

Temperature Monitoring of Refrigerators, Freezers, Warmers

Office of Origin: Facilities Department

I. PURPOSE

To maintain patient safety by ensuring that correct actions are taken to monitor temperatures in refrigerators, freezers and blanket/fluid warmers used in patient care settings throughout UCSF Medical Center

II. REFERENCES

California Business and Professions Code §1265.j.2

California Code of Regulations Title 22 § 70263

UCSF Administrative Policy, [1.01.31 Tissue Management](#)

UCSF Administrative Policy, [6.09.07 Medication Management: Medication Access and Storage](#)

UCSF Administrative Policy, [6.07.02 Point of Care Testing](#)

Environment of Care Manual, [6.1.0 Medical Equipment](#)

Environment of Care Manual, [7.1.0 Facilities Building Utilities](#)

Nursing, [Automated Temperature Monitoring \(Specimens, POCT Supplies, Breast Milk, and Warmed Fluids\)](#)

Nursing, [Temperature Monitoring and Thermometer Management \(Ambulatory\)](#)

Nutrition & Food Services, [05.510.08 Temperature Monitoring of Refrigerators and Freezers Storing Food](#)

Pathology, AP203 Temperature Monitoring and Management of Specimen and Reagent Storage Areas

Pharmaceutical Services, [110.400 Temperature Monitoring of Medications](#)

Perioperative Services, [1.01.03 Automated Temperature Monitoring](#)

Radiology, [Automated Temperature Monitoring](#)

III. DEFINITIONS

Automated Temperature Monitoring System (ATMS): electronic system that has the ability to continuously monitor and record temperatures of any given asset

Asset: the refrigerator, freezer or warming unit in which products/materials are stored

Key Performance Indicators: reporting tools utilized to track assets, compliance and inventory for the preventative maintenance of equipment licensed under the Medical Center

Manual Temperature Monitoring: the modality for temperature monitoring used in areas not supported by ATMS/RFID and in the event of power loss and ATMS/RFID infrastructure failure

Medical Center Support Services Service Now: centralized work order system used by Medical Center employees; utilized to submit work orders into Facilities, Clinical Engineering, Security, Materiel Services, Hospitality, and Safety. <https://ucsf.service-now.com/fss/fss.do>

NIST: National Institute of Standards and Technology (NIST) is a measurement standards

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laboratory, part of the U.S. Department of Commerce

Point-of-care testing (POCT): refers to patient laboratory testing done outside of the clinical laboratory at the point of patient care

Radio Frequency Identification (Device) (RFID): an antenna and a transceiver which read the radio frequency and transfer the information to a processing device, and a transponder, or tag, which is an integrated circuit containing the radio frequency circuitry and information to be transmitted.

Reporting Departments: designated departments responsible for monitoring storage temperatures of their respective products and assets; they are subject matter experts for temperature storage guidelines, regulations, and other pertinent questions related to temperature monitoring:

- **Ambulatory Services/Practices:** medications, vaccines, patient food, blanket/fluid warmers, specimens and POCT materials stored within the ambulatory practices
- **Department of Pharmaceutical Services:** all medications and IV solutions
- **Department of Nursing:** patient specimens for clinical testing; POCT materials stored within the nursing units
- **Nutrition and Food Services:** patient food items stored in patient care areas
- **Pathology:** specimens
- **Perioperative Services:** patient specimens for clinical testing; POCT materials stored within the Perioperative units
- **Radiology:** POCT materials stored within the Radiology units

IV. POLICY

- A. Medications (including vaccines), specific fluids/solutions, POCT materials, patient food items, patient specimens for clinical testing, and blankets will be stored within temperature ranges required by manufacturer recommendations, regulations and relevant department procedures.
- B. Managers of Reporting Departments will ensure that temperatures are monitored consistently in accordance with these requirements.
- C. This policy does not apply to tissue, bone, sperm, graft and specific ultra-low temperature storage. It also excludes food service items/assets that are located outside of direct patient care areas and staff food storage refrigerators.

V. PROCEDURES

- A. Guidelines for Temperature Monitoring
 1. Temperatures are monitored with an ATMS device unless prevented from doing so by either electrical/mechanical failure of the ATMS system or where located in a building unsupported by the ATMS/RFID infrastructure. **Enterprise-wide ATMS is considered the primary temperature monitoring system** excluding the Ambulatory Services/Practices where ATMS is used to determine out of range temperatures retrospectively for the purpose of determining stability of medications or other refrigerator contents and unless otherwise specifically noted physically in the asset unit being monitored.
 2. Temperatures in areas supported by the ATMS are continuously monitored to ensure that proper temperature ranges are met for maximum patient safety. In physical areas that are

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not supported by the ATMS/RFID infrastructure system, and in the Ambulatory Services/Practices where ATMS is used to determine out of range temperatures retrospectively for the purpose of determining stability of medications or other refrigerator contents, temperatures are checked and hand logged on a daily basis (twice daily for all medications) utilizing thermometers and following the manual temperature monitoring procedures.

3. In the event the ATMS/RFID system is not available for any reason (i.e., most often by lack of RFID infrastructure), a thermometer that is specific for manual temperature monitoring procedures is used for manual logging of temperature. These devices can be purchased through Procurement (353-4701).
 4. For redundancy on **non-medication** refrigerators without emergency power source and for all medication refrigerators/freezers, the above-referenced thermometer shall be stored in close proximity as a secondary (non-ATMS) monitoring device so that temperatures can then be manually monitored in the event of power loss, network failure, or other systemic disruption. In such an event, the manual temperature monitoring procedures would be followed (see section V.B.2 Manual Temperature Monitoring Procedures).
 5. Records shall be maintained and stored in the Reporting Department for a minimum rolling 12 months unless regulatory requirements stipulate otherwise. POCT supply temperature logs shall be kept for 3 years as per California Business and Professions Code Sec. 1265.j.2
 - a. Records from ATMS devices will be kept electronically by the Reporting Departments. Paper copies are printed as needed and upon request of surveyor or regulatory personnel.
 - b. Reporting Departments with primary oversight of items being stored (e.g. Pharmacy for medications) will have access to temperature monitoring logs across the institution and are responsible for setting and maintaining appropriate alarm parameters, temperature ranges, temperature monitoring reports and other aspects of monitoring compliance.
 6. No food or lab specimens are stored in medication refrigerators, fluid warmers, or contrast dye warmers. Non-food items shall not be stored in any patient food refrigerator. Staff food shall not be stored in any patient refrigerator.
- B. Temperature Monitoring Procedures
1. Automated Temperature Monitoring System Procedures
 - a. Temperatures are continuously monitored with an ATMS except in cases of electrical/electronic and/or other ATMS/RFID system disruption. In areas not supported by ATMS/RFID infrastructure, the default mode shall be manual temperature logging as described in Section V.B.2.
 - b. Automatic notification alerts are established for all assets being monitored per Reporting Department procedures that have been approved by the ATMS/RFID Temperature Monitoring Sub-committee.
 - c. Designated e-mail accounts and numbers for text-enabled phones and pagers are set up for each type of alert, notification and emergency escalation of notifications as described Reporting Department procedures.
 - d. System Disruptions
 - i. In the event of power loss, network outage, ATMS/RFID failure or other infrastructure system disruption, trained personnel within the affected patient

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- care areas will switch to manual temperature monitoring procedures as described in Section V.B.2.
- ii. If there is a loss of network connectivity between the ATMS/RFID device and the asset being monitored, the ATMS/RFID system will notice the Medical Center immediately through remote notification alarm protocol and Medical Center shall initiate manual temperature monitoring processes. If the temperature falls outside the acceptable range, the asset should be assessed to determine if it is malfunctioning or in use.
 - iii. Initial alarm: Check the plug, keep the door of the asset closed for 1 hour and recheck the asset to determine whether it is functioning properly.
 - iv. If the asset is malfunctioning, a supervisor must be notified at the earliest opportunity and the temperature range should be reset to the appropriate level. Indicate corrective action on in the ATMS electronic record.
 - v. Place a sign on the asset indicating "OUT OF ORDER".
 - vi. Determine whether the product(s) in the asset are safe to be used or need to be discarded. For guidance about whether to keep or discard items, contact the appropriate Reporting Department:
 - Ambulatory Services/Practices
 - Ancillary Services - Clinical Laboratories
 - Nutrition and Food Services
 - Nursing Department
 - Pathology
 - Pharmacy
 - Perioperative Services
 - POCT Department
 - Radiology
2. Manual Temperature Monitoring Procedures (for those areas not supported by ATMS/RFID or in the event of power loss, ATMS/RFID infrastructure failure, Ambulatory Services/Practices).
- a. Temperatures shall be checked and recorded in the Medical Center Temperature Log (Appendix A) according to departmental regulatory requirements for frequency, range, etc.
 - b. Temperatures for units with medications and vaccines must be checked twice daily (Appendix B).
 - c. All temperature log entries shall include the date, initials of person recording the temperature, and any necessary corrective action taken in response to out- of-range temperature readings.
 - d. For additional information, refer to:
 - i. Blanket/fluid warmer: Clinical Engineering.
 - ii. UCSF Clinical Laboratory: POCT staff for POCT tests materials
- C. Temperature Monitoring Corrective Actions
1. If the temperature falls outside the acceptable range, the asset should be assessed to determine if it is malfunctioning or in use. Refer to the appropriate Reporting Department procedure and contact information to determine the proper response and documentation process. Keep the door of the asset closed for 1 hour and recheck the asset to determine whether it is functioning properly.

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2. If the asset remains malfunctioning with regard to temperature, place a sign on the asset indicating "OUT OF ORDER" and initiate a Work Order to Facilities in order to document the response.
 3. Determine whether the product(s) in the asset are safe to be used or need to be discarded as described in the respective departmental procedure. For guidance about whether to keep or discard items, contact the appropriate Reporting Department:
 - Ambulatory Services/Practices
 - Ancillary Services - Clinical Laboratories
 - Nutrition and Food Services
 - Nursing Department
 - Pathology
 - Pharmacy
 - Perioperative Services
 - POCT Department
 - Radiology
 4. If a malfunction is suspected, the appropriate department shall also be notified for repair of the asset through submitting a work order into MCSS Service Now:
 - a. Refrigerators and Freezers: Facilities
 - b. Blanket/fluid warmer: Clinical Engineering
- D. System Maintenance and Support
1. ATMS/RFID Asset Monitoring Committee
 - a. Maintains overall budget for entire RFID system.
 - b. Ensures the installation or transfer of RFID monitoring tags to new assets in the event the vendor is not available. Acting as UCSF Medical Center liaison to the ATMS/RFID vendor for assistance as required.
 - c. Maintains and monitors NIST certification of ATMS sensors and keeps record of NIST certification documentation.
 2. Ambulatory Practices
 - a. Responsible for ordering manual thermometer devices identified by Ambulatory Clinical Services.
 - b. Maintain current NIST certificates for manual thermometers.
 3. Clinical Engineering
 - a. Business Owner of ATMS. Manages all Smart Sheet requests submitted and assists with KPI Reporting of ATMS. Ensures that all blanket/solution warmers are in working order including all appropriate preventative maintenance and work order history
 - b. Asset Tags:
 - i. Requests for asset tags are submitted via the Carelinks website at:
<https://app.smartsheet.com/b/form?EQBCT=302e2733b57443f7a2283a7ec87fd6d6>
 - ii. Clinical Engineering will reference departmental policy to approve asset tag requests.
 - c. Temperature Tags:
 - iii. Requests for temperature tags are submitted via the Carelinks website at:
<https://app.smartsheet.com/b/form?EQBCT=302e2733b57443f7a2283a7ec87fd6d6>

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- iv. All requests for ATMS temperature monitoring tags are processed and approved through the Clinical Engineering. Requests must have a departmental temperature monitoring policy to support alert parameters set within the ATMS.
- 4. Facilities
 - a. Ensures all refrigerators and freezers are in proper working order including all appropriate preventative maintenance and work order history.
 - b. Repairs or replaces refrigerators and freezers upon request of end users through the Work Order system. Verifies refrigerators and freezers are in working order once repaired or purchased by the department.
 - c. Assists in the installation and/or transfer of ATMS monitoring tags to new refrigerators and freezers in the event the vendor is not available.
 - d. On a quarterly basis, provides KPI Reports (Compliance Inventory) to departmental owners who have refrigerated equipment/assets requiring Preventative Maintenance.
- 5. Security Services
 - a. Provides authorized access to spaces when areas with temperature monitoring are not staffed.
- E. Quality Assessment and Compliance
 - 1. For quality assessment and compliance, Key Performance Indicator reports related to the ATMS/RFID system are provided on a quarterly basis to the ATMS/RFID Temperature Monitoring Sub-Committee and department SME
 - 2. Reconciliation of the departmental inventory (refrigerators/freezers) will be managed through the compliance reports which is generated by Facilities PM program.
 - 3. Reconciliation of the temperature monitoring tags are managed through the ATMS under Clinical Engineering (Business Owner).

VI. RESPONSIBILITY

Questions about the implementation of this policy should be directed to Facilities Management or Reporting Departments within policy.

VII. HISTORY OF POLICY

Issued May 2002 as policy 6.06.11 Food Storage/Maintenance of Patient Unit Refrigerators and as policy 6.06.12 Food Storage/Maintenance of Patient Refrigerators in Outpatient Areas

Revised December 2002 by Nutrition and Food Services

Approved December 2002 by Mark R. Laret, CEO

Revised and consolidated October 2003 as policy 6.06.13 Temperature Monitoring of Refrigerators/Freezers and Blanket/Fluid Warmers

Approved November 2003 by Senior Executive Group

Approved December 2003 by Mark R. Laret, CEO

Revised August 2006 by Tina Yuen, Department of Pharmacy

Approved October 2006 by Nursing/Pharmacy Committee

Approved November 2006 by Pharmacy and Therapeutics Committee

Approved March 2007 by Nursing/Pharmacy Committee and Pharmacy and Therapeutics Committee

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Reviewed June 2007 by Policy Steering Committee
Revised November 2007 by Tina Yuen, Department of Pharmacy
Approved December 2007 by Pharmacy and Therapeutics Committee
Approved December 2007 by Executive Medical Board, Governance Advisory Council and Chancellor J. Michael Bishop
Revised February 2010 by Dan Henroid, Nutrition and Food Services
Approved February 2010 by Pharmacy and Therapeutics Committee
Revised April 2011 by Dan Henroid, Nutrition and Food Services
Reviewed and Approved June 2011 by Nursing, Pharmacy, Nutrition and Food Services and Regulatory Affairs
Revised March 2012 by Dan Henroid, Nutrition and Food Services
Revised October 2012 by Bruce Mace, Facilities, Temperature Monitoring Sub-Committee
Revised December 2012 by Dan Henroid, Nutrition and Food Services
Revised January 2013 by Dan Henroid, Nutrition and Food Services
Approved January 2013 by Policy Steering Committee
Revised July 2014 by Temperature Monitoring Subcommittee
Reviewed and Approved August 2014 by the Policy Steering Committee
Revised January 2018 by Jhoric De Guzman, Facilities Management
Approved February 2018 by Temperature Monitoring Subcommittee
Reviewed and Approved by Policy Steering Committee March 2018

VIII. APPENDIX

- A. [Temperature Log Sample](#)
- B. [Twice Daily Temperature Monitoring Log](#)

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APPENDIX A: Temperature Log Sample

If temperature is out of range: notify supervisor, document action taken and call Pharmacy (Parnassus 3-1028, MZ 5-7374) re: medications; Nutrition & Food Services (Parnassus 3-1461) re: food; UCSF Clinical Laboratory POCT testing staff (4-8223 and 4-2144) for POCT test materials. Refer to POCT policy 6.07.02 for POCT Temperature Log.

Location: _____ **Mon/Yr:** _____ **Type:** Meds Food Specimens Blanket Fluid Contrast

Day of	Refrigerator	Freezer	Blanket Warmer	Fluid Warmer	Contrast Dye	Pyxis OR	Initials	Action/ Follow-up
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

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 Last Approval: 03/2018

Day of	Refrigerator	Freezer	Blanket Warmer	Fluid Warmer	Contrast Dye	Pyxis OR	Initials	Action/ Follow-up
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

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APPENDIX B: Twice Daily Temperature Monitoring Log

Practice Name: _____			Month: _____		Year: _____		
<u>CHECK EXPIRATION DATES ON ALL THERMOMETERS ON THE FIRST OPEN CLINIC DAY OF EACH MONTH*</u>							
Do any thermometers expire NEXT month (circle one)? <u>YES</u> / <u>NO</u>							
If "YES", order new thermometer(s) using PMIM#61679 If "NO", no action necessary. Reassess next month.							
D A Y	AM and PM	Refrigerator Temperature 2-8°C		Freezer Temperature Meds -25 to -10°C Vaccines -50 to -15°C		Initials	Action/Follow-up (when temperatures are out of range OR refrigerator/freezer is not functioning properly)
		Min-Max	Current	Min-Max	Current		
	Example	2-5	4	-22 to -7	0	WW	
*1	AM						
	PM						
2	AM						
	PM						
3	AM						
	PM						
4	AM						
	PM						
5	AM						
	PM						
6	AM						
	PM						
7	AM						
	PM						
8	AM						
	PM						
9	AM						
	PM						
10	AM						
	PM						
11	AM						
	PM						
12	AM						
	PM						
13	AM						
	PM						
14	AM						
	PM						
15	AM						
	PM						
16	AM						
	PM						
17	AM						
	PM						
18	AM						
	PM						
19	AM						
	PM						
Log Revised: 10/1/16							

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Practice Location: _____			Month: _____		Year: _____		
D A Y	AM and PM	Refrigerator Temperature 2-8°C	Freezer Temperature Meds -25 to -10°C Vaccines -50 to -15°C	Initials	Action/Follow-up (when temperatures are out of range OR refrigerator/freezer is not functioning properly)		
20	AM						
	PM						
21	AM						
	PM						
22	AM						
	PM						
23	AM						
	PM						
24	AM						
	PM						
25	AM						
	PM						
26	AM						
	PM						
27	AM						
	PM						
28	AM						
	PM						
29	AM						
	PM						
30	AM						
	PM						
31	AM						
	PM						
Manager or Designee Review: _____		Date _____		Any New Thermometers Ordered? _____		Print Name: _____	
Log Revised: 10/1/16							