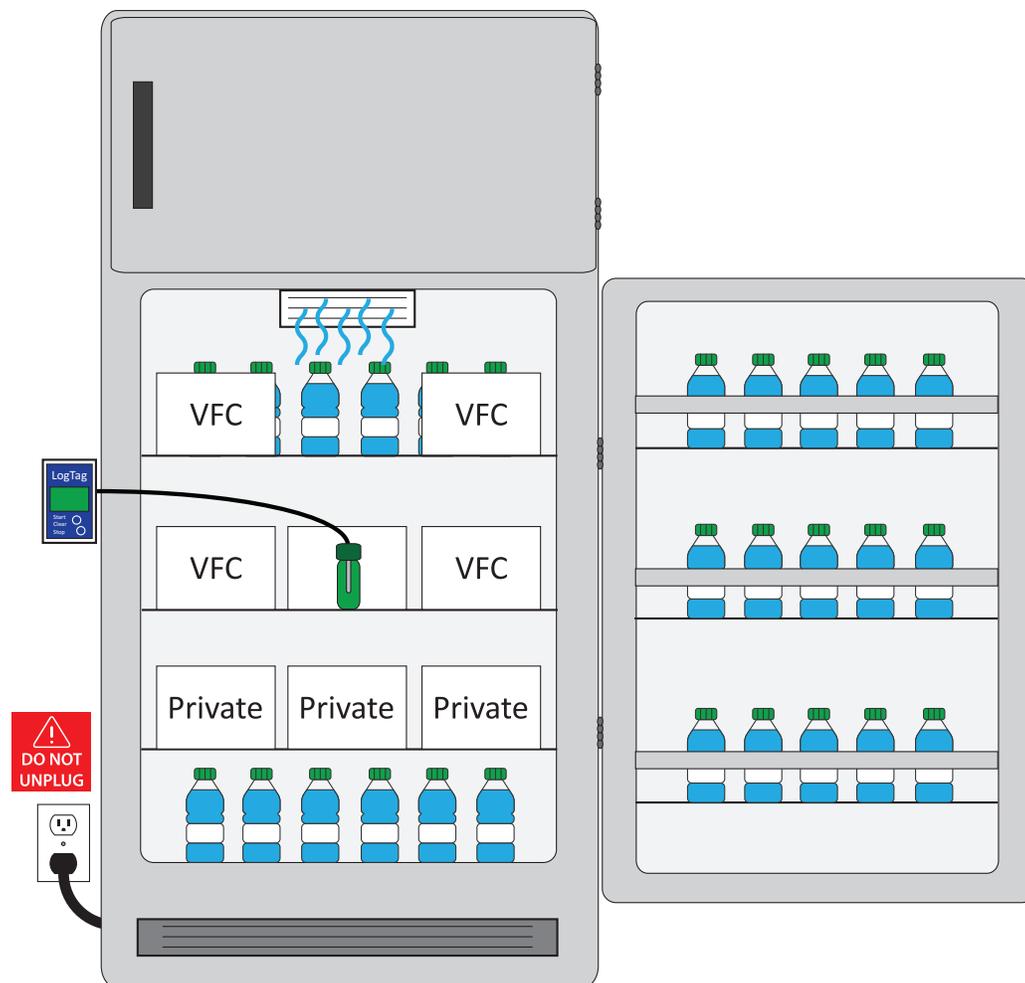


# Vaccine Storage and Handling 2016 Toolkit



# Table of Contents

3	---	Quick Reference
4	---	Cold Chain
5	---	Storage Temperatures
6	---	Types of Storage Units
7	---	Preparing Storage Units
8	---	Standalone Refrigerator Diagram
9	---	Standalone Freezer Diagram
10	---	Combination Refrigerator/Freezer Diagram
11	---	Pharmaceutical Refrigerator Diagram
12	---	Proper Vaccine Storage
13	---	Keep Vaccine Organized
14	---	Post Vaccine Management Plans
15	---	Regular Upkeep of Vaccine Storage Units
16	---	Monitoring Storage Temperatures
17	---	Temperature Indicators
18	---	Out-of-range Storage Temperatures
19	---	Other Resources
19	---	Manufacturer Contact Information

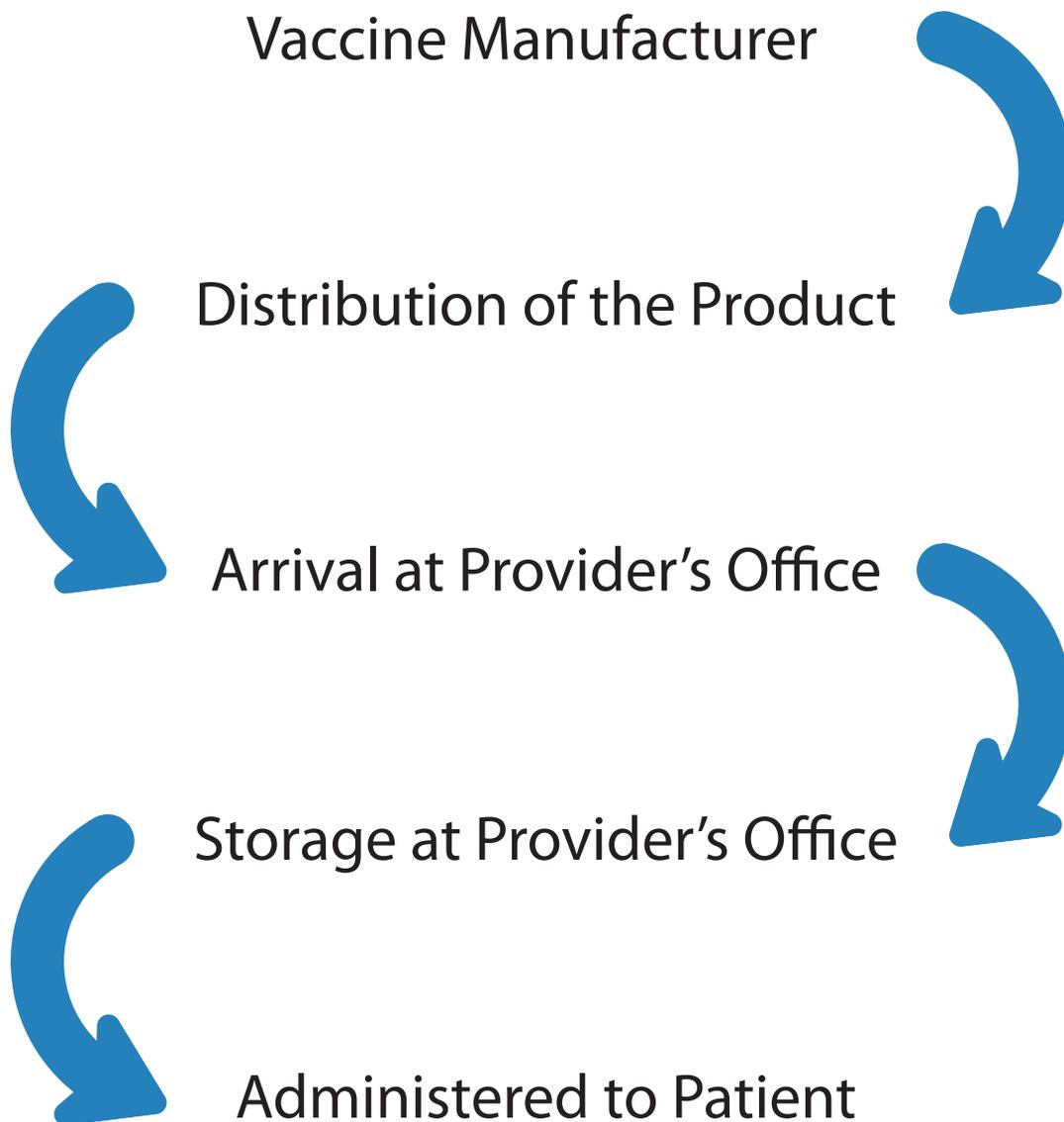
## Quick Reference

- Prepare vaccine storage units by removing drawers, checking door seals, and placing water bottles in the unit to help maintain the temperature.
- Do not store food or drinks in vaccine storage units.
- Post the “Vaccine Management and Emergency Response Plan” near all of your vaccine storage units.
- Post “Do Not Unplug” signs near the electrical outlets for your vaccine storage units, the storage units, and circuit breaker.
- Always maintain the “Vaccine Cold Chain.” Do not expose vaccine to excessively warm or cold temperatures.
- Store refrigerated vaccine between 35°F to 46°F (2°C to 8°C), ideally 40°F (4°C).
- Store frozen vaccine (varicella only) at 5°F (-15°C) or colder, ideally 0°F (-18°C).
- Use certified, calibrated digital thermometers/digital data loggers with a temperature buffered glycol probe to monitor vaccine storage temperatures.
- Monitor and record vaccine storage temperatures twice daily.
- Perform regular maintenance on vaccine storage units. Check the door seal, dust the coils, and clean the inside of the unit.

# Vaccine Cold Chain

Vaccines must be stored appropriately from the time they are manufactured until the time they are administered to a patient. Excessive heat or cold can reduce vaccine potency, increasing the risk that recipients will not be protected against vaccine preventable diseases. A temperature-controlled environment used to maintain and distribute vaccines in optimal condition is called the **Vaccine Cold Chain**.

You are responsible to maintain the Vaccine Cold Chain as soon as the vaccine arrives at your office.



# Vaccine Storage Temperatures

## Refrigerator

All vaccines (except Varicella) must be stored in a refrigerator. Ideal temperature is 40°F (6°C). Vaccines must be stored between 35°F (2°C) and 46°F (8°C).

Ideal: 40°F (4°C)

MIN: 35°F (2°C)

MAX: 46°F (8°C)



## Freezer

Varicella is the only vaccine stored in the freezer. Ideal temperature is 0°F (-18°C). MAX temperature is 5°F (-15°C). There is no MIN temperature. Colder is better.

Ideal: 0°F (-18°C)

MIN: -58°F (-50°C)

MAX: 5°F (-15°C)



# Types of Vaccine Storage Units

Before ordering vaccine, ensure that your site has proper vaccine storage units, and enough space available to store vaccine.

Ensure you have a storage unit that meets the Philadelphia Immunization Program requirements. Choose the right storage unit for your office. Dorm-style units are prohibited for vaccine storage - even temporary storage.



## Vaccine Storage Units Pictured

First row: Household combination refrigerator/freezer (you can **not** use the freezer in the combination unit - you **must** have a standalone freezer), and a household standalone refrigerator.

Second row: Pharmaceutical refrigerator, chest freezer, and pharmaceutical freezer.

*Images not shown to scale.*



# Preparing Vaccine Storage Units

- Remove all drawers and bins
- Fill refrigerator door, floor and top shelf with water bottles
- Fill freezer door and bottom shelf with cold packs (if possible)
- Place bins used to organize vaccine 2 to 3 inches from the walls of the unit
- Place temperature probe in the center of the unit
- Set refrigerator to 40°F (4°C)
- Set freezer to 0°F (-18°C)
- Post “Do Not Unplug” sign next to the outlet, on your circuit breaker, and on the unit door



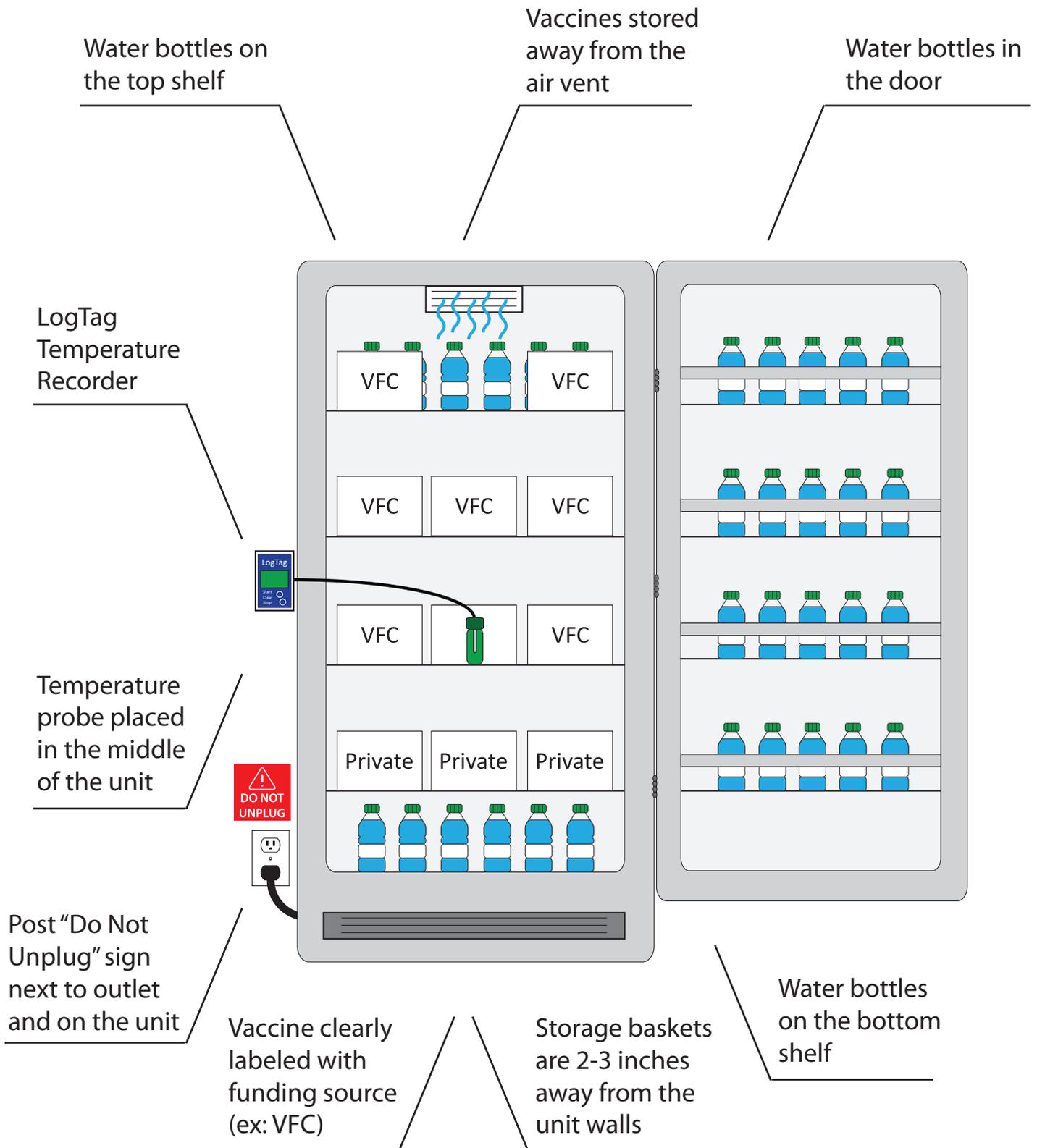
## No food or drink in vaccine storage units at any time

Vaccine storage units should be dedicated to vaccine storage only. Food and beverages can NOT be stored in a vaccine storage unit because it results in frequent opening of the door and destabilization of the temperature.

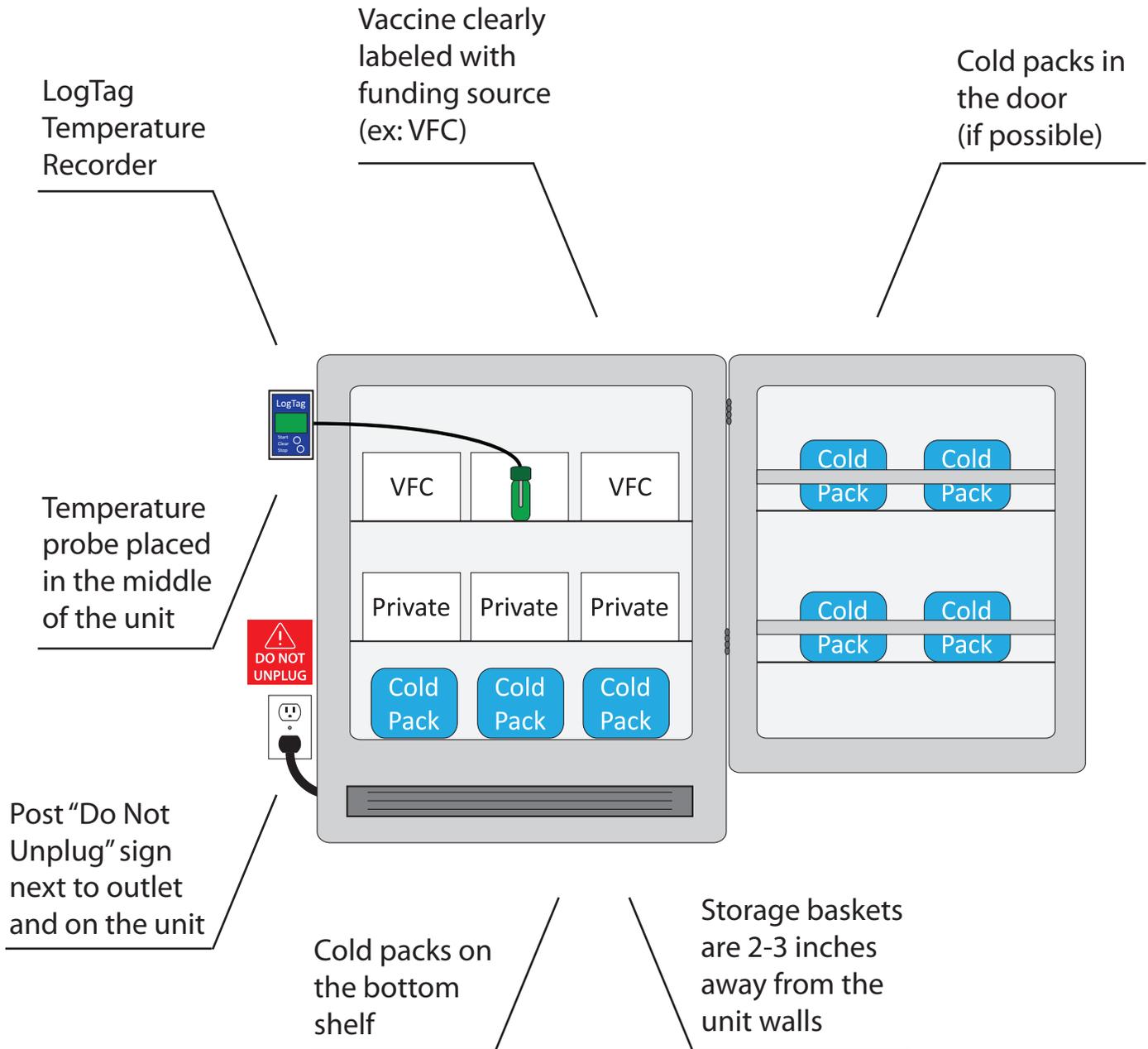
## Before the unit can store vaccine:

It must demonstrate that it can maintain the proper temperature needed to store vaccine. Record the storage unit temperature 2 times a day for 2 weeks. Then submit the record to the Philadelphia Immunization Program. Do not store vaccine until approved by the Immunization Program.

# Standalone Refrigerator

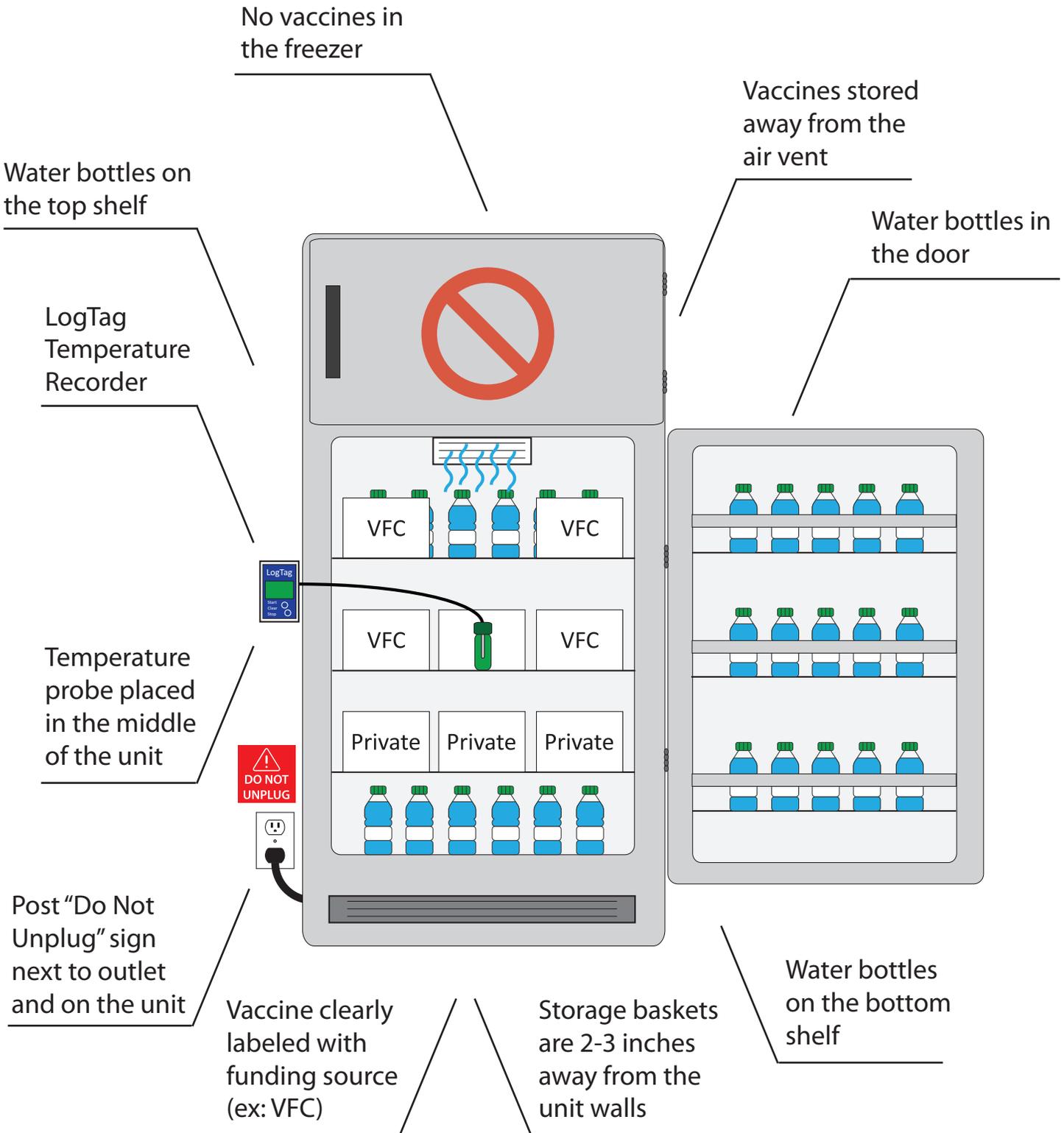


# Standalone Freezer



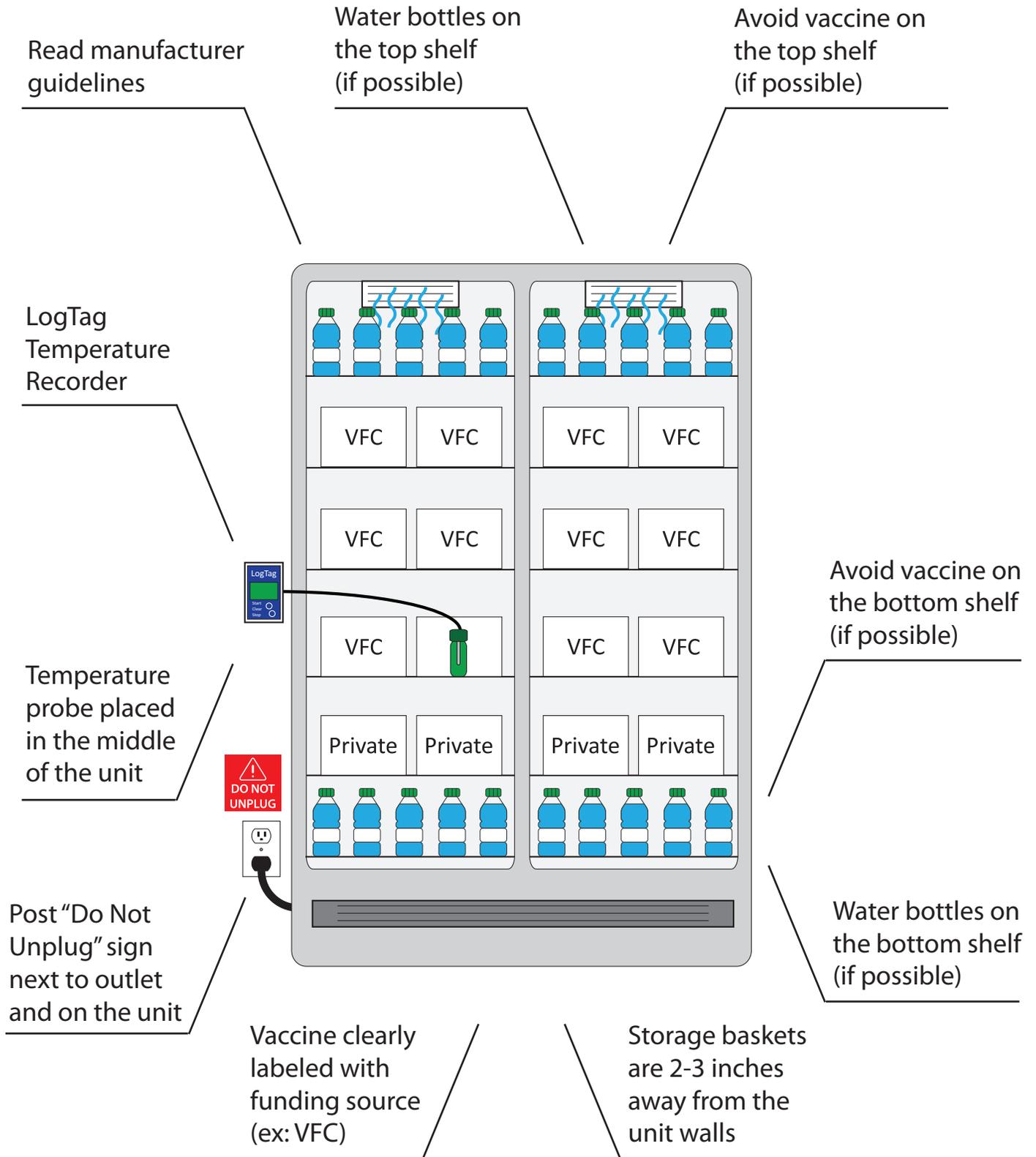
# Combination Refrigerator-Freezer

Vaccine is only allowed to be stored in the refrigerator section of combination refrigerator-freezer units. Do not store vaccines in the freezer unit.



# Pharmaceutical Refrigerator

Some pharmaceutical units may not allow for water bottles. Check the manufacturer guidelines. Avoid storage on the top and bottom shelves, but it is ok if the space is needed.



# Proper Vaccine Storage

Below is an example of proper vaccine storage in a refrigerator. The drawers have been removed. Water bottles are on the top and bottom shelves. Bins are placed 2-3 inches from the walls. The temperature probe is placed in the middle of the unit. Vaccines are organized by type and funding source.



# Keep Vaccine Organized

Well-organized vaccine storage units will minimize medical errors and vaccine wastage.

- Keep vaccine in the original packaging.
- Only open one box at a time.
- Place vaccine in plastic trays/bins/baskets.
- Store vaccine by type (Example: Store all VFC Polio vaccine in the same bin).
- Store vaccine front-to-back by the expiration date. Vaccine that expires first should be in the front. Vaccine that expires at a later date should be in the back.
- Clearly label vaccine by funding source (“VFC” or “VFAAR” or “Private”).



# Post Vaccine Management Plans

The **Vaccine Management Plan** (8 pages) contains all the information you need to manage vaccines from day-to-day.

The **Emergency Management Plan** (6 pages) contains all the information you need to manage vaccines during an emergency (example: a power outage or natural disaster).

Post both of these documents to the door of your storage unit(s). This will make the documents easy to find and reference.

## VFC & VFAAR

### Vaccine Management Plan



Department of  
**Public Health**  
CITY OF PHILADELPHIA  
LIFE • LIBERTY • AND YOU™

**Key Vaccine Management Information**

**INSTRUCTIONS:** Fill in all information for your practice and keep near vaccine storage unit(s).

The Philadelphia Immunization Program requires each practice to develop and maintain a Routine Vaccine Management Plan and an Emergency Vaccine Management Plan. Plans should include practice-specific guidelines, protocols, and contact information. Plans must be updated whenever VFC/VFAAR program guidelines change and when staff with designated vaccine management responsibilities change.

Staff assigned vaccine management responsibilities are to review and sign the signature page at the end of this document annually and when the plan is updated. This Plan may be reviewed by VFC/VFAAR representatives during routine and unannounced site visits. Please ensure this Plan is accessible at all times.

Facility Name	VFC/VFAAR PIN	Today's Date
Address		Suite #
City	State	Zip Code

Role	Name	Title	Work Phone #	Cell Phone #
Site Medical Director				
Vaccine Coordinator				
Back-up Vaccine Coordinator				
Person Receiving Vaccine				
Person Storing Vaccine				
Person Checking Vaccine Temperatures				
Other				

**Notes:** \_\_\_\_\_

Philadelphia Department of Public Health - Division of Disease Control - Immunization Program  
<http://kids.phila.gov/> - 500 South Broad Street - Philadelphia, PA 19146

Last updated: June 2015 1

## VFC & VFAAR

### Emergency Management Plan



Department of  
**Public Health**  
CITY OF PHILADELPHIA  
LIFE • LIBERTY • AND YOU™

**INSTRUCTIONS:** Use the following guidance for safeguarding vaccines in the event of planned or unplanned power interruptions (e.g., power outages, weather related circumstances, building maintenance/repairs, etc.).

**Before an Emergency**

1. Maintain emergency contact information for key staff responsible for vaccine management.
2. Store water bottles in fridge and cold packs in freezer to help maintain the interior temperature in the event of a power loss.
3. Identify alternate vaccine storage location(s), e.g., a local hospital or another VFC/VFAAR provider. Ensure the location has adequate space to accommodate vaccines and their temperature monitoring equipment meets VFC/VFAAR Program requirements.
4. Update the necessary contact information for alternate vaccine storage location(s), including the facility name, address, contact person, and telephone number.
5. Stock supplies indicated in Transporting Refrigerated Vaccines and Transporting Frozen Vaccines.
6. Label and keep accessible any necessary vaccine packing and transport supplies, copies of vaccine transport job aids, facility floor plans when available, and other related information.
7. Be familiar with back-up power sources for commercial/lab/pharmacy grade units.

**During an Emergency**

1. Assess the situation. Do not open the vaccine storage unit(s) affected.
2. Determine the cause of the power failure and estimate the time it will take to restore power.
3. Notify the key staff listed on this Emergency Plan as appropriate.
4. If the power outage is expected to be short-term, usually restored within 2 hours.
  - Record the time the outage started, the unit temperatures (CURRENT, MIN and MAX) and room temperature.
  - Place a "DO NOT OPEN" sign on storage unit(s) to conserve cold air mass.
  - Monitor the interior temperature until power is restored. Do not open the unit to verify the temperature.

**Note:** Temperatures in commercial, pharmacy, and lab grade units tend to increase faster during power failures. As a result, clinics using these units need to monitor temperatures more frequently and may need to transport vaccines to an alternate location sooner.

Philadelphia Department of Public Health - Division of Disease Control - Immunization Program  
<http://kids.phila.gov/> - 500 South Broad Street - Philadelphia, PA 19146

August 2015 1

# Regular Upkeep of Storage Units

A small amount of regular maintenance is necessary to help ensure that vaccine refrigerators and freezers work properly. When cleaning a vaccine storage unit, do **not** unplug the unit, and do **not** remove the vaccine from the unit. Instead, move the trays of vaccine as you clean.

1. Clean any spills.
2. Wipe the inside of the compartment and the shelves with disinfectant or antibacterial wipes. Let it dry, then put the trays of vaccine back where they were.
3. Inspect door seals at least once a month. Household refrigerators and freezers have flexible door seals. Ensure they are not torn or brittle, and create a complete seal when closed.
4. If possible, clean the coils at least once a month using a soft brush or vacuum cleaner.
5. If there is more than 1 cm of frost in your freezer, you must defrost it. Call the Immunization Program if you need assistance in moving or storing vaccine while the freezer defrosts.



# Monitoring Storage Temperatures

Vaccine storage temperatures must be monitored with a calibrated digital thermometer/data-logger with a biosafe glycol-encased probe (or a similar temperature buffered probe). Dial thermometers and digital devices without a certificate of calibration are **not** acceptable.

All VFC and VFAAR sites will be issued 2 LogTag digital data logger recorder units.

All digital devices must have a certificate of calibration from an accredited laboratory (see Checklist for Thermometer Certificate of Traceability and Calibration form).



# Temperature Indicators

Temperature indicators are packed with vaccine as it is shipped. Check the temperature indicators as soon as vaccine is delivered to your site, and before you store the products.

## 3M MonitorMark™ Time Temperature Indicator

1. Remove the **3M MonitorMark™ Time Temperature Indicator** and check the Index.

### For MMR vaccine:

2. If the Index color is 0-1, store the products as instructed and begin use.
3. If the Index color is 2-5, store the product as instructed and contact the Philadelphia Immunization Program for further instruction prior to using.

### For all other vaccines:

2. If the Index color is 0-2, store the products as instructed and begin use.
3. If the Index color is 3-5, store the product as instructed and contact the Philadelphia Immunization Program for further instruction prior to using.



## TransTracker® C FREEZEmarker® Indicator

1. Press the **TransTracker C FREEZEmarker Indicator** with your thumb.
2. If the indicator shows a white check mark within a green circle, store the vaccine as instructed and begin use.
3. If the indicator is white and cloudy, store the vaccine as instructed and contact the Philadelphia Immunization Program for further instruction. You may begin using the vaccine if it is MMR, ActHib or LAIV.



## ColdMark™ Freeze Indicator

1. Remove the **ColdMark™ Freeze Indicator** and check the ColdMark bulb.
2. If the bulb is clear and colorless, begin using vaccine as needed.
3. If the bulb appears violet in color, store the product as instructed and contact the Philadelphia Immunization Program for further instructions prior to using. You may begin using the vaccine if it is MMR, ActHib or LAIV.



# Recording Storage Temperatures

Check and record vaccine storage unit temperatures twice a day on the Temperature Log Form (see right).

Keep these logs on file for 3 years. If a storage unit is out-of-range, notify your site's Vaccine Coordinator, take action, document actions, and notify the Immunization Program.

Starting June 2016, storage temperatures will be logged in KIDS Plus IIS instead of the paper form.

Temperature Log Form (°F)		Protect Your Vaccines: Check Both Temperatures Twice A Day!	
FAX With VFC ORDER ONLY!		DAYS 1 - 15	
Month/Year:	VFC PIN:	Location:	
<small>Instructions: Record temperatures at the beginning and end of each day the office is open. Place an "X" in the box that corresponds with the temperature (rows) and day of the month (columns) for your temperature check. If the temperature is in the shaded range, record the actual temperature in the box. Enter your initials and the time you monitored the temperature in the boxes at the top of the column.</small>			
<b>Refrigerator</b>			
Staff Initials:			
Time:			
Day of Month:	1	2	3
Too high	≥ 49°F	48°F	47°F
	46°F	45°F	44°F
	43°F	42°F	41°F
Room to	40°F		
	39°F		
	38°F		
	37°F		
	36°F		
	35°F		
Too low	34°F	33°F	≤ 32°F
**Take immediate action if temperatures are in the shaded range!**			
<b>Freezer</b>			
Staff Initials:			
Time:			
Day of Month:	1	2	3
Too high	≥ 8°F	7°F	6°F
	5°F	4°F	3°F
Too low	≤ 3°F		
**Take immediate action if temperatures are in the shaded range!**			
<small>**Actions if the temperature recorded is in shaded range: 1) Store vaccines under proper conditions as quickly as possible and 2) call the Philadelphia VFC Program at (215) 685-6728. Do not discard any vaccine without instruction from Philadelphia VFC. Document all actions on the back of this chart.</small>			
<small>Philadelphia Vaccines for Children Program 500 S. Broad Street, Philadelphia, PA 19146 Tel.: (215) 685-6728 Fax: (215) 238-6939</small>			

# Out-of-range Storage Temperatures

If your thermometer is recording an out-of-range temperature (too hot or too cold), record it on the PDPH Temperature Log Form and take these actions:

1. Notify the primary or back-up Vaccine Coordinator immediately of any vaccine storage unit temperature that is outside the recommended range.
2. Complete the PDPH "Emergency Response VFC/VFAAR Vaccine Record" worksheet.
3. Document room temperature, storage unit temperature, the time you discovered the problem, and if water bottles or coolant packs were in the storage unit.
4. Inventory the vaccines affected by this event (except in cases of power loss).
5. Isolate affected vaccine and clearly label "DO NOT USE" and leave in the storage unit.
6. Do not discard vaccine.
7. Contact the Philadelphia Immunization Program and the vaccine manufacturer(s) for further guidance.
8. In the event of a power outage, contact PECO Energy and ask when power is expected to return. Record their response on the PDPH emergency worksheet.

## Other Resources

All Vaccine Storage & Handling Resources will be posted on the **Philadelphia Immunization Program** website: <http://kids.phila.gov>. Check this site first for all Philadelphia Storage & Handling rules, regulations, forms and contact information.

For more information check these resources:

- U.S. Centers for Disease Control and Prevention (CDC):  
<http://www.cdc.gov/VACCINES/RECS/storage/default.htm>
- Epidemiology and Prevention of Vaccine-Preventable Diseases (Pink Book):  
<http://www.cdc.gov/vaccines/pubs/pinkbook/vac-storage.html>
- Immunization Action Coalition (IAC)  
<http://www.immunize.org/clinic/storage-handling.asp>

## Manufacturer Contact Information

**CDC**

404-639-3670

**GlaxoSmithKline (GSK)**

866-475-8222

**Massachusetts Biological Labs**

800-457-4626

**MedImmune**

877-633-4411

**Merck & Co., Inc.**

800-637-2590

**Biotest Pharmaceuticals**

800-458-4244

**Novartis**

877-683-4732

**Pfizer/Wyeth**

800-438-1985

**Sanofi Pasteur**

800-822-2463

**Grifols Biotherapeutics**

800-520-2807

# Contact Information

## Philadelphia Immunization Program

All Philadelphia vaccine storage and handling materials are posted on <http://kids.phila.gov/>

**Shumethia Seal, MPH**

VFC/AFIX Coordinator

215-685-6424

Shumethia.Seal@phila.gov

**Nichole Dantzler, BS**

VFAAR Coordinator

215-685-6837

Nichole.Dantzler@phila.gov

**Veronica P. Alvarez, MPA**

Public Health Advisor

215-685-6498

Veronica.Alvarez@phila.gov

**Christine Wilson**

Vaccine Specialist

215-685-6728

Christine.Wilson@phila.gov

**Adam Howsare**

Data Logger Specialist

215-685-6491

Adam.Howsare@phila.gov

**Justin Gero, MS**

Communications Coordinator

215-685-6854

Justin.Gero@phila.gov



Department of

**Public Health**

CITY OF PHILADELPHIA

LIFE • LIBERTY • AND YOU™