

RESOURCES

National guidelines for vaccine storage and transportation

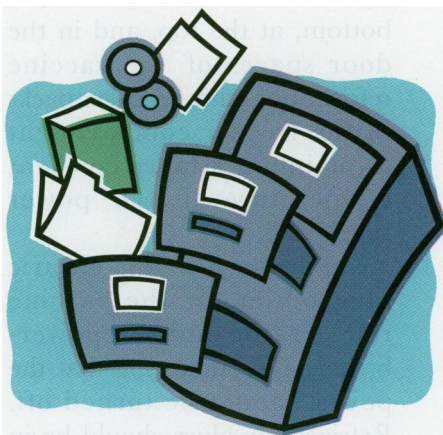
LABORATORY CENTRE FOR DISEASE CONTROL

The article entitled "Vaccine storage and handling. Knowledge and practice in primary care physicians' offices," by Yuan et al (page 1169), describes the results of a recent study on this subject carried out in Ontario. It highlights major deficiencies in the cold chain, ie, maintaining vaccines at the appropriate temperature throughout storage, transport, and handling.

Maintaining the cold chain is an important aspect of proper immunization delivery programs, and it is currently receiving attention in Canada. Lack of adherence to the cold chain can reduce vaccine effectiveness, cause undue vaccine failures, and increase the rate of local reactions after vaccine administration.

The Childhood Immunization Division of the Bureau of Communicable Disease Epidemiology at Health Canada's Laboratory Centre for Disease Control recently developed national guidelines for vaccine storage and transportation, in collaboration with manufacturers and health authorities.

The following summarizes the guidelines published in the *Canada Communicable Disease Report*, Vol 21-11, on June 15, 1995. This summary focuses on aspects of the guidelines



that are pertinent to private practice. For a copy of the complete guidelines, access the FaxLink service by dialing (613) 941-3900 from any fax machine and requesting Vol 21, issue 11, when asked.

Information about technical issues, training, and educational material related to the cold chain can be obtained by writing to the Childhood Immunization Division, Bureau of Communicable Disease Epidemiology, Laboratory Centre for Disease Control, Tunney's Pasture, Ottawa, ON K1A 0L2, or calling (613) 957-1340 or 1-800-363-6456.

General recommendations

1. Practices relating to the cold chain should be reviewed periodically at all levels (ie, every 6 months to 1 year). Where excessive cold chain failures occur, reviews should be more frequent.
2. Vaccines exposed to temperatures outside those stated in the manufacturer's insert or label should be stored in a separate, marked container in a well-functioning, monitored refrigerator until clear instructions have been received on what to do with them. Because the potency

of different vaccines varies depending on the type of temperature exposure, each incident must be evaluated individually.

3. Records should be kept of doses received, including lot numbers for each vaccine shipment, and of wastage after vaccine expiry dates have passed.

Recommendations for storage

1. Vaccines should never be removed from the refrigerator except for the following reasons: withdrawing doses; shipping to clients; or transporting to immunization clinics. The refrigerator door should not be opened too frequently. (The World Health Organization recommends that the door not be opened more than four times daily.)
2. Vaccines should be stored in the refrigerator as soon as they are received.
3. All persons responsible for handling vaccines should know the correct storage temperatures for the various vaccines.
4. A refrigerator for vaccine storage only should be identified and dedicated solely for this purpose. Vaccine refrigerators should not be used to store staff lunches or specimens.
5. If more than 1 cm (or 1/4 inch) of ice accumulates in the freezer compartment of a refrigerator, defrosting is required. Vaccines should be transferred to a vaccine carrier box or another refrigerator while this is being done. The temperature should be monitored during this period.

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6. One person should be identified as responsible for vaccine management. Another person should also be trained for when the first is absent.
7. All vaccine storage refrigerators should have a maximum-minimum thermometer or, if large quantities of vaccines are stored, a continuous temperature recording device. All monitoring devices should be certified or calibrated routinely.
8. Two daily temperature readings for the vaccine refrigerator should be taken and recorded – one first thing in the morning and one at the end of the day – to ensure temperatures remain between 2°C and 8°C. A chart-recording thermometer should also be checked for temperature fluctuations, which can occur between readings. The designated staff person should record and sign off readings in a logbook daily. This person also should ensure that all staff handling vaccine know how to read and interpret maximum-minimum thermometers.
9. All staff handling vaccines should be taught the importance of good vaccine storage and transportation techniques.
10. Vaccines should never be stored on refrigerator door shelves because temperatures are warmer there than on the shelves of the refrigerator.
11. Space should be left between the products in the refrigerator to allow air to circulate. For freeze-dried products, for which diluent is provided in separate packages, the diluent should be stored at room temperature to conserve refrigerator space (unless the vaccine direction insert specifies that the diluent must be refrigerated).
12. Keep all adsorbed vaccines that should not be frozen away from the freezing element and away from direct contact with ice.
13. Store water bottles at the bottom, at the top, and in the door spaces of the vaccine refrigerator, and keep ice packs in the freezer compartment to maintain a more constant temperature if the power supply fails.
14. Keep a sign near the electric plug outlet for the vaccine refrigerator and the power-breaker box indicating that the power cannot be turned off. Refrigerator plugs should be in a protected area where they cannot be knocked out accidentally. Vaccine refrigerators should have a designated plug outlet that is not required for other appliances.
15. Make sure that the refrigerator door is closed when not in use.
16. Procedures in the event of vaccine refrigerator failure should be posted on or near all such refrigerators.
17. If the power supply fails, the person responsible for vaccine storage or the delegate should put all vaccines into a thermal cold box or a container with ice packs and a thermometer until the vaccines can be transferred to another refrigerator. If a short power outage is anticipated (less than 1 hour), the storage unit should not be opened. If a longer power outage is anticipated, plans for transfer are warranted.
18. Educational material on the cold chain should be available in all centres storing vaccines.
19. If products are known to have been exposed to temperatures outside of the recommended range, the exposed products should be put in a box marked "DO NOT USE" and placed in a functioning refrigerator. The types of products exposed should be recorded, as well as the duration and temperature of exposure, and advice on whether these products can be used or returned should be sought immediately.
20. Regular maintenance of refrigerators (cleaning coils, replacing door seals, etc) should be performed and records kept.

Recommendations for transportation

1. If evidence of freezing is present when vaccines sensitive to freezing are received (eg, results of temperature measurements), the vaccine must not be used.
2. Oral polio vaccine should preferably arrive with some dry ice still present. If this vaccine arrives with no remaining ice but still cold, it may still be used; however, if the vaccine is warm, it should not be used. ■

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Preventing hepatitis A infections

National Advisory Committee on Immunization statement

LABORATORY CENTRE FOR DISEASE CONTROL

The following summarizes the statement on the prevention of hepatitis A infections, focusing on aspects that are most relevant to family practitioners. A copy of the complete statement can be obtained through the FaxLink service by dialing (613) 941-3900 from any fax machine and requesting Vol 20, issue 16 of the Canada Communicable Disease Report, when asked.

Between 1000 and 3000 cases of hepatitis A (HAV) infection are reported annually in Canada. Since