COLD CHAIN

A vaccine, once manufactured, need to be remained potent during transport, storage, and up to the point of administration to the recipient. The “cold chain” is the name given to a system of people trained in vaccine management and equipment which ensures that the correct quantity of effective vaccine reaches those who need it from the point of production. The cold chain system is necessary because vaccines are delicate substances that lose potency if exposed to temperatures that are too warm or too cold. High coverage of immunization alone is not effective if the vaccine that was used is not potent.

The essential elements of the cold chain system are human factor trained in handling vaccine management, equipment (to transport and storage), and monitoring devices. The trained persons are a critical component for proper maintenance of the cold chain as the system consists of the finest and most modern equipment to assure the safety and efficacy of vaccine vials. The basic cold chain equipment includes cold-rooms and iced-line refrigerators for vaccine storage. Vehicles with refrigerator facilities, Cold boxes, and freeze-free Vaccine carriers are used in vaccine transportation. For temperature monitoring, devices like thermometers, fridge tags, and Vaccine vial monitors are being used.

Vaccine and logistic delivery of the Sri Lankan National Immunization Program (NIP) is basically a “push system” mechanism, where all the vaccines are distributed from the center which is the Epidemiology Unit to all the regional and from there to the divisional level on regular basis as per requirement. Sri Lanka has incorporated advanced technology for optimum maintenance of the cold chain at all levels. All MOH offices in the country are equipped with ice-lined refrigerators

that have the capability to maintain the required temperature for an extended period during a power failure. For the transportation of vaccines, the country exclusively uses freeze-protective cold boxes and vaccine carriers.

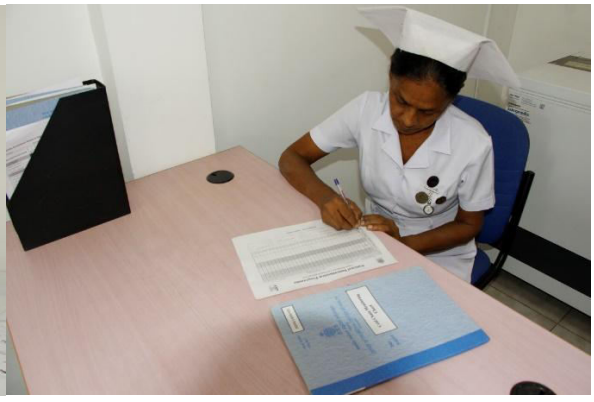
Central, regional/district level, and almost all the MOH level refrigerators are equipped with backup power supply by the generators or UPS system. Central vaccine stores and regional/district level stores (RMSD), where a large amount of vaccines are stored have walk-in cold rooms which are equipped with modern WHO-prequalified temperature monitoring equipment. Despite the additional cost, NIP of Sri Lanka opts for vaccine vials with a vaccine vial monitor (VVM) that indicates the usability of vaccine vials exposed to high temperatures.

The cold chain of vaccine storage facilities, at all levels, is being monitored by an automated system as well as manually by trained public health staff. In addition to the routine equipment to monitor the temperature, the walk-in cold rooms of the central level and district level stores are connected to a web-based round the clock monitoring and signaling mechanism. An in-built mechanism exists to monitor, evaluate and supervise the vaccine storage facilities routinely at each level. Further, the National vaccine management system is assessed periodically by a team of international evaluators to ensure the quality and safety of vaccines in line with international standards. One of the main pillars of the success of the National Immunization Program in Sri Lanka is optimum cold chain maintenance at all levels from the center to the field level which assured the effective vaccine reaches the clients.

Vaccine storage in an iced-line refrigerator

Vaccine storage in a freeze-free Vaccine carrier

Observing the Vaccine Vial Monitor



Manual temperature reading using the thermometer and recording