



Immunization, Vaccines and Biologicals



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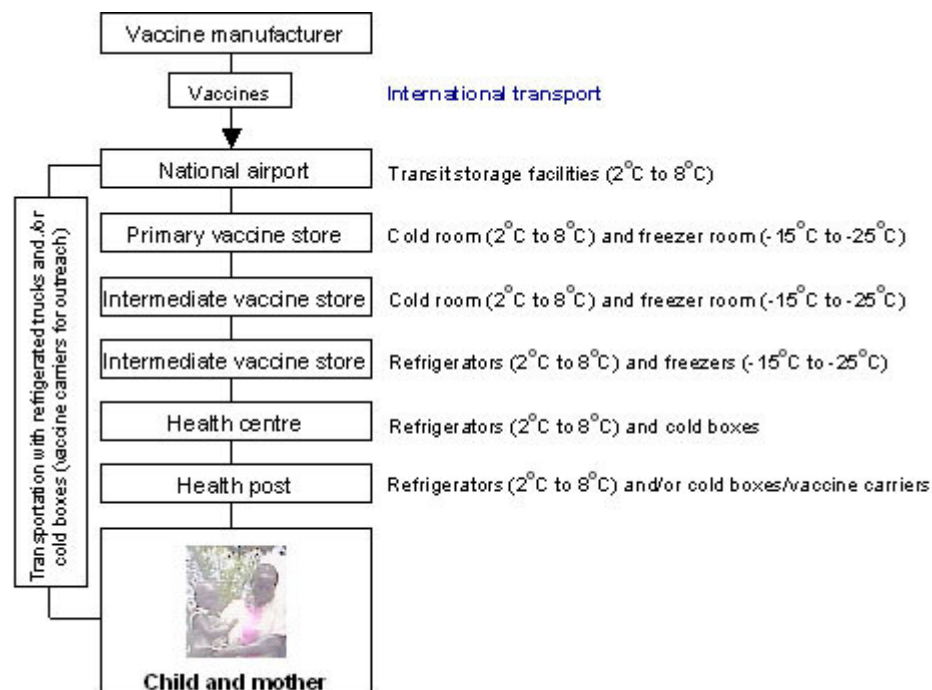


The cold chain



All vaccines are sensitive biological substances and all will lose their potency – that is, their ability to give protection against disease - with time. This loss of potency becomes faster as vaccines are exposed to higher temperatures. In order to maintain their quality, all vaccines must be continuously stored at the appropriate temperature from the time they are manufactured up until the moment of use. Once vaccine potency is lost, it cannot be regained or restored, and without proper care, any vaccine may eventually lose all its potency. If this occurs, the vaccine will no longer provide any protection against the target disease and is then useless. In some cases, heat exposure leading to loss of vaccine potency may also cause the vaccine to become more reactogenic.

The system used for keeping and distributing vaccines in good condition is called the 'cold chain'. This consists of a series of storage and transport links, all of which are designed to keep the vaccine at the correct temperature until it reaches the user. A typical cold chain system for vaccine is shown below.



Different vaccines require different storage conditions, and what is correct for one vaccine may be dangerous for another, so it is vital to know the [correct storage conditions](#) for each vaccine used. Diluents for vaccines are less sensitive to storage conditions than vaccines, and so are normally not kept in the vaccine cold chain. However they may be kept in the cold chain under certain conditions if space permits. (Also see [vaccine reconstitution and administration](#))

The recommended equipment for storage (cold rooms, refrigerators, freezers) and transport (cold boxes, vaccine carriers) has to comply with a [set of performance standards](#) defined by WHO and UNICEF. [Stock management procedures](#) have been established so that vaccines are not stored longer than necessary at the central, regional and district levels of the cold chain.

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