Readers' Forum

Q.1. Regarding the correct method of storage of vaccine in the refrigerator in the clinic, why do you recommend that killed vaccines like OPT, TT, OT and Typhoid be placed on the second shelf and freeze dried vaccine such as varicella be placed on the third shelf? Other freeze dried vaccines such as measles; MMR are to be kept either in the freezer or in the first shelf.

Anita Chandna,
Plot No. 42,
Laxmi Nagar; Picket,
Secunderabad 500 026, India.

A. Different vaccines due to presence of antigens have different heat lability, i.e. some of the antigens are more heat labile than the others. Heat lability of different antigens is as follows in descending order: Polio, BCG, Measles, MMR, Varicella, Hepatitis A, Typhoid, Hepatitis B and DPT/DT/TT.

Further some of the vaccines contain adjuvant which is Aluminum salts. If these vaccines are frozen, Aluminum salts gets flocculated and most of the antigen gets fixed into those floccules. So that vaccine looses that much potency. DPT, DT, dT, TT, Hepatitis B and typhoid contains such adjuvant and so can not be frozen.

Lyophilized or powder type of vaccines do not freeze as they have no liquids in it and so storage in freezer compartment or lower shelves do not make difference. In the freezer compartment we can be sure of maintenance of temperature. Polio vaccine should not be repeatedly frozen and thawed.

In refrigerator maximum cool air is in freezer compartment, which can be around 0ºC. In the first shelf, just below freezer compartment it is around 2ºC. In the second self around 4ºC. So we need to store most heat labile vaccines in the Freezer compartment or shelf nearest to that, while heat stable vaccines and vaccines containing Aluminum adjuvant in the lower compartments.

To maintain potency of the vaccine during storage for short time (around one month or so), they should be stored in refrigerator as follows: (*i*) BCG, Measles and MMR (all lyophilized) in freezer compartment. (Polio if you want to store vial for long time); (*ii*) Polio, Varicella, Hepatitis A on first shelf; (*iii*) DPT, DT, dT, TT and Hepatitis B on second shelf; (*iv*) All diluents on the third or lower shelf.

No vaccine or diluents should be stored on the shelves of the door of refrigerator.

Raju C Shah,
Chairman,
Immunisation committee and Immediate Past President of IAP,
Ankur Institute of Child Health,
Ashram Road, Ahmedabad,India.

Q.2. In general, immunity induced by vaccines against viral diseases lasts for long duration, some times life long, as is seen in cases of hepatitis A, hepatitis B, polioviruses, varicella vaccines. On the other hand immunity against bacterial diseases is of short duration as is seen in case of

typhoid vaccine. Rabies is caused by a virus. Why is re-vaccination required after re-exposure even if the individual had received full pre-exposure or post-exposure rabies vaccination ?

Yash Paul
A-D-7, Devi Marg,
Bani Park,
Jaipur-302016, India.
dryashpaul2003@yahoo.com

A. For various viral vaccines, the "vaccine efficacy" (VE) is often expressed as a percent figure. If VE is 98-99%, we feel that it must be a very good vaccine. An occasional instance of the target disease in a previously vaccinated person is accepted as a normal phenomenon. Such "vaccine failure" cases may be due to primary failure (vaccination did not result in immunity) or secondary failure (immunity achieved but waned later). Secondary vaccine failure disease is usually mild and without the usual complications of the target disease, whereas primary failure cases are unmodified.

As far as rabies vaccination is concerned, we require 100% VE and no failure. The pre-exposure vaccination may or may not have been followed up with the recommended booster doses. For post-exposure vaccination, in some individuals rabies immune globulin may have been given (dampening the height of active immunity) and in some the 90-day dose may not have been given. In some persons the height of antibody level may have declined, which often happens one or more years later. In others the level may be maintained high even after years. All such circumstances are taken together, without hair-splitting differences, for further considerations. In all such situations, for re-exposure, 1 or 2 booster doses (depending on time elapsed) are recommended for abundant caution, not because of any immunological peculiarity of rabies vaccine, but for complete confidence of assured protection.

T. Jacob John,
439 Civil Supplies Godown Lane,
Kamalakshipuram,
Vellore, TN, 632 002, India.
E-mail: vlr_tjjohn@sancharnet.in