

Module #7 / Edition #3 / Feb 2008

# Handling & Storage of Vaccines

- Pre-test

# Handling and Storage

- Assign vaccine responsibilities to a lead person and to a back-up person
- Also:
  - Let everyone at your site know about storage of vaccines and your Vaccine Emergency Plan
  - **Vaccine management is EVERYONE'S responsibility**



# Handling & Storage

- All sites must have a Handling & Storage Plan which includes:
  - Your refrigerator & freezer
    - Range of temps for inside the frig
    - Temperatures (or colder) for inside the freezer
    - Once vaccines are removed from frig & freezer
  - Your Vaccine Emergency Plan

## Inside the appliance(s): Which vaccines go where

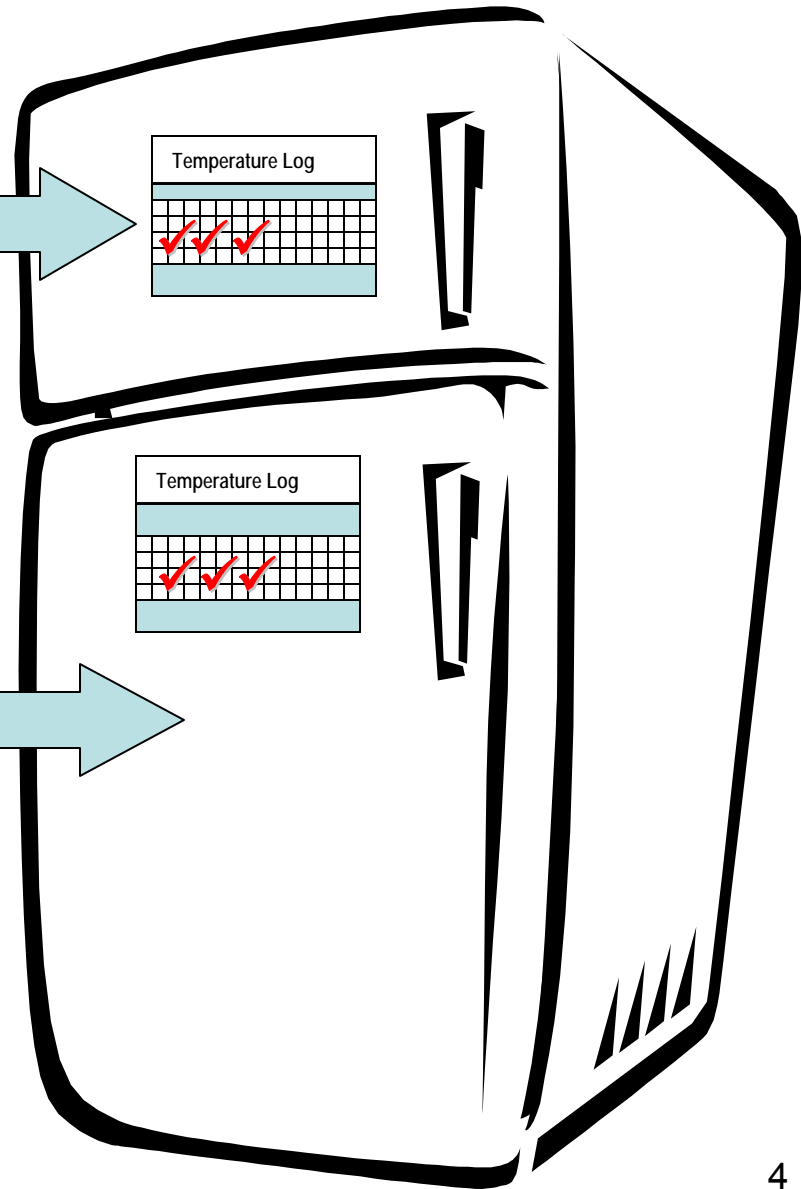
**Store frozen vaccine  
at 5°F (-15°C) or colder**

**Varicella, LAIV, Zoster, MMR\*,  
MMRV**

**Store refrigerated vaccines  
between  
35°F (2°C) and 46°F (8°C)**

**DTaP, Td, Tdap, DT, IPV, Hib,  
Hep A, Hep B, HPV4, MMR\*,  
MCV4, MPSV, TIV, PCV7,  
PPV23, Rota**

**\*MMR may be stored in the freezer or  
refrigerator**



# Handling and Storage (5)

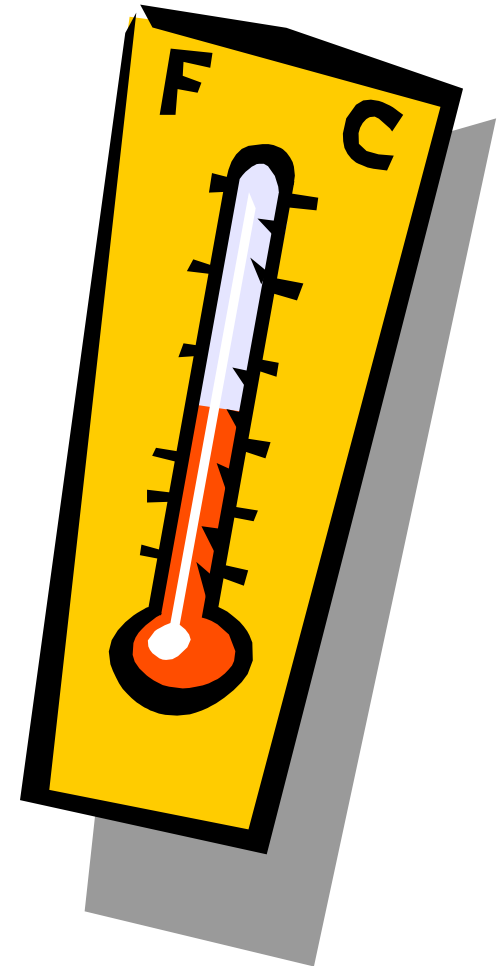
- There are two scales for measuring temperatures
  - Fahrenheit (F)
    - On which water freezes at 32°F
  - Centigrade (C)
    - On which water freezes at 0°C
- Which scale do you use at your site?

# Handling & Storage

(6)

- Required temperatures
  - Frig in which vaccines are stored
    - 35° - 46° F (2° - 8°C)
    - Vaccines in the frig MUST stay in this temperature range!!!
  - Freezer
    - 5° F or colder (-15°C or colder)
    - Vaccines in the freezer MUST stay at this temperature or colder!!!

- **Measure temperatures with a certified thermometer**
- **In both the refrigerator and freezer**



# Handling & Storage

(8)

- Record every temperature on log
  - One for the frig and one for the freezer
  - In the morning
    - As health center opens
  - In the late afternoon or evening
    - Before health center closes
- Purpose of logs
  - To help you maintain correct temperatures
  - To let you know if frig/freezer is not working properly
- If you suspect your frig/freezer are not working properly
  - Report it immediately

# Handling & Storage

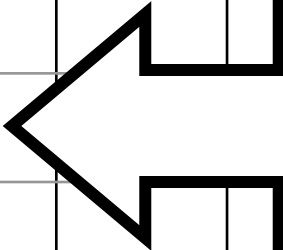
(9)

- Keep the current temperature logs
  - On the front
    - Of the frig
    - Of the freezer
  - All logs must be kept for 3 years

# REFRIGERATOR

Staff Initials	JSW	JSW	JSW	JSW	KLM	KLM				
Time	8:00 AM	5:00 PM	8:00 AM	5:00 PM	8:00 AM	5:00 PM				
Day of Month	1		2		3		4		5	
°F Temp	<i>am</i>	<i>pm</i>	<i>am</i>	<i>pm</i>	<i>am</i>	<i>pm</i>	<i>am</i>	<i>pm</i>	<i>am</i>	<i>pm</i>
≥49										
48										
47										
46										
45										
44										
43										
42										
41		✓	✓							
<b>40°</b>	.			✓	✓					
39	✓									
38										
37										
36										
35										
34										
33										
<32										

**Aim for 40°  
in the  
refrigerator**



# Handling & Storage

(11)

- Keep the frig temperature
  - In the middle of the range
- Small adjustments in controls can be made
  - If temp of frig moves up toward 44° or 45°F (7°C)
  - If temp of frig moves down toward 37° or 36°F (3°C)
- If you make even a small adjustment
  - Record what you did
  - Notify your supervisor
  - Return in 30 minutes to see what happened to temp

# Handling & Storage

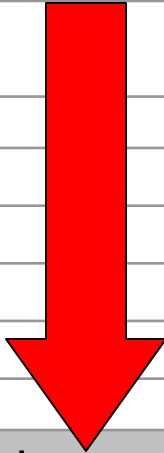
(12)

- If temp of frig becomes
  - Warmer than 46°F (8 °C)
  - Colder than 35 °F (2°C)
  - **You MUST take action!!!**
- If temp of freezer becomes
  - Warmer than 5° F (-15°C)
  - **You MUST take action!!**
- It is time to use your Vaccine Emergency Plan

# REFRIGERATOR

Staff Initials	JSW	JSW	JSW	JSW	KLM	KLM	JSW	
Time	8:00 AM	5:00 PM	8:00 AM	5:00 PM	8:00 AM	5:00 PM	8:00 AM	
Day of Month	1		2		3		4	
°F Temp	<i>am</i>	<i>pm</i>	<i>am</i>	<i>pm</i>	<i>am</i>	<i>pm</i>	<i>am</i>	<i>pm</i>
≥49								
48								
47								
46								
45								
44								
43								
42		.						
41		✓	✓					
40		.						
39	✓							
38				✓				
37					✓	✓		
36								
35								
34							.	
33							✓	
≤32								

**Take action immediately!**



# Handling & Storage

(14)

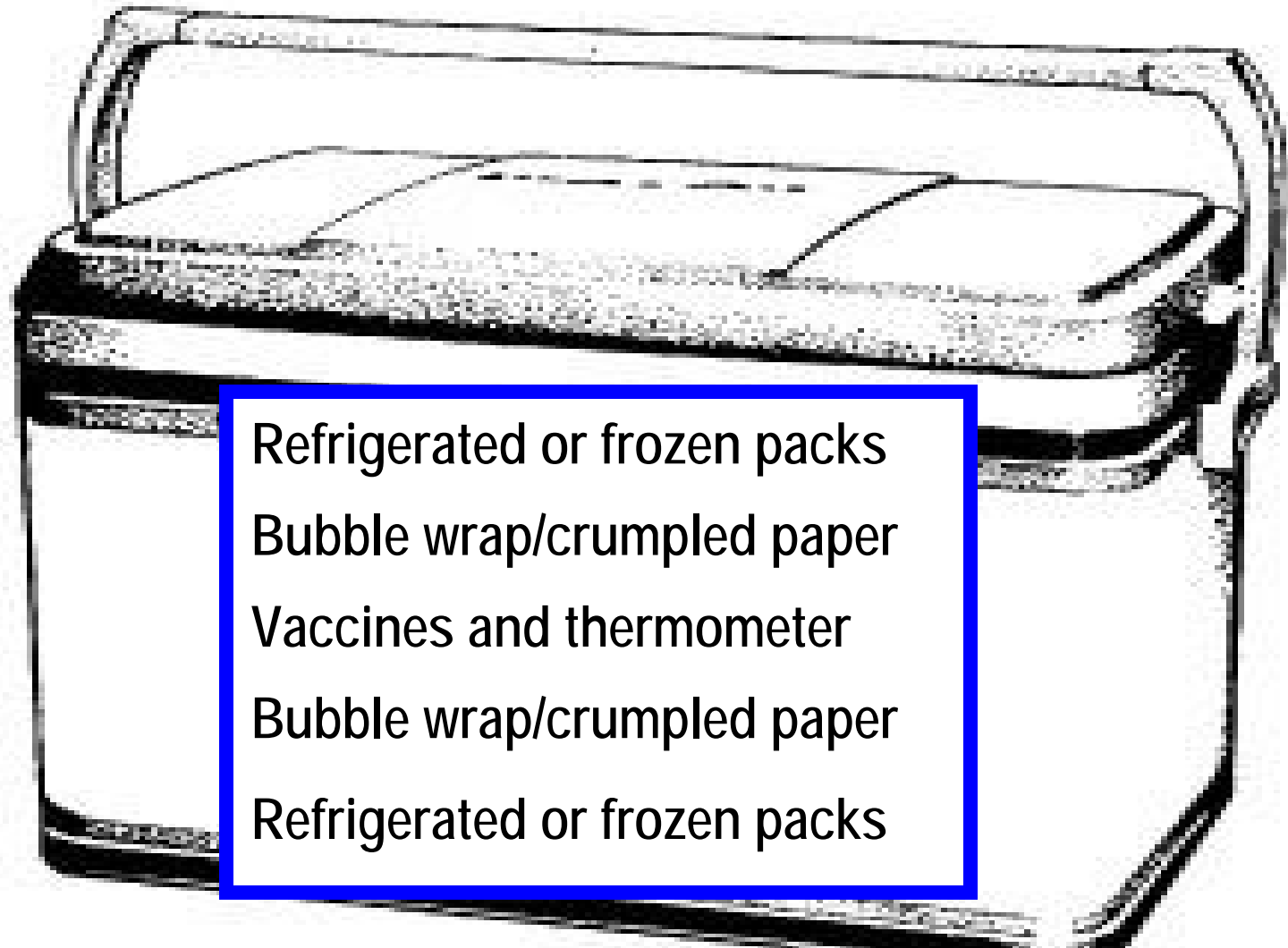
- Every site **MUST** have its own written Vaccine Emergency Plan
- Goal: To immediately store the vaccine at proper temperatures!!
  - Notify your supervisor
  - Carry out plan
    - Depending on situation
    - Time of day
  - It is everyone's responsibility to
    - Know the plan
    - Stay in communication with your supervisor

# Handling & Storage

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- In addition, everyone needs to know
  - How to pack a cooler to carry vaccine
  - Where coolers are kept
  - How to transport the frozen vaccines
    - Be very careful with dry ice
    - Use ONLY with frozen vaccines
    - Do NOT use with vaccines in frig

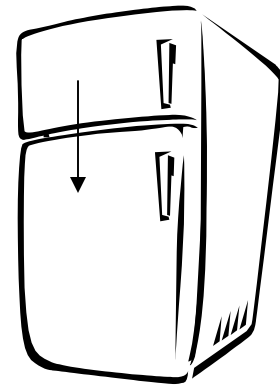
# Transporting Vaccines? Layer Your Cooler



# Handling & Storage

(17)

- Can a freezer become too cold for the vaccines in it?
  - The very cold temperature itself will not harm vaccines which have to be kept frozen.
  - However, if the freezer and frig are attached in one unit, very cold temps in the freezer may make the frig too cold.



# Handling & Storage

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- Do NOT automatically throw vaccine away if it becomes too warm or too cold
  - Put vaccine in separate bag
  - Label “DO NOT USE” until decisions are made
  - Store vaccine at proper temperature
  - Call health dept & pharmaceutical company for instructions
- If it is decided that VFC vaccines does need to be wasted
  - Do not throw vaccine away
  - Return to health dept
  - Will be able to reclaim excise tax

# Handling and Storage

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- Compromised vaccine
  - Vaccines
    - In frig
    - Have become too warm or too cold
  - Vaccines
    - In freezer
    - Have become too warm
- **Never, NEVER use compromised vaccines!!**

# Handling & Storage

(20)

- All vaccines have an expiration date
- Never, NEVER use expired vaccines!!
- Watch the expiration dates carefully
  - On all the vaccines in your frig & freezer
  - Rotate your vaccine stocks
    - So that vaccine with earliest expiration date
    - Is in the front of the line-up of that vaccine
    - Is used first
- If VFC vaccine will expire in three months or less
  - Notify your health dept

# Handling & Storage: Reconstituting Vaccines

- Some vaccines need to be reconstituted
  - They come as powder
  - Need to be mixed with liquid
- Vaccines are:
  - MMR
  - Varicella
  - MMRV
  - Hib (some of the brands)
  - Zoster
  - MPSV4 (Menomune)
- Use only the diluent
  - That comes with the vaccine
  - Or that comes from the same company that made the vaccine (if this is acceptable with company)
- Store diluents properly

# Handling & Storage: Reconstituting Vaccines

- Do NOT re-freeze vaccines after they have been reconstituted
- MMR
  - Reconstituted MMR may be stored in the refrigerator at 35°-46°F (2°-8°C) for up to 8 hours
  - After 8 hours it must be discarded
- Varicella, Zoster and MMRV
  - Must be used within 30 minutes of reconstitution
  - Be very exact about this!!
  - Do not use even if only a few minutes longer!!
  - Do NOT put reconstituted vaccines back into freezer
  - Putting them in frig after reconstitution will not make them last longer

# Handling & Storage

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- Store vaccines in middle of frig/freezer
  - So cold air circulates around them
- Some vaccines must be protected from light
  - Make it your practice
  - To keep all vaccines in box they come it
    - In frig
    - In freezer

# Handling & Storage

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- Place **DO NOT UNPLUG** signs on the refrigerator and/or freezer
- Use a plug cover to make sure that the appliance will not be unplugged from the wall
- Plug the refrigerator into separate outlet from other appliances
- Move the refrigerator in front of the electrical outlet



# Vaccine Deliveries and Shipments

- When a vaccine shipment arrives:
  - Make sure everyone knows package must be handled & stored IMMEDIATELY
    - Front desk staff
      - Need to know whom to notify when it arrives
      - Need to be told about this on orientation
      - Need to be reminded periodically
  - Immediately store vaccines
    - In frig or freezer as appropriate

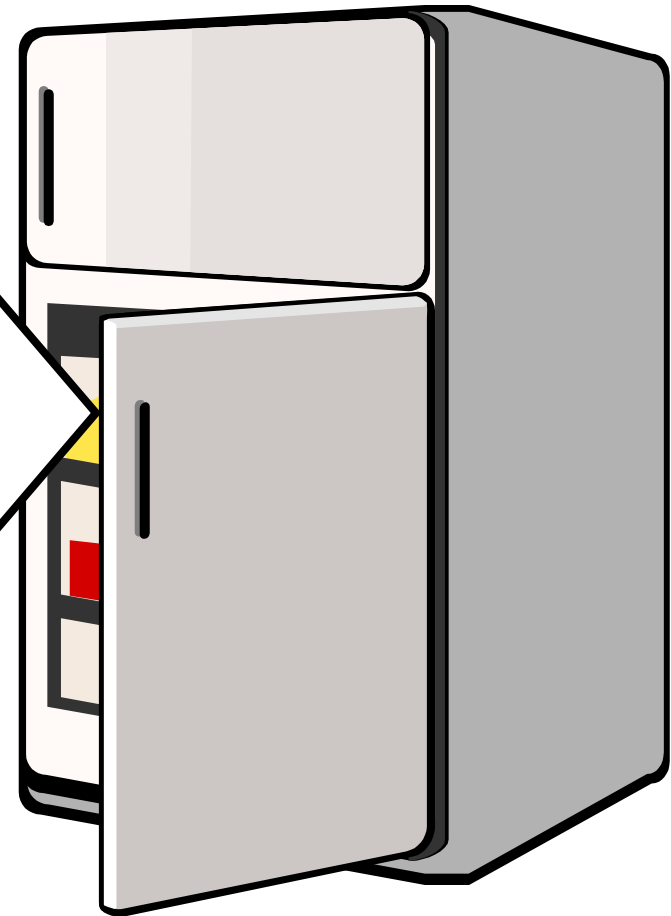
# Vaccine Deliveries and Shipments

- As you unpack the shipment box:
  - Examine vaccine shipment:
  - Check package contents against packing slip
  - Check enclosed temperature indicators if present
  - Check shipment date
    - Interval between shipment date and arrival at your office should be no more than 48 hours.
- Record information on the vaccine shipment inventory worksheet

# Vaccine Costs: Losses are expensive!!

10 doses of each  
recommended  
pediatric vaccine  
plus 2 combination  
vaccines equals

**\$7,912.00**



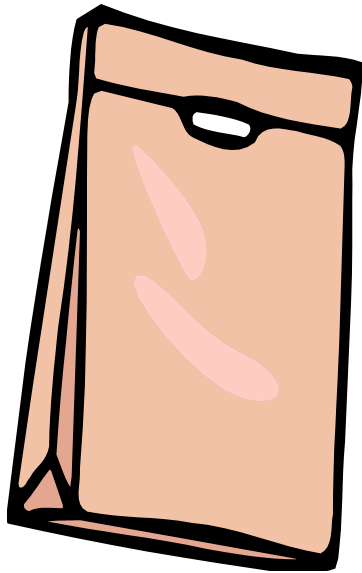
\* Private sector prices based on CDC Vaccine Price List October 31, 2006 27

# True or False?

1. This vaccine has become too warm, I'll just throw it away.

# True or False?

1. This vaccine has become too warm, I'll just throw it away.



1. False.

Your Vaccine Emergency Plan needs to include these instructions. Follow them:

- Put vaccine in separate bag.
- Label do not use.
- Store vaccine at proper temperature
- Call health dept & pharmaceutical company for instructions

# True or False?

2. The vaccine has become too cold but it doesn't look frozen so it must be OK.

# True or False?

2. The vaccine has become too cold but it doesn't look frozen so it must be OK.
2. False.  
Vaccine that has become too cold or too warm may look OK but it may be compromised.  
**DO NOT use compromised vaccine!!**  
Instead, follow your Vaccine Emergency Plan.

# True or False?

3. Stock up and have a full refrigerator & freezer.

# True or False?

3. Stock up and have a full refrigerator & freezer.

3. False.

You need to keep a month's supply of vaccines in your frig & freezer.

If you have too much vaccine on hand, it will be costly if there is a problem with the temps.

If you have too much vaccine on hand, it may expire before you can use it.

# True or False?

4. It is okay to leave vaccine out on the counter as long as it is sitting on a pad of “blue-ice.”

# True or False?

4. It is okay to leave vaccine out on the counter as long as it is sitting on a pad of “blue-ice.”

4. False

Vaccine must be stored at proper temperatures at all times.

If stored improperly, it will become compromised.

Giving compromised vaccines to a patient does not offer protection from diseases

# True or False?

5. It is helpful to have bottles of water in the frig and pads of “blue-ice” in the freezer.

# True or False?

5. It is good to have bottles of water in the frig and pads of “blue-ice” in the freezer.

5. True.

These help the temperatures stay stable in the frig and freezer.

Just be careful not to put 3 or 4 bottles of liquid -- that is at room temperature, into the frig all at once.

# True or False?

6. MMR may be stored in the frig or freezer but MMRV must be stored in the freezer.

# True or False?

6. MMR may be stored in the frig or freezer but MMRV must be stored in the freezer.

6. True.  
The “V” in MMRV means it contains Varicella vaccine. Varicella **MUST** be kept frozen until ready to be used.  
MMRV that is stored in the frig is compromised vaccine.  
Prevent the problem by storing MMR in the freezer from now on.

# True or False

7. A new maintenance person is hired for your site. He must also be informed about the value of vaccines and about need to keep frig/freezer at proper temperatures.

# True or False?

7. A new maintenance person is hired for your site. He must also be informed about the value of vaccines and need to keep frig/freezer at proper temperatures

7. True

You do not want someone to flip a circuit breaker or move the appliance to repair or clean. This would ruin your vaccine supply. Make all staff aware of importance & cost of vaccines!

# True or False?

8. There aren't many plug-ins in the room where your frig/freezer is kept.  
It's OK to plug the frig, fax, & coffee pot all into the same power-strip type extension cord.

# True or False?

8. There aren't many plug-ins in the room where your frig/freezer is kept. It's OK to plug the frig, fax, & coffee pot all into the same power strip type extension cord.

8. False.  
The power strip could be turned off when the coffee pot is not in use -- which would also turn off the frig – which would ruin your vaccine!!

# True or False?

9. You know it will be a busy morning, so it is OK to pre-fill syringes with vaccines you know you will use.

# True or False?

9. You know it will be a busy morning, so it is OK to pre-fill syringes with vaccines you know you will use.

9. False

This is unsafe because:

- Increased chance of making an error
- You should not give vaccines that you have not drawn up yourself
- Increased chance of wasting vaccine
- Bacteria may grow in the syringe
- Vaccine may seep into the syringe
  - Which means you will not be giving your patient the full dose

# True or False?

10. The lunch room is a long way from your work-site, so it is OK to keep your soda/pop & snacks in the frig with the vaccines.

# True or False?

10. The lunch room is a long way from your work-site, so it is OK to keep your soda/pop & snacks in the frig with the vaccines.

10. False.

Any food or drink (not just lunches) should not be kept in the same frig/freezer with vaccines.

Food or pop will cause you to open & close the door more than is necessary.

Could cause the temperature of the appliance to get too warm.

# True or False?

11. You have other medication and products that need to be stored in a frig or freezer. It is OK to use the same frig/freezer in which vaccines are stored.

# True or False?

11. You have other medication and products that need to be stored in a frig or freezer. It is OK to use the same frig/freezer in which vaccines are stored.

11. True, but only to a certain point. Remember that the appliance doors should not be opened more often than necessary. Will storing these products make you open the door very often?

Also, will the frig become so full that cold air cannot circulate well around the vaccines?

# True or False?

12. Every time you receive more vaccines and add them to the bins in the frig, the temperature of the frig rises above 46°s F. This is OK because you know the temperature will fall back down below 46°s F in an hour or so.

# True or False?

12. Every time you receive more vaccines and add them to the bins in the frig, the temperature of the frig rises above 46°s F. This is OK because you know the temperature will fall back down below 46°s F in an hour or so.

12. False.

The correct temperature must be maintained at all times.

Think about what can be done to prevent this:

- Can the vaccine be added more quickly?
- Can you remove a specific “bin” of vaccine while you check the expirations dates on the vaccine in that bin?
- Is your frig beginning to fail?

# Handling & Storage

(52)

- Post-test

# Handling & Storage

(53)

- Many thanks to JoEllen Wolicki and Barb Wolicki, the state-based nurses who write the Immunization Nurse Education Modules.
- I drew heavily from their work in writing this module.

Carolee

# Games People Play #9

## Note to instructor

- Scavenger Hunt
  - Divide attendees into groups
    - Ask groups to find and make copies of logs
      - Frig & freezer
      - Current month
      - Past month or two
    - Bring a copy to class
      - Discuss current temperature
      - Range of temperatures noted on graphs
      - Identify any problem areas