



SGH Pharmacy Store : Optimizing Cold Chain Supply of Vaccines (Sep-Nov 2016)

Singapore Healthcare Management 2017

May Cheah, Mohd Sahrin ,Lee Chee Kien , Abdul Aziz, Sharom Shah, Ho Swee Geok



Background

Drugs that require refrigeration are sensitive biological substances which are susceptible to heat, light or freezing. In particular, vaccine will lose its potency if the recommended storage temperature of 2-8°C is not maintained at all times. Once potency is lost, it cannot be restored. It no longer provides maximum protection against the targeted disease. To ensure that potency is not compromised, criteria for storage and transport should be observed from the time they are manufactured to the time they are administered to the patient.

The system for distributing vaccines in a potent state from the manufacturers to the actual patient use is called the **cold chain**. It consists of a series of transportation and storage links during which adequate refrigeration is required and the temperature of 2-8°C is maintained.

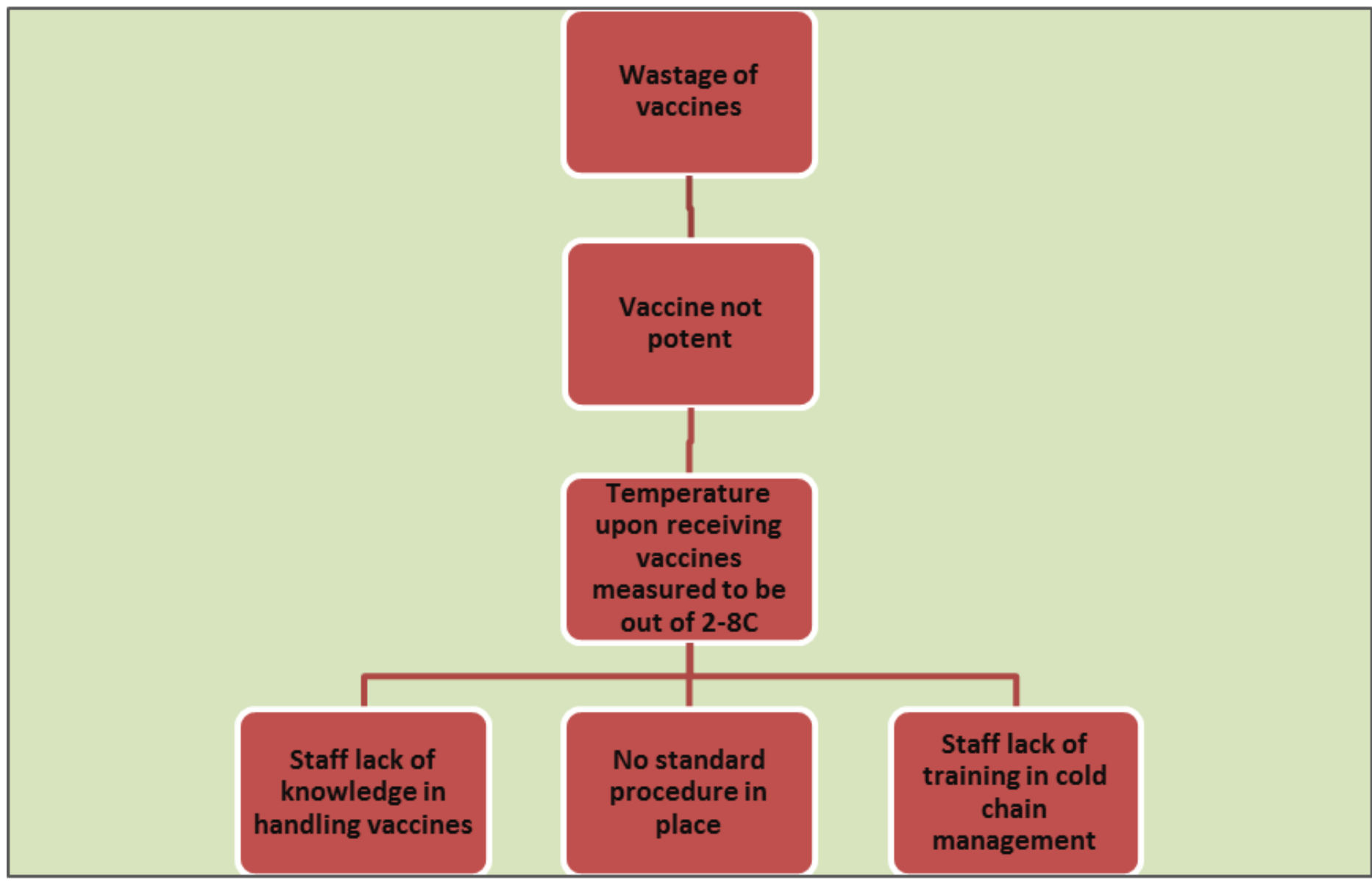
Fridge items and vaccines that had a temperature excursion when cold chain is broken will need to be assessed for potency. Items deemed not suitable for use will have to be written off in order not to compromise patients’ safety.

Mission Statement

To decrease wastage of vaccines supplied by SGH Pharmacy Store due to break in cold chain to zero percent within 3 months.

Analysis

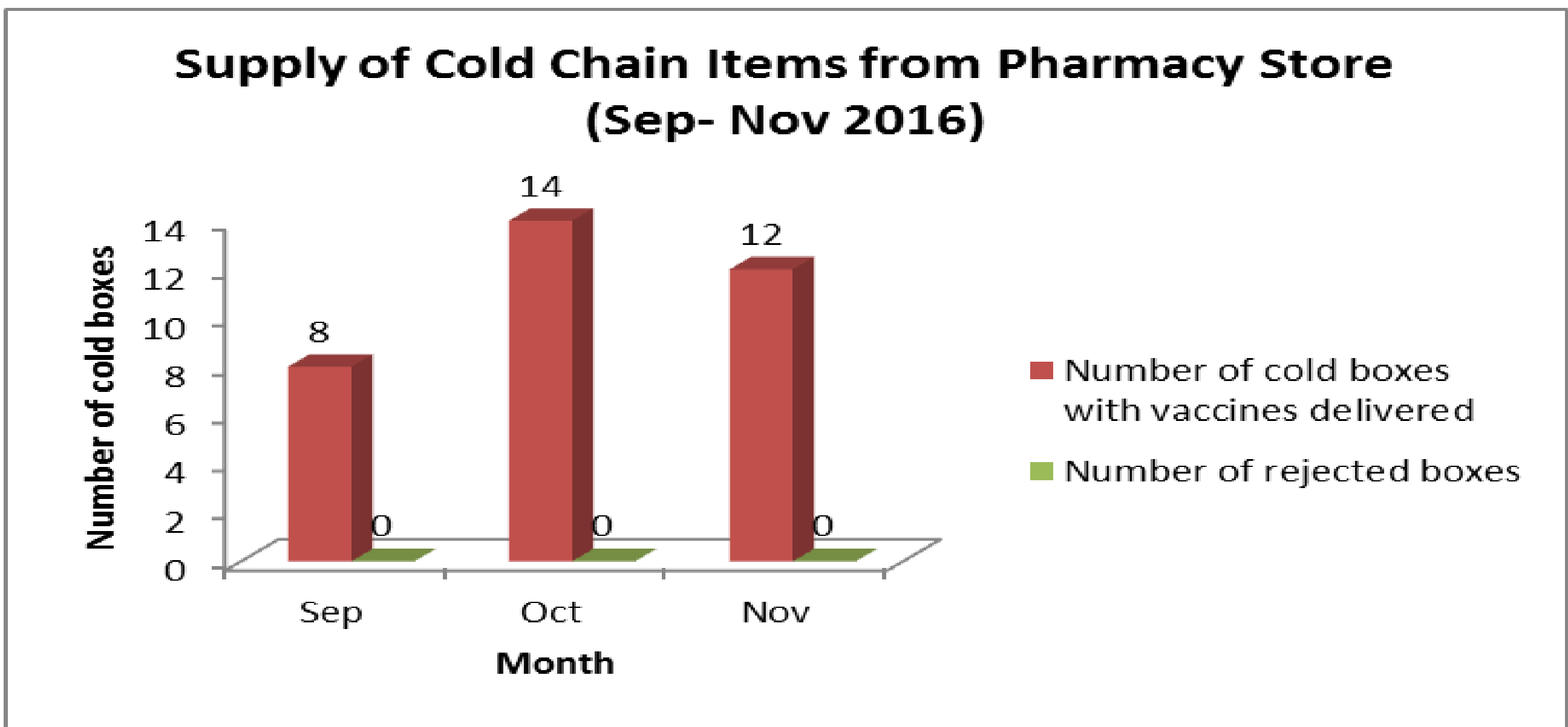
There was neither standard work procedure for packing of fridge items at Pharmacy store, nor monitoring of temperature upon receiving stocks. There were 2 incidences of vaccines excursion in the month of July 2016 when Pharmacy sections started monitoring vaccines upon receipt.



Interventions

Cold chain management training was conducted for 13 logistic associates and 1 health attendant in September 2016. Validation of cold boxes was carried out in October and some old cold boxes were replaced. Due to different models of cold boxes that Pharmacy has, instruction sheets were pasted on the cold boxes for store keepers. Step by step work instruction for packing of cold items was pasted on the door of the cold room. Documentation of packing and supply of vaccines, and endorsement by receiving party started since September 2016.

Results



Before implementation of the interventions, there were 2 incidences of vaccines excursion in July 2016. There were no cold chain break and wastage of vaccines from September to November 2016 with implementation of the interventions.

Standardization of Work Processes

Subsequently, work processes were standardized and all logistic associates were briefed on work instructions for packing and delivering of fridge items in December 2016.



Work instructions for packing/delivering of fridge items

- 1.Put number of coolants into the cold box as per instruction pasted on the box, and place outside cold room.
- 2.Place cardboard as barrier to prevent freezing of products.
- 3.Put thermometer probe in the middle of cold box and monitor temperature to equilibrium (2-8°C).
- 4.Bring an empty box into cold room to pick/pack orders. Checkers to check the items, and transfer the items into cold box (equilibrium at 2-8°C). Use cardboard as barrier to protect the items.
- 5.Measure the stabilized temperature prior to delivery to Pharmacy sections.
- 6.The entire (pack, check and delivery) process should complete within the time frame allowed, which is 3 hours (from store to users),and must be delivered on the same day.
- 7.Upon arrival, logistic associate to inform Pharmacy sections, the boxes which contain vaccines. Priority will be given for temperature measurement.
- 8.Receiving Pharmacy technician to endorse upon verification of temperature within range.

Sustainability Plans

- Yearly refresher training for store keeper
- Maintenance of equipment: Yearly validation of cold box and calibrated thermometer
- Future plan - vaccines to be transported in dedicated cold boxes instead of mixing with other cold chain drugs, and to purchase “fridge trolley” for delivery of fridge items.

References: CDC vaccines storage and handling toolkit May 2014, MOH guidelines on how to maintain the vaccine cold chain.

Cold Chain Management Training



Cold Boxes Validation Data (Instruction sheet on cold box)

Bright blue box	3 packs of coolant required. Time to reach <8°C : 15 mins Within 2-8°C : 6 hours
Pale blue box	4 packs of coolant required. Remove 1 pack after 15 mins. Time to reach <8°C : 15 mins Within 2-8°C : 5 hours
Large grey box	4 packs of coolant required. Remove 1 pack after 15 mins. Time to reach <8°C : 15 mins Within 2-8°C : 6 hours