

COLD CHAIN

The 'cold chain' is a system of storage, transport and distribution of vaccines in the state of efficacy and potency at recommended temperature from the manufacturer to the actual recipient of the vaccine.

For successful cold chain system, three elements are essential, i.e. i. cold chain equipment, ii. transportation system, and iii. motivation and training of the workers for maintenance of cold chain link.

Among all vaccines, polio is the most heat sensitive, requiring storage at -20°C. Polio and measles vaccines must be stored in the freezer compartment.

DPT, DT, TT, BCG, typhoid and diluents of vaccines must be stored in the cold part and never allowed to freeze.

Vaccines must be protected from sunlight and contact of antiseptic.

At the health centers, most vaccines, except polio, can be stored at 4 to 8°C for 5 weeks.

Multidose opened vial, which is not used fully, must be discarded, within 1 hour, if no preservative is present. It should be discarded within 3 hours or at the end of a session when preservative is used.

Necessary instruction for the particular vaccine must be followed regarding maintenance of required temperature. Instruction for maintenance of vaccine vial monitor (VVM) especially for oral polio vaccine should be followed strictly.

Cold Chain Equipment consist the following:

The cold chain equipment's

1)Walk in Cold Rooms

In the regional level, vaccines are stored for 4 to 5 districts in the walk in cold (WIC) rooms, at recommended temperature up to 3 months.

2)Deep Freezers

Deep freezer is a top opening cold chain equipment and available as 300 liters or 140 liters capacity.

Big deep freezer (300 L) is supplied to all districts and the WIC locations along with ice lined refrigerators (ILR).

Deep freezers are used for making ice packs and for storing polio and measles vaccines.

A pair of deep freezer and ILR is connected to a common voltage stabilizer.

Small deep freezers (140 L) along with ILR are supplied to PHCs, urban family planning centers and postpartum centers.

3)Ice Lined Refrigerators

Ice lined refrigerators (ILR) is top opening refrigerator. Two types of ILR are available, one with ice tubes (electrolux) and other with ice packs (vest frost) as the ice lining.

The bottom of the ILR is the coldest part. DPT, DT, TT and diluents should not be kept directly on the floor of the ILR as they can freeze and get denatured.

These vaccines should be kept in the basket provided within the ILR.

Temperature of the ILR should be recorded twice a day with the dial thermometer which should be kept inside the ILR, even if there is an in built thermometer.

During electric supply failure or equipment failure, vaccines should be transferred to cold boxes and then to alternate storage.

Deep freezer and ILR should be kept in cool room, away from direct sunlight and at least 10 cm away from the wall.

They will be kept in levelled and to be fixed through voltage stabilizer.

The vaccines should be kept inside the ILR neatly with space in between for air circulation.

The ILR should be kept locked and open only when necessary.

Do not keep any object on the deep freezer or ILR. Never store any other drugs, drinking water, foods or date expired vaccines or more than one month requirements at PHC level and do not open these equipment unless required.

5)Cold Boxes

Cold boxes are available at all peripheral health centers. They are used for transporting vaccines and also for storing vaccines during failure of electric supply.

Fully frozen ice packs are placed at the bottom and sides of the cold box before placing the vaccines in it.

The vaccines should be first packed in cartons or polythene bags, then to be kept inside the cold box. DPT, DT, TT vaccines and diluents should not be kept in direct contact with the frozen ice packs.

7)Vaccine Carriers

Vaccine carriers are used to carry 16 to 20 vials of vaccines to out reach sites to the subcenters, village, vaccination clinic or camp.

Four fully frozen ice packs are placed for lining the sides of the carriers. DPT, DT, TT and diluents should not be placed in direct contact of frozen ice packs. The carrier must be closed tightly.

8)Day Carriers

Day carriers are used for nearby areas and only for few hours period with two fully frozen ice packs. It is used to carry small quantities of vaccines, i.e. 6 to 8 vials only.

9)Ice Packs

Ice packs are used for cold boxes and vaccine carriers. It is prepared in the deep freezer. Ice pack contains water, filled upto the level marked on the side. No salt is added to it. Leak ice pack should not be used.

Nurses, especially the community health nurses have to play major role in maintaining cold chain to protect the potency of vaccines. Successful implementation of immunization program depends upon maintenance of vaccine potency at the delivery end of actual vaccination site.

NURSING RESPONSIBILITIES FOR CHILD IMMUNIZATION

Nursing personnel are mostly responsible for administration of immunization and its related activities.

Administrations of vaccines are the main assignment but other related activities are also vital for success of immunization program.

The nursing responsibilities at various levels can be summarized as follows:

- 1)Motivation of general people about the importance of immunization and its benefits.
- 2)Estimation of beneficiaries of the area and identification of nonparticipants and dropouts of immunization.
- 3)Assessment of problems and reasons for nonacceptance of immunization and intervening to solve the problems.
- 4)Information, health education and communication about the immunization session, time, place, available vaccines and other health facilities related to immunization.

- 5) Organization of immunization clinics at different health institutions, immunization camps, outreach and home based services.
- 6) Arrangement and maintenance of required amount of vaccines and other necessary equipment and materials for the particular immunization center or clinic.
- 7) Maintenance of cold chain system at immunization center or during transportation of vaccines to home or clinics with necessary precautions to preserve the efficacy and potency of the vaccines.
- 8) Care of cold chain equipment and maintenance of recommended temperature for vaccines are crucial aspects of the success of immunization program.
- 9) Administration of vaccines is important responsibilities of the nurses at all levels of health care.
- 10) Nurse should follow the basic nursing skills of aseptic techniques and check the vaccine vials or ampules.
- 11) Reconstitution of vaccines should be done according to particular instructions with specific diluents.
- 12) Selection of proper site, positioning of the child, maintenance of six-rights and steps of medication should be followed.
- 13) Instruction of the vaccine manufacturer or physicians' directions or standing orders should be noticed and kept in mind during vaccination.
- 14) Observation of possible reactions after vaccination and providing necessary instructions, about the care of the child following immunization, to the parent and family members.
- 15) Information about the next date of visit to complete the immunization as per schedule and dangers of default.
- 16) Maintenance of immunization card with required information and next date of visit. Maintenance of clinic records, registers, stocks, number of attendance for vaccination, vaccine used, etc.
- 17) Reporting about immunization coverage and problems of the particular area. Participating in research activities and new approaches related to immunization program.
- 18) Updating own knowledge and developing skill regarding advancement of immunization practices and changing attitudes.

CHILDREN ACT

The Children Act, 1960 (amended in 1977) in India, provides for the care maintenance, welfare, training, education and rehabilitation of the delinquent child. It covers the neglected, destitute, socially handicapped, uncontrollable, victimized and delinquent children. In Article 39(f), the constitution of India provides that 'the state shall in particular direct its policy towards securing that childhood and youth are protected against moral and material abandonment.

The Juvenile Justice Act, 1986, provides a comprehensive scheme for care, protection, treatment, development and rehabilitation of delinquent juveniles. The new Act has come into force from 2nd October 1987, after rectification of the inadequacies of the Children Act (1960). This Act was amended again in 2000 and 2006.

Juvenile Justice Act 2000

Juvenile Justice (Care and Protection of Children) Act 2000, now amendment Act 2006 is an Act to consolidate and amend the law relating to juveniles in conflict with law and children in need of care and protection. The Act defines a juvenile/ child as a person who has not completed the age of 18 years. It has two chapters-one for juveniles in conflict with law and other for children in need of care and protection. It also contains an exclusive chapter concerning rehabilitation

and social reintegration of children. This Act promotes proper care, protection and treatment by catering to the developmental needs of children and by adopting a child friendly approach in the best interest of children and for their ultimate rehabilitation.

The needs of children and our duties towards them are enshrined in our constitution.

The relevant articles are as follows:

Article 24 prohibits employment of children below the age of 14 years in factories.

Article 39 prevents abuse of children of tender age.

Article 45 provides the free and compulsory education for all children until they complete the age of 14 years. Other important Acts for child welfare are: "The Child Labor (Prohibition and Regulation) Act, 1986; "The Child Marriage Restraint Act 1978' "The Hindu Adoptions and Maintenance Act, 1956, Infant Milk Substitute, Feeding Bottles and Infant Foods (Regulation of Production, Supply and Distribution) Act 1992 and Prenatal Diagnostic Technique (Regulation and Prevention of Misuse) act 1994.

Special attention has been given to the welfare of children in the five-year plans by the Government of India. Various schemes and programs have been introduced and implemented to achieve the goals of child health services.

Healthy children are future healthy citizens of the countries. So every attempts should be made towards better tomorrow for better survival of this precious group and to help them to grow into healthy adult. Promotion of child health should receive priority attention in all levels as new challenge of the 21st century. WHO, in 2005, emphasizes on healthy mothers and children. The aims and objectives of World Health Day, 2005, are to create momentum that compels national governments, international community, civil society and individuals to take action to ensure the health and well-being of mothers and children. These can be achieved by raising awareness, increasing understanding about the existing solutions and generating movement to stimulate collective responsibility and action to improve the survival, health and well-being of all mothers and children.