Vaccine Management: Storage and Handling



Massachusetts Department of Public Health Robert Morrison Vaccine Manager

• Vaccine S&H

4/2016 • 1

Presenter Disclosure Information

- I, Robert Morrison, have been asked to disclose any significant relationships with commercial entities that are either providing financial support for this program or whose products or services are mentioned during my presentations.
- I have no relationships to disclose.
- I may discuss the use of vaccines in a manner not approved by the U.S. Food and Drug Administration but in accordance with ACIP recommendations.

Learning Objectives

- Summarize principles of vaccine management
- Describe current vaccine storage and handling recommendations
- Describe preventative measures to maintain refrigerator and freezer temperatures
- Discover a new tool to monitor vaccine temperatures
- List steps to protect vaccine in the event of a power outage or emergency

Why is Vaccine Storage & Handling important?

"Proper vaccine storage and handling practices play a very important role in protecting individuals and communities from vaccine-preventable diseases.

Vaccine quality is the *shared responsibility of everyone*, from the time vaccine is manufactured until it is administered." -CDC

- Proper storage and handling of vaccines protect public health and have contributed to the decrease of vaccine-preventable disease rates
- Storage and handling errors
 - Decrease potency and reduce effectiveness and protection
 - Cost thousands of dollars in wasted vaccine and revaccination
 - o Loss of patient confidence

Guidelines for Compliance

Massachusetts Department of Public Health Division of Epidemiology and Immunization Vaccines for Children Program (VFC)

Guidelines for Compliance with Federal and State Vaccine Administration Requirement

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The following requirements regarding vaccine storage and handling, administration, documentation, reporting and information are in accordance with Section 317 of the Public Health Service Act, federal vaccine contract terms, the specifications of the National Childhood Vaccine Injury Act (NCVIA) of 1986 (Section 2125, of the Public Health Service Act), the Vaccines for Children Program (VFC) (Section 1928 of the Social Security Act) and the Massachusetts Department of Public Health (MDPH) Immunization Program.

A. Appropriate Use of State-supplied Vaccine

- A-1. Providers must use state-supplied vaccine only for those children and adults determined eligible as defined in the most recent versions of the Childhood Vaccine Availability Table, the Adult Vaccine Availability Table and the Summary of the Advisory Committee on Immunization Program website by visiting <u>http://www.mass.gov/dph imm</u> and selecting "Vaccine Management.")
- A-2. VFC-only vaccines (see Childhood Vaccine Availability Table) must be offered only to VFCeligible children. Children < 19 years of age in the following categories are eligible for VFC vaccine:

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- · Enrolled in Medicaid, or
- · Without health insurance, or
- · American Indian (Native American) or Alaska Native, or

guidelines-vaccine-compliance Jan 2016

All vaccine storage and handling and VFC requirements and recommendations are detailed in the Guidelines for Compliance with Federal and State Vaccine Administration Requirements.

 Available on our website: <u>www.mass.gov/dph/imm</u> and click on 'Vaccine Management'

MDPH Immunization Program Website www.mass.gov/dph/imm

Immunization Program Vaccine Management Vaccine Management Guidelines and Forms The Immunization Program is committed to promoting MIIS citizens by reducing the burden of vaccine preventable • Adult Vaccine Availability Table, 📆 🆷 of the Commonwealth. The mission of the program is • Agreement to Comply with Federal and State Requirements For Participation in the MDPH Immunization Program 📆 🚮 that all individuals are fully immunized in a timely ma CDC Vaccine Information Statements The Immunization Program develops strategies to en re th the Commonwealth are appropriately immunized and have Childhood Vaccine Availability Table. T Bill program is responsible for a variety of wide-ranging inctic Enrollment 2016 Cover Letter 📆 📾 management, distribution and quality assurance; ad inistra Guidelines for Compliance with Federal Vaccine Administration Requirements 2016 📆 📓 Children (VFC) program; analysis of the immuniza ion rate tools, including the National Immunization Survey Behavi Pharmaceutical Grade Refrigerator Requirements – 2016 📆 🗃 System, and Massachusetts Immunization Inform ion Syst ntificatio National Vaccine Injury Table (HRSA) implementation, and maintenance of the MIIS; id immunization disparities; ongoing close collabor tion with New Restitution Policy, Effective January 1, 2016 📆 📓 Control and Prevention (CDC); hepatitis B prev ntion and Patient Eligibility Screening Form for Federally Qualified Health Centers, 📆 🎬 information, education and community outreach vaccine pi surveillance and control; outbreak response; pa demic prep Patient Eligibility Screening Form 📆 🆷 development and implementation of state-wid immunizati · Standards for Child and Adolescent Immunization Practices (Pediatrics) Vaccine Management SOP III Advisories and Alerts • Vaccine Order Form 📆 🚮 Vaccine Return Request Form 📆 🎬 Guidelines and Schedules Vaccine Usage Aggregate Report 📆 📓 VFC Eligibility Screen within an EHR 📆 🆷 Massachusetts Immunizatio Informatio VFC Vaccine Borrowing Report 📆 🎬 VFC Compliance Training Webinar Model Standing Orders • What NOT to Return to McKesson 📆 🖷 2MB Temperature Log and Data Logger Information School Immunizations Fridge Tag 2L Data Logger Infographic Temperature Scale Conversion Chart, 🙉 📆 Vaccine Management Quick Reference Guide-Fridge Tag 2 Data Logger 📆 🆷 Vaccine Freezer Temperature Log 📆 📓 Vaccine Preventable Diseases Vaccine Refrigerator Temperature Log 📆 🖷

• Temperature Troubleshooting Record 📆 😹

CDC Storage and Handling http://www.cdc.gov/vaccines/recs/storage/



Vaccine Management

- Each provider should designate one staff member to be the Vaccine Coordinator and one back up person who is able to perform the same responsibilities.
- The Vaccine Coordinator must train other staff responsible for managing the vaccine supply.



Vaccine Management Plans

- Providers should have written vaccine management standard operating procedures (SOP) which are reviewed or updated annually or when there is a new Vaccine Coordinator.
- All staff who are responsible for handling or administering vaccines must acknowledge reading the practice's SOP by signing and dating the document.



Components of Vaccine Management Standard Operating Procedure (SOP)

- Proper storage and handling of vaccines
- Vaccine receiving
- Procedure for vaccine relocation in the event of power or equipment failure
- Vaccine ordering and inventory control
- Handling damaged or expired vaccines
- Protocols for response when vaccine is stored out of temperature range
- A sample copy of MDPH's SOP for Vaccine Management can be found on our website

Updating SOP

- Update SOP annually or with any changes.
 - Have all staff who handle or administer vaccines read the updated SOP and sign and date the last page.
 - o Post the SOP on the vaccine refrigerator.
 - Have any new staff member read and sign the SOP as part of their training.

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Vaccine Coordinator Responsibilities

- Order vaccine and oversee inventory
- Receive vaccine and refrigerate/freeze
 immediately
- Provide proper storage and handling
- Handle damaged, wasted and expired vaccine
- Respond when vaccine is out of required temperature range
 - Contact MDPH Vaccine Unit to determine if vaccine has been damaged (617-983-6828)

Vaccine Inventory Management

- Limit access to authorized personnel
- Order vaccines regularly, do not stockpile
- Organize vaccine with shortest shelf life in front
- Conduct and log vaccine inventory monthly
- Rotate vaccines and monitor expiration dates

Receiving Vaccine

- Examine shipment immediately upon arrival
- Report problems to MDPH within two hours
- Check contents against packing slip
- Check vaccine expiration dates
- Examine contents for damage
- Check temperature monitor
- Immediately place in appropriate storage
- Keep a shipping box on hand to use when returning any damaged or expired vaccine

Vaccine Storage

- Maintain refrigerator temperature between 2°C to 8°C (35°F and 46°F).
- Maintain freezer temperature between -50°C and -15°C (-58°F and +5°F) for Varivax, ProQuad, and Zostavax vaccines.
- Place temperature data logger in a central area of the storage units adjacent to the vaccines and away from any air vents.

Common Adult Vaccines

Refrigerator

- Hepatitis A
- Hepatitis B
- Human Papillomavirus (HPV)
- Measles, Mumps, Rubella (MMR)
- Meningococcal Conjugate (MCV4)
- Meningococcal Group B
- Pneumococcal Conjugate

Refrigerator

- Pneumococcal
 Polysaccharide
- Tetanus and Diphtheria (Td)
- Tetanus, Diphtheria, Acellular Pertussis (Tdap)

Freezer

- Varicella
- Zoster

Vaccine Storage Units

- CDC and MDPH strongly recommend stand alone refrigerators and stand alone freezers.
- Beginning in 2016, MDPH now requires a pharmacy grade stand alone refrigerator for all sites that administer vaccines to children.
- A stand alone freezer that can maintain the proper temperatures will be acceptable.

Pharmaceutical Grade Refrigerator

- Although there is no clear description of a pharmaceutical refrigerator, we have identified the following characteristics:
 - Internal fans to disperse cold air throughout the unit, eliminating cold pockets of air
 - o Wire racks to allow better air flow
 - o No storage bins, or shelves on door
 - Typically, pharmaceutical grade refrigerators have a narrow operating range (less than 2 Celsius degrees or 3 Fahrenheit degrees)

Loading Vaccines

- Keep vaccines in original manufacturer packaging
 - Don't remove individual vials from cardboard boxes
- Place vaccine boxes in trays
- Organize vaccines by type, state/private, to facilitate quick retrieval and minimize time with refrigerator door open
- Avoid over-filling refrigerator and hindering air circulation
 - Do not store vaccines on the bottom shelf or near vents



Stabilize Your Refrigerator

Stabilize your refrigerator temperatures by placing water bottles where vaccine should not be stored (on bottom shelf)





Store cold packs in the refrigerator as part of your emergency preparedness, in case you need to transport vaccine during an emergency.

Unacceptable Vaccine Storage



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Unacceptable Vaccine Storage





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Certified Calibrated Thermometers

CERTIFICATE of CONFORMANCE &ACCURACY This thermometer identified by Serial No. was compared with a Standard calibrated at the National Institute of Standards and Technology (NIST), formerly the National Bureau of Standards (NBS); and was found to be within one scale division. The indications of this thermometer are traceable to N.I.S.T. The standard Serial No. is 59001 The NIST Identification No. is 119016 APR 2 3 2003 TEST DATE 173.14 QUALITY SINCE Clifton Thomas, Quality Control Supervisor 1942 Ever-Ready Thermometer Co., Inc. 228 Lackawanna Avenue West Paterson, NJ 07424 Phone 973/812-7474 Fax 973/812-7475 THE VALIDITY OF THIS CERTIFICATE & INSTRUMENT IS ONE YEAR.



Monitor Temperatures

- Record temperatures twice daily
 - First thing in the morning
 - End of the work day
 - Temperature logs must be retained for at least 3 years
 - Monitor for out-of-range temperatures
- Place temperature logs on front of unit

Appropriate Temperature Monitoring & Documentation

- NIST certified calibrated digital data loggers for continuous 24-hour temperature monitoring for all primary vaccine storage units at all pediatric providers (any site that administers vaccines to those <19 years of age) is now required by MDPH.
- These data loggers should have a biosafe glycolencased detachable temperature probe.
- The data logger must record the minimum and maximum temperature each day.
- Providers must still physically acknowledge the high/low temperatures at least twice daily.

Appropriate Temperature Monitoring & Documentation

- Although data loggers are recommended for secondary vaccine storage units, using an NIST certified, calibrated, biosafe glycol-encased probe thermometer is acceptable.
 - Temperatures must be recorded twice daily (AM and PM) for all secondary vaccine storage units.
 - Preferably at the start of the work day and the end of the work day.
 - Recording of daily min/max temperatures, initials of person who checked temperatures, and time temperatures checked is also required.
- Logs must be reviewed for:
 - Completeness.
 - Out of range temperatures.

Appropriate Temperature Monitoring & Documentation

- Immediate action must be taken if temperatures are out of range.
- For state-supplied vaccines, report all vaccine storage issues, including temperature excursions, to:
 Vaccine Management Unit at 617-983-6828.
- For privately purchased vaccines, contact each manufacturer to determine if you can continue to administer their vaccine.

Data Loggers



- Come in all shapes and sizes
- Must be NIST certified
- Able to measure product temperature with a detachable probe

MDPH Has Provided Fridge-tag2L® Logger to All Pediatric Providers

- NIST certified
- No software required; easy to install and use
 Simple YouTube instructional videos
- All pediatric practices have received one refrigerator and one freezer unit
 - o Can purchase additional units at state pricing



Fridge-tag 2L® Loggers

Refrigerator





Freezer

Calibration reports

Refrigerator

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Freezer

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Burns 100mm PRT Pro Laboratory Environmental Conditio Thermoneter Integrity: Comptet wall impedion for any physical cent Calibration Proceedings with 150/CET The StateGorden Used: The NRT Integrity of the StateGorden Used StateGorden The StateGorden Th	nt: <u>Temperature H</u> 2013 € +6 °C 40 per 1013 € 400 C 400 C 400 per 1013 € 400 C 400	1096 1095 el 853277 mildfty Orisite Calibrat 51-60% Yes described thermometer laster addecalizationicn laboratory diffe calibration for producing or metric associated with the mess	12/10/2015 12/10/2015 12/10/2015 12/10/2015 12/10/2015 12/10/2015 suffs that are trace arement result ropo suffs that are trace arement result ropo	12/10/2016 12/10/2016 12/10/2016 12/10/2016 12/10/2016 NIST traceable reference able to NIST and through field in this certificate is and this certificate is
Burn 100mm PRT Pro	membershure	Topic 1006 1005 as a state of the state of t	12/10/2015 12/10/2015 12/10/2015 12/10/2015 12/10/2015 10/0 above against the comparison mattrod multis that are trace arement result report balance or noone resources	12/10/2016 12/10/2018 12/10/2018 12/10/2016 NIST Indoceable reference able to NIST and through able to NIST and through able to NIST and through able to NIST and through
Burna 100cm PRT Pro Laboratory Environmental Condition Thermometer Integrity: Control water integrity: Control water integrity: Calibration Proceedings with Biolife's Calibration Proceedings with Biolife's Provide State of the State of the State State of the State of the State of the State State of the State of the State of the State State of the State of the State of the State State of the State of the State of the State State of the State of the State of the State State of the State of the State of the State State of the State of the State of the State Calibration Technician :	the second	Topic State Calibration State	12102015 12102015 12102015 1220020000000000	NIST traceable references and the contract of the the contract

Closer Measurement of Vaccine Temperature

- Fridge-tag2L[®] Logger measures the temperature of a 5 ml glycol solution
- Most vaccines are 1 ml or less
- Minimum and maximum temperatures being measured more closely reflect the temperature of the vaccine and with more sensitivity to temperature fluctuations
- Traditional bottle thermometer measures the temperature of a 30 ml glycol solution

Documenting Temperature

- With the Fridge-tag2L® you can document temperatures 2x/day, with time, initials and min/max temp by pressing the 'Read' button 2x/day
- Infographic on MDPH website
 <u>www.mass.gov/dph/imm</u> under 'Vaccine Management'



Vaccine S&H

4/2016 • 33

Reviewing temp logs

PDF document of the Fridge-tag® 2 L

5min

Identification number: Date and time of report creation: Activation date: 510500000127 04/11/2016 07:59h 01/27/2016 11:11h

Upper alarm limit: Lower alarm limit:

Measurement interval:¹⁾ Logging interval: Above +8.0°C for 1h Below +2.0°C for 15min 1min (fixed)

				l ower alar	m limit			Upper alar	m limit			Ext senso	r connection	error	1
No	. Date (MM/dd/yyyy)	Events ²⁾	Average temp.	Status	Min. temp.	Cumulative daily time below the limit	Alarm trigger time	Status	Max. temp.	Cumulative daily time above the limit	Alarm trigger time	Status	Duration	Alarm trigger time	Signature / notes Action taken
1	Today	05:46	+4.5°C	In progress	+4.1°C	Omin		In progress	+4.9°C	Omin		In progress	11min		
2	04/10/2016		+4.5°C	ok	+4.2°C	Omin		ok	+4.9°C	Omin		ok	Omin		
3	04/09/2016		+4.5°C	ok	+4.2°C	Omin		ok	+4.9°C	Omin		ok	Omin		
4	04/08/2016	15:34	+4.5°C	ok	+4.3°C	Omin		ok	+5.2°C	Omin		ok	Omin		
5	04/07/2016	05:47,15:38	+4.5°C	ok	+4.2°C	Omin		ok	+5.0°C	Omin		ok	3min		
6	04/06/2016	05:50,15:43	+4.5°C	ok	+4.3°C	Omin		ok	+4.9°C	Omin		ok	Omin		
7	04/05/2016	05:48,15:42	+4.5°C	ok	+4.3°C	Omin		ok	+4.9°C	Omin		ok	Omin		
8	04/04/2016	05:46,15:46	+4.5°C	ok	+4.3°C	Omin		ok	+5.1°C	Omin		ok	Omin		
9	04/03/2016		+4.5°C	ok	+4.3°C	Omin		ok	+5.1°C	Omin		ok	Omin		
10	04/02/2016		+4.5°C	ok	+4.3°C	Omin		ok	+5.1°C	Omin		ok	Omin		
11	04/01/2016	05:46,15:35	+4.5°C	ok	+4.2°C	Omin		ok	+5.2°C	Omin		ok	Omin		
12	03/31/2016	05:48,15:29	+4.4°C	ok	+4.1°C	Omin		ok	+5.1°C	Omin		ok	Omin		
13	03/30/2016	05:51,15:47	+4.4°C	ok	+4.0°C	Omin		ok	+5.0°C	Omin		ok	Omin		
14	03/29/2016	05:48,15:38	+4.4°C	ok	+4.1°C	Omin		ok	+5.0°C	Omin		ok	Omin		
15	03/28/2016	05:45,15:44	+4.4°C	ok	+4.1°C	Omin		ok	+5.1°C	Omin		ok	Omin		
16	03/27/2016		+4.4°C	ok	+4.1°C	Omin		ok	+5.0°C	Omin		ok	Omin		
17	03/26/2016		+4.4°C	ok	+4.1°C	Omin		ok	+5.0°C	Omin		ok	Omin		
18	03/25/2016	05:48,15:44	+4.4°C	ok	+4.1°C	Omin		ok	+4.9°C	Omin		ok	Omin		
19	03/24/2016	05:44,15:32	+4.4°C	ok	+4.1°C	Omin		ok	+5.1°C	Omin		ok	Omin		
20	03/23/2016	05:44,15:44	+4.4°C	ok	+4.0°C	Omin		ok	+4.9°C	Omin		ok	Omin		
21	03/22/2016	05:45,15:39	+4.4°C	ok	+4.1°C	Omin		ok	+5.1°C	Omin		ok	Omin		
22	03/21/2016	06:42	+4.4°C	ok	+4.1°C	Omin		ok	+5.1°C	Omin		ok	Omin		
23	03/20/2016		+4.4°C	ok	+4.1°C	Omin		ok	+5.0°C	Omin		ok	Omin		
24	03/19/2016		+4.4°C	ok	+4.1°C	Omin		ok	+5.1°C	Omin		ok	Omin		
25	03/18/2016	05:53,15:13	+4.4°C	ok	+4.1°C	Omin		ok	+5.1°C	Omin		ok	Omin		
26	03/17/2016	05:49,15:43	+4.4°C	ok	+4.0°C	Omin		ok	+5.1°C	Omin		ok	Omin		
27	03/16/2016	05:41,15:33	+4.5°C	ok	+4.1°C	Omin		ok	+5.2°C	Omin		ok	Omin		
28	03/15/2016	05:48.15:39	+4.5°C	ok	+4.3°C	Omin		ok	+5.0°C	Omin		ok	Omin		

1) Sampling and data analysis every minute

2) t = time / date changed, hh:mm = status checked

Freezer Tag Example #1

Upper Alarm Limit – the frequency of alarms and the duration out of range

				Lower alarr	n limit				Unper alar	m limit				Ext sensor	connection	BULOK]
10.	Date (MM/dd/yyyy)	Events*	Average temp.	Status	Min. temp.	Duration out of range	Alarm trigger time	Alarm ambient temp.	Status	Max. temp.	Duration out of range	Alarm trigger time	Alarm ambient temp.	Status	Duration	Alann trigger time	Signature / notes Action taken
_31.	02/12/2016		-25.7°C-	ok	-26.0°C	Omin			ok		Omin			- ok	Omin		
32	02/11/2016		-25.7°C	ok	-26.1 °C	Omin			lok	-25.4°C	Omin	+	1	lok	Omin		1
33	02/10/2016		-19.3°C	ok	-28.0°C	Omin		1	ALARMI	1-10.7°C	6h 7min	01:14h	+13.6°C	lok	Omin	1	
34	02/09/2016		-16.0°C	ok	-20.3°C	Omin			ALARMI	-10.5°C	8h 39min	01:38h	+13.0°C	lok	Omin		
35	02/08/2016		-15.8°C	ok	-19.7°C	Omin	1		ALARMI	-11.0°C	9h 34min	01:48h	+14.1°C	ook	Omin		
36	02/07/2016		-15.2°C	ok	-19.1°C	Omin		T	ALARM!	-10.7°C	11h 19min	00:15h	+13.6°C	ok	Omin		
37	02/06/2015		-15.5°C	ok	-19.5°C	Omin			ALARM!	-10.6°C	10h 13min	00:54h	+13.7°C	ok	Omin		1
38	02/05/2016		-16.4°C	ok	-20.3°C	Omin			ok	-12.1°C	7h 18min	1	1	ok	Omin	1	
39	02/04/2016		-17.2°C	ok	1-20.9°C	Omin			ok	-12.6°C	4h 48min	1	1	ok	Omin	1	
10	02/03/2016		-16.5°C	ok	-21.0°C	Omain		T	ALARM	-11.0°C	7h 5mán	03:58h	+14.4°C	ok	Omin	1	1
\$1	02/02/2016		-16.9°C	ok	-21.2°C	Omin			ALARMI	1-11.5°C	5h 59min	08:14h	+13.9°C	ok	Omin		1
\$2	02/01/2016		-16.6°C	ok	-20.7°C	Omin			ALARMI	-11.0°C	Sh 42min	00:27h	+14.1°C	ok	Ormin		1
13	01/31/2016		-15.2°C	ok	-19.4°C	Omin		T	ALARMI	-10.4°C	1th 13min	00:000	+13.6°C	ok	Omin	1	
14	01/30/2016		-15.3°C	ok	-19.6°C	Omin _			ALARM	-10.5°C	11h 9min	00:20h	+14.3°C	ok	Omin	-	
15	01/29/2016		-16.2°C	ok	-20.7°C	Omin			ALARMI	-11.3°C	8h 35min	02:20h	+13.8°C	ok	Omin	1	
16	01/28/2016		-16.1°C	ok	-20.6°C	Omin			ALARMI	-10.6°C	8h 31min	02:45h	+13.5°C	ok	Omin	1	
17.	01/27/2016		-16.3°C	loik	-20.9°C	Omin			ALARMI	-10.3°C	7h 25min	00:00h	+14.1°C	ok	Omin		
18	01/26/2016		-15.8°C	ok	-20.0°C	Omin			ALARM	-10.2°C	9h 26min	00:56h	+13.4°C	lok	Omin	1	
19	01/25/2016		-15.5°C	ok	-20.3°C	Omin			ALARMI	-9.6°C	9h 20min	01:08h	+13.0°C	ok	Omin		
50	01/24/2016		-14.7°C	ok	-19.0°C	Omin			ALARMI	-9.3°C	12h 15min	02:14h	+12.9°C	ok	Omin		
31	01/23/2015		-14.4°C	ok	-19.1°C	Omin			ALARMI	-9.2°C	13h 17min	00:00h	+13.1°C	ok	Omin		
32	01/22/2016		-14.9°C	ok	-19.5°C	Omin	1		ALARM	-9.3°C	11h 58min	00:00h	+13.0°C	ok	Omin	1	
23	01/21/2016		-15.1°C	ok	-19.9°C	Omin	1		ALARM	-9.3°C	11h 25min	00:18h	+13.1°C	ak	Omin	1	
54	01/20/2016		-15.1°C	ok	-19.6°C	Omin			ALARMI	-8.9°C	11h 22min	00:00h	+12.9°C	ok	Omin		1
55	01/19/2016		-15.4°C	ok	-20.2°C	Omin			ALARMI	-9.7°C	10h 47min	00:25h	+13.8°C	ok	Omin	1	1
56	01/18/2016		-15.9°C	ok	-20.3°C	Omin			ALARM	-10.2°C	9h 25min	01:51h	+13.1°C	ok	Omin		
57	01/17/2016		-16.0°C	ok	-19.7°C	Omin			ALARMI	-10.2°C	11h 58min	00:11h	+13.3°C	ok	Omin	1	
58	01/16/2016		-15.0°C	ak	-19.6°C	Omin			ALARMI	-10.3°C	11h 55min	01:25h	+13.4°C	ok	Omin		
39	01/15/2016		-15.5°C	ok	-19.7°C	Omin		1	ALARM!	-10.4°C	10h 30min	04:18h	+13.1°C	ok	Omin	1	
30	01/14/2016		-16.1°C	ok	-20.6°C	Onein	1	1	ALARM!	-9.9°C	Sh 11min	00:00h	+13.6°C	ok	Omin	1	

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Fridge Tag Example #2

Upper Alarm Limit – shows ALARM, with a maximum temp of +11.4°C, with 3h 23min out of range with an alarm triggered time 21:39h (9:39PM)

			Lower alar	m ilmit			Upper alar	m limit			Ext. senso	r connectio	n error	
ta Middlyyyyy	Events ²⁾	Average temp.	Stalus	Min. temp.	Cumulative daily time below the limit	Alarm trigger time	Status	Max. temp.	Cumutative daily time above the timit	Alanni trigger time	Status	Duration	Alarm trigger time	Signature / notes Action taken
day	08:51	+3.8°C	In progress	+3.5°C	Onvin		In progress	+4.7°C	Dmin		In progress	Omin		
20/2016		+9.0°C	ok	+3.5°C	Omin		ALARMI	+16.2°C	12h 7min	00:00h	ak	Omin		
/19/2016	09:06	+5.1°C	ok	+3.8°C	Dznin		ALARMI	+11.4°C	3h 23min	21:39h	ok	Omin		
18/2016	09:49	+4.2°C	ok	+3.7°C	Ocnin		ok	+6.6°C	Omin		ok	Omin		
17/2016	1,09:05,12:48	+4.7°C	ok	+3.8°C	<u> ûmin</u>		ok	+10.4°C	26min		ALARM	17 min	09:04h	
					1									
	e Alddlyyyyy 20/2016 19/2016 18/2016 17/2016	e Events ²⁾ A/dd/yyyy) lay 08:51 20/2016 19/2016 09:06 18/2016 09:49 17/2016 L09:05,12:48	e Events ²⁾ Average temp. lay 08:51 +3.8°C 20/2016 +9.0°C 19/2016 09:06 +5.1°C 18/2016 09:49 +4.2°C 17/2016 L09:05,12:48 +4.7°C	Events ²⁾ Average temp. Status //dd/yyyy 1 43.8°C In progress /ay 06:51 +3.8°C In progress /20/2016 +9.0°C ok 04 /9/2016 09:06 +5.1°C ok /8/2016 09:49 +4.2°C ok /7/2016 L09:05,12:48 +4.7°C ok	Events ²⁾ Average temp. Stalus Min. temp. lay 08:51 +3.8°C In progress +3.5°C 20/2016 +9.0°C ok +3.5°C 19/2016 09:06 +5.1°C ok +3.9°C 18/2016 09:06 +5.1°C ok +3.8°C 18/2016 09:05,12:48 +4.7°C ok +3.8°C	Events ²⁾ Average temp. Status Min. temp. Cumulative daily time below the limit lay 08:51 +3.8°C In progress +3.5°C Omin 20/2016 +9.0°C ok +3.5°C Omin 19/2016 09:06 +5.1°C ok +3.9°C Omin 18/2016 09:09 +4.2°C ok +3.8°C Omin 17/2016 L09:05,12:48 +4.7°C ok +3.8°C Omin	Events ²⁾ Average temp. Status Min. temp. Cumulative daily time below the limit Alarm trigger time lay 06:51 +3.8°C In progress +3.5°C Omin 10/2016 10/2016 10/2016 10/2016 10/2016 00/2016 10/2016 00/2016 10/2016 00/2016 00/2016 00/2016 00/2016 10/2016 00/2016 </td <td>Events²⁾ Average temp. Status Min. temp. Cumulative temp. Alarm trigger Status lay 06:51 +3.8°C In progress +9.5°C Dmin In progress 1000000000000000000000000000000000000</td> <td>Events21 Average Mdd/yyyy Status Min. temp. Cumulative daily time below the limit Atern Wigger time Status Max. temp. lay 06:51 +3.8°C In progress +9.5°C 0min In progress +4.7°C 20/2016 +9.0°C ok +3.5°C 0min ALARMI +16.2°C 19/2016 09:06 +5.1°C ok +3.8°C 0min ALARMI +11.4°C 18/2016 09:05, 12:48 +4.7°C ok +3.8°C 0min ok +6.6°C 17/2016 L09:05, 12:48 +4.7°C ok +3.8°C 0min ok +10.4°C</td> <td>e Events²¹ Average temp. Status Min. temp. Cumulative daily time below the limit Atam, trigger Status Max. temp. Cumutative daily time below the limit lay 06:51 +3.6°C In progress +3.5°C Dmin In progress +4.7°C Dmin 20/2016 +9.0°C ok +3.5°C Omin ALARMI +16.2°C 12h 7min 19/2016 09:06 +5.1°C ok +3.8°C Dmin ALARMI +11.4°C 3h 23min 18/2016 09:05, 12:48 +4.7°C ok +3.8°C Omin ok +6.6°C Omin 17/2016 L09:05, 12:48 +4.7°C ok +3.8°C Omin ok +10.4°C 26min</td> <td>e Average Status Min. Cumulative Alarm Status Max. Cumutative Alarm Akddyyyy below temp. below the limit time Status Max. Cumutative Alarm ay 06:51 +3.6°C in progress +3.5°C Dmin In progress 44.7°C Dmin above the limit time 20/2016 +9.0°C ok +3.5°C Omin ALARMI +16.2°C 12h 7min 00:00h 19/2016 09:06 +5.1°C ok +3.8°C Dmin ALARMI +11.4°C 3h 23min 21:39h 18/2016 09:05, 12:48 +4.7°C ok +3.8°C Omin ok +6.6°C Omin 77/2016 L09:05, 12:48 +4.7°C ok +3.8°C Omin ok +10.4°C 26min</td> <td>Events²¹ Average temp. Status Min. temp. Cumulative daily time below the limit Alarm trigger time Status Max. temp. Cumulative daily time above the limit Alarm trigger time Status 20/2016 +3.0°C 0k +3.5°C 0min ALARMI +16.2°C 12h 7min 00:00h 0k 18/2016 09:05, 12:48 +4.7°C 0k +3.8°C 0min 0k +10.4°C 26min ALARM 17/2016 109:05, 12:48 +4.7°C 0k +3.8°C<td>Events²¹ Average temp. Status Min. temp. Cumulative daily time below the limit Atemn trigger time Status Max. temp. Cumutative daily time above the limit Atamn trigger time Max. temp. Cumutative daily time above the limit Atamn trigger time In progress the time Max. temp. Cumutative daily time time<td>Events²¹ Average temp. Status Min. temp. Cumulative daily time below the limit Alarm trigger time Max. temp. Cumulative daily time above the limit Alarm trigger time Status Max. temp. Cumulative daily time above the limit Alarm trigger time Status Max. temp. Cumulative daily time above the limit Alarm trigger time Status Duration Alarm trigger time 20/2016 +3.8°C In progress +3.5°C 0min ALARMI +16.2°C 12h 7min 00:00h ak 0min Alarm trigger 19/2016 09:06 +5.1°C ok +3.8°C 0min ALARMI +16.2°C 12h 7min 00:00h ak 0min 18/2016 09:05 +5.1°C ok +3.8°C 0min ok +6.6°C 0min 0k 0min 17/2016 L09:05, 12:48 +4.7°C ok +3.8°C 0min ok +10.4°C 26min ALARM 17min 09:04h</td></td></td>	Events ²⁾ Average temp. Status Min. temp. Cumulative temp. Alarm trigger Status lay 06:51 +3.8°C In progress +9.5°C Dmin In progress 1000000000000000000000000000000000000	Events21 Average Mdd/yyyy Status Min. temp. Cumulative daily time below the limit Atern Wigger time Status Max. temp. lay 06:51 +3.8°C In progress +9.5°C 0min In progress +4.7°C 20/2016 +9.0°C ok +3.5°C 0min ALARMI +16.2°C 19/2016 09:06 +5.1°C ok +3.8°C 0min ALARMI +11.4°C 18/2016 09:05, 12:48 +4.7°C ok +3.8°C 0min ok +6.6°C 17/2016 L09:05, 12:48 +4.7°C ok +3.8°C 0min ok +10.4°C	e Events ²¹ Average temp. Status Min. temp. Cumulative daily time below the limit Atam, trigger Status Max. temp. Cumutative daily time below the limit lay 06:51 +3.6°C In progress +3.5°C Dmin In progress +4.7°C Dmin 20/2016 +9.0°C ok +3.5°C Omin ALARMI +16.2°C 12h 7min 19/2016 09:06 +5.1°C ok +3.8°C Dmin ALARMI +11.4°C 3h 23min 18/2016 09:05, 12:48 +4.7°C ok +3.8°C Omin ok +6.6°C Omin 17/2016 L09:05, 12:48 +4.7°C ok +3.8°C Omin ok +10.4°C 26min	e Average Status Min. Cumulative Alarm Status Max. Cumutative Alarm Akddyyyy below temp. below the limit time Status Max. Cumutative Alarm ay 06:51 +3.6°C in progress +3.5°C Dmin In progress 44.7°C Dmin above the limit time 20/2016 +9.0°C ok +3.5°C Omin ALARMI +16.2°C 12h 7min 00:00h 19/2016 09:06 +5.1°C ok +3.8°C Dmin ALARMI +11.4°C 3h 23min 21:39h 18/2016 09:05, 12:48 +4.7°C ok +3.8°C Omin ok +6.6°C Omin 77/2016 L09:05, 12:48 +4.7°C ok +3.8°C Omin ok +10.4°C 26min	Events ²¹ Average temp. Status Min. temp. Cumulative daily time below the limit Alarm trigger time Status Max. temp. Cumulative daily time above the limit Alarm trigger time Status 20/2016 +3.0°C 0k +3.5°C 0min ALARMI +16.2°C 12h 7min 00:00h 0k 18/2016 09:05, 12:48 +4.7°C 0k +3.8°C 0min 0k +10.4°C 26min ALARM 17/2016 109:05, 12:48 +4.7°C 0k +3.8°C <td>Events²¹ Average temp. Status Min. temp. Cumulative daily time below the limit Atemn trigger time Status Max. temp. Cumutative daily time above the limit Atamn trigger time Max. temp. Cumutative daily time above the limit Atamn trigger time In progress the time Max. temp. Cumutative daily time time<td>Events²¹ Average temp. Status Min. temp. Cumulative daily time below the limit Alarm trigger time Max. temp. Cumulative daily time above the limit Alarm trigger time Status Max. temp. Cumulative daily time above the limit Alarm trigger time Status Max. temp. 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Fridge Tag Example #3

Upper Alarm Limit – shows ALARM, with a maximum temp of +11.5°C, with 4h 53min out of range with an alarm triggered time 20:19h (8:10PM)

				Lower ala	rm limit		****		Upper ala	rm limit			20.00	Ext. sensor connection error			7
No.	Date (MM/dd/yyyy)	Events*	Average temp.	Status	Min. temp.	Duration out of range	Alarm trigger time	Alarm ambient temp.	Status	Max. temp.	Duration out of range	Alarm trigger time	Alarm ambient temp.	Status	Duration	Alarm trigger time	Signature / notes Action taken
31	01/31/2016		+5.3°C	ok	+4.8°C	Omin	10		ok	+6.2°C	Omin		- Winter	ok	Omin		
32	01/30/2016		+5.3°C	ok	+4.8°C	Omin		1	ok	+6.1°C	Omin			ok	Omin		· · · · · · · · · · · · · · · · · · ·
33	01/29/2016	am	+5.5°C	ok	+4.6°C	Omin		- 100 - 100 P	ok	+7.1°C	Omin			ok	Omin		
34	01/28/2016	am,pm	+5.4°C	ok	+4.7°C	Omin		-	ok	+6.6°C	Omin			lok	Omin		
35	01/27/2016	pm	+5.8°C	ok	+5.0°C	Omin			ok	+6.9°C	Omin	1		lok	Omin	1	
36	01/26/2016	am	+5.7°C	ok	+4.9°C	Omin	-		ok	+7.6°C	Omin		1	lok	Omin	-	
37	01/25/2016	am,pm	+5.6°C	ok	+4.7°C	Omin			ok	+7.0°C	Omin			lok	Omin		
38	01/24/2016		+5.1°C	ok	+4.6°C	Omin			ok	+5.8°C	Omin	-		ok	Omin	****	
39	01/23/2016		+5.1°C	ok	+4.6°C	Omin			ok	+6.1°C	Omin			ok	Omin	1	
40	01/22/2016	am,pm	+5.6°C	ok	+4.5°C	Omin			ok	+6.9°C	Omin	1		ok	Omin	-	
41	01/21/2016	am.pm	+5.8°C	ok	+4.7°C	Omin		1 1000	ok	+8.4°C	14min			ok	Ûmin	-	1 211F
12	01/20/2016	am,pm	+5.8°C	ok	+5.0°C	Omin			ok	+7.6°C	Omin	1	a	ok	Omin		
13	01/19/2016		+5.3°C	ok	+3.9°C	Omin			ok	+7.6°C	Omin		-	ok	Omin	-	1. Sector - 007
44	01/18/2016		+4.7°C	ok	+4.1°C	Omin			ok	+5.5°C	Omin	-		ok	Omin	1	
45	01/17/2016	(+4.8°C	ok	+4.2°C	Omin			ok	+5.6°C	Omin			lok	Omin	-	
16	01/16/2016		+5.2°C	ok	+4.5°C	Omin			ok	+6.0°C	Omin			lak	Omin		
17	01/15/2016	am	+5.4°C	ok	+4.5°C	Omin			ok	+6.6°C	Omin			ok	Omin		
18	01/14/2016		+5.4°C	ok	+4.3°C	Omin			ok	+7.9°C	Omin			ok	Omin		
19	01/13/2016	am,pm	+5.6°C	ok	+4.9°C	Omin			ok	+6.9°C	Omin			ok	Omin	1	
50	01/12/2016	am	+5.2°C	ok	+3.8°C	Omin			ok	+7.1°C	Omin		1	ok	Omin		
51	01/11/2016	am	+5.5°C	ok	+4.2°C	Omin		NORCOMPOSE	ok	+8.0°C	Omin			ok	5min		
52	01/10/2016	am,pm	+4.8°C	ok	+4.3°C	Omin			ok	+5.6°C	Omin			ok	Omin		
53	01/09/2016	am,pm	+8.1°C	ok	+4.4°C	Omin			ALARM	+11.5°C	12h 25min	00:00h	+22.6°C	ok	2min		1 10 Marca
54	01/08/2016	pm	+6.3°C	ok	+4.5°C	Omin		1	ALARM	+11.5°C	4h 53min	20:10h	+22.1°C	ok	Omin		
55	01/07/2016	1994	+5.3°C	ok	+4.4°C	Omin			ok	+6.6°C	Omin			ok	Omin	-	
56	01/06/2016	pm	+5.3°C	ok	+4.5°C	Omin			ok	+6.5°C	Omin			ok	Omin	-	
57	01/05/2016	am	+5.5°C	ok	+4.5°C	Omin			ok	+7.2°C	Omin	1		lok	Omin		
58	01/04/2016	am	+5.4°C	ok	+4.2°C	Omin			ok	+7.1°C	Omin			ok	Omin	-	
59	01/03/2016		+4.7°C	ok	+4.0°C	Omin	1		ok	+5.5°C	Omin			ok	Omin	-	
60	01/02/2016		+4.7°C	ok	+4 1°C	Omin	-		ok	+5.5°C	Omin		1	lok	Omin	1	0% 2.9VV

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Fridge Tag Example #4

Upper Alarm Limit – shows ALARM, with a maximum temp of +13.0°C, with 30min out of range with an alarm triggered time 16:56h (4:56PM)

· · · · · · · · · · · · · · · · · · ·		Lower alarm limit					Upper alarm limit					Ext. sensor connection error			1	
lo. Date (dd.MM.yyyy	Events*	Average temp.	Status	Min. temp.	Duration out of range	Alarm trigger time	Alarm ambient temp.	Status	Max. temp.	Duration out of range	Alarm trigger time	Alarm ambient temp.	Status	Duration	Alarm trigger time	Signature / notes
1 31.01.2016		+5.3°C	ok	+5.0°C	Omin			ok	+5.7°C	Omin	1	1 a a	ok	Omin		
2 30.01.2016		+5.3°C	ok	+5.0°C	Omin		1999	ok	+5.7°C	Omin		1	ok	Omin		
3 29.01.2016		+5.2°C	ok	+4.9°C	Omin			ok	+5.8°C	Omin			ok	Omin		
4 28.01.2016		+5.2°C	ok	+4.8°C	Omin			ok	+5.6°C	Omin			ok	0min		
5 27.01.2016		+5.2°C	ok	+4.9°C	Omin			ok	+6.2°C	Omin			ok	0min		
6 26.01.2016		+5.2°C	ok	+4.8°C	Omin			ok	+5.9°C	Omin			ok	Omin		
7 25.01.2016		+5.2°C	ok	+4.8°C	Omin			ok	+5.9°C	Omin			ok	0min		
3 24.01.2016		+5.3°C	ok	+5.0°C	Omin			ok	+5.7°C	Omin			ok	Omin		
9 23.01.2016		+5.3°C	ok	+5.0°C	Omin			ok	+5.9°C	Omin			ok	0min	1	
0 22.01.2016		+5.3°C	ok	+5.0°C	Omin			ok	+5.8°C	Omin			ok	Omin		
1 21.01.2016		+5.4°C	ok	+5.0°C	Omin			ok	+5.8°C	Omin			ok .	Omin		
2 20.01.2016	-	+5.4°C	ok	+4.8°C	Omin			ALARM!	+13.0°C	30min	16:56h	+27.3°C	ok	Omin		
3 19.01.2016		+5.1°C	ok	+4.8°C	Omin		V125.32	ok	+5.6°C	Omin			ok	Omin		0
18.01.2016		+5.1°C	ok	+4.9°C	Omin		2	ok	+5.5°C	Omin	1		ok	Omin		
5 17.01.2016	-	+5.1°C	ok	+4.9°C	Omin		n - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 2000 - 20 	ok	+5.5°C	Omin			ok	Omin		Ŷ
6 16.01.2016		+5.2°C	ok	+4.9°C	Omin		17	ok	+5.6°C	0min			ok	Omin		
7 15.01.2016		+5.1°C	ok	+4.9°C	Omin			ok	+6.0°C	Omin			ok	Omin		
3 14.01.2016		+5.1°C	ok	+4.9°C	Omin			ok	+5.5°C	Omin			ok	0min		
3 13.01.2016		+5.2°C	ok	+4.9°C	Omin			ok	+5.7°C	Omin			ok	Omin		
12.01.2016	am	+5.3°C	ok	+4.8°C	Omin			ok	+8.5°C	2min			ok	Omin		
111.01.2016		+5.5°C	ok	+5.1°C	Omin			ok	+8.2°C	1min			ok	Omin		
2 10.01.2016	-	+5.3°C	ok	+5.0°C	Omin			ok	+5.8°C	Omin			ok	Omin	- N C C C C C C C C C C C C C C C C C C	
3 09.01.2016		+5.2°C	ok	+5.0°C	Omin			ok	+5.6°C	0min			ok	Omin		
08.01.2016		+5.2°C	ok	+5.0°C	Omin			ok	+6.2°C	Omin			ok	Omin		
5 07.01.2016		+5.2°C	ok	+5.0°C	Omin			ok	+5.6°C	Omin			ok	Omin		
6 06.01.2016		+5.2°C	ok	+4.9°C	Omin		state at	ok	+5.6°C	Omin		a generation	ok	0min		
05.01.2016		+5.2°C	ok	+5.0°C	Omin			ok	+6.4°C	Omin			ok	Omin		1002801040
3 04.01.2016		+5.3°C	ok	+5.1°C	Omin	12		ok	+6.2°C	Omin			ok .	Omin		
03.01.2016		+5.5°C	ok	+5.2°C	Omin			ok	+5.9°C	Omin			ok	Omin		
02.01.2016		+5.5°C	ok	+5.2°C	Omin			ok	+5.9°C	Omin			ok	Omin		

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Documentation of excursion

- Best practice to use a sample 'Documentation of Temperature Troubleshooting' on MDPH website
- Keeps a record of temperature excursions available

Documentation of	Temperature	Troubleshooting
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Practice Name : DPH Pediatrics PIN : 55555

Date and time of incident	Problem	Date, time, contact person spoken to at MDPH	Action Taken	Initials and date
5/4/2016 4:35pm	Maximum temps in freezer went to -8.7°C for over an hour and triggered an alarm.	5/4/2016 4:40pm Lois Ciccone	Shut freezer door and monitored temperature to ensure it returned to range. The temp returned to -15°C by 5:10pm. Per Lois at the Vaccine Unit, vaccines are ok to use.	SS 5/4/2016

Temperature Adjustment

- If a refrigerator is running on the cold side, or is slowly becoming colder, you should take action
- Never adjust the refrigerator temperature control with vaccine in unit
- Remove vaccine to another refrigerator/freezer
- Adjust temperature of unit
- Wait until you have 3 successive readings one hour apart within range before returning vaccine to the unit

Power Failure

- If you lose power for <u>extended period</u>, follow your emergency plan:
 - pack vaccine
 - transport to prearranged site
 - notify MDPH Vaccine Unit, if state-supplied
- When power returns:
 - do not adjust the temperature control in unit
 - allow unit to return to proper temperature range
 - return vaccine to unit

Safeguard Power Supply

- Use a plug guard or safety-lock plug
- Place "Do Not Unplug" sign on storage unit, outlet and "Do Not Disconnect" on circuit breakers
- Consider installing a temperature alarm
- Do not use extension cords

Safeguard Power Supply



Safeguard Power Supply



Vaccine Storage & Handling Questions

- MDPH Vaccine Management Unit (617) 983-6828
- MDPH Immunization/Epidemiology Division (888) 658-2850 (617) 983-6800 (24x7)
- Always consult with MDPH Immunization Program before removing improperly stored state-supplied vaccine from the storage unit
 - If the temperature of the vaccine goes out of range, either too high or too low, call the MDPH Vaccine Management Unit immediately!

And thanks to you...

To all of the Medical Directors, Back-up Vaccine Coordinators, RNs, MAs, other office staff involved with immunizations at provider offices and, especially, to Vaccine Coordinators,

Thank you for all you do to take care of vaccines and, in turn, take care of your patients and protect them from vaccine preventable diseases!





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