

## STORAGE CONDITIONS FOR VACCINES

An adequate storage temperature for vaccines is imperative. They should almost without exception be stored continually between +4 and +8 degrees Centigrade. When vaccines are stored at higher temperatures for any amount of time the ingredients may interact, decompose, form aggregates and/or precipitate. Microbial growth may take place. The vaccines may become exceedingly detrimental to health.

Maintaining optimal temperature is not simply a matter of reading a thermometer. These may present a rise or fall in temperature whilst being read, it is not possible to read the highest/lowest temperature reached, they may not show the temperature in or possibly near the actual vaccine vials – and they are often inaccurate. Calibrated maximum-minimum thermometers show the highest/lowest temperatures reached, but not the length of time the temperatures have been maintained. Thermal feelers in refrigerators connected to graph-drawing systems which register and draw temperature variations continuously may be used, but these are expensive and complicated to operate. In other words, documentation of temperature is extremely complex.

The temperature in a refrigerator often varies according to whether it is measured high, low, at the back or near the door. When many units are placed in the refrigerator at the same time the temperature may change and only become stable after a few hours.

Vaccine manufacturers will normally not accept return of unused vaccines. This is not only because of the financial aspect, but also because it is not normally possible for those who return the vaccines to document that the storage temperature has been adequate all the time, including during transport.

It is extremely unsettling that some health authorities are considering donating thousands of unused swine flu vaccines to developing countries when it is known that there is no acceptable documentation available regarding satisfactory storage conditions.