't Utilize



Stage 4 = bad:  
Don't Utilize



The central square is equal to, or  
darker than the surrounding circle

Thank  
You

