Vaccine Storage and Cold Chain Management

Summary This policy directive provides mandatory requirements for the storage and management of vaccines and aims to ensure consistent and effective vaccine storage and monitoring processes. The policy aims to ensure that all clients receive potent vaccines and that vaccine cold chain breaches are identified and managed consistently, efficiently and effectively.

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Audience All clinical staff, pharmacy staff, Directors of Clinical Governance

Secretary, NSW Health
This Policy Directive may be varied, withdrawn or replaced at any time. Compliance with this directive is mandatory for NSW Health and is a condition of subsidy for public health organisations.
VACCINE STORAGE AND COLD CHAIN MANAGEMENT

PURPOSE
This policy directive provides mandatory requirements for the storage and management of vaccines and aims to ensure consistent and effective vaccine storage and monitoring processes in all public health facilities. The policy also aims to ensure that all clients receive potent vaccines and that all vaccine cold chain breaches are identified and managed consistently, efficiently and effectively.

MANDATORY REQUIREMENTS
All facilities must ensure that:
- Policies, procedures and protocols are in place for vaccine management in each facility according to the current editions of the *National Vaccine Storage Guidelines Strive for 5* and *The Australian Immunisation Handbook*;
- All vaccines are stored in a purpose built vaccine refrigerator;
- All vaccine refrigerators are continually data logged and the data logging report is downloaded and reviewed at least weekly (refer to Section 3 Refrigerator Monitoring in Attachment 1 Vaccine Storage and Cold Chain Management: Procedures);
- All refrigerators have a back-to-base alarm;
- A base-line vaccine storage self-audit is conducted initially and annually thereafter (available on the Quality Audit Reporting System – QARS);
- Plans are in place for responses to cold chain breaches and power failures in each facility, including reporting temperatures outside +2°C to +8°C range to the local public health unit (PHU) on 1300 066 055 within the same working day. Quarantine the vaccines until PHU advice is received;
- Cold chain breaches resulting in vaccine wastage or recall and revaccination of patients must be reported in the Incident Information Management System (IIMS) to facilitate investigation, resolution and minimise the risk of future incidents;
- All vaccine refrigerator minimum/maximum temperatures are recorded twice daily on the NSW Health vaccine refrigerator monitoring chart, and;
- Cold chain management resources (available on the NSW Health cold chain webpage) are utilised to facilitate staff education.

IMPLEMENTATION
Effective vaccine storage and management requires a coordinated approach by key personnel as follows:

Public facilities must:
- Ensure that vaccines are stored and managed according to the current edition of the *National Vaccine Storage Guidelines – Strive for 5* and this policy directive.
- Ensure that all staff are aware of the requirements of this policy directive.

Health Protection NSW will:
- Provide ongoing vaccine storage and cold chain management support to public health units and facilities as required.
- Provide recall and revaccination advice following cold chain breaches as required.
- Ensure that updated vaccine storage and cold chain management advice is provided to local health districts and public health units.

**REVISION HISTORY**

<table>
<thead>
<tr>
<th>Version</th>
<th>Approved by</th>
<th>Amendment notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Deputy Secretary Population and Public Health and Chief Health Officer</td>
<td>New policy directive</td>
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**ATTACHMENTS**

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1 BACKGROUND

1.1 About this policy

This policy provides specified procedures for the storage and monitoring requirements of vaccines that are either funded by NSW Health or purchased by facilities. Self-auditing requirements are also detailed in this policy which aims to:

- Ensure consistent and effective vaccine storage and monitoring processes in all public health facilities;
- Facilitate the administration of viable vaccines to vaccine recipients;
- Ensure vaccine cold chain breaches are identified and managed consistently, efficiently and effectively;
- Reduce vaccine wastage as a result of vaccine cold chain mis-management, and;
- Inform providers of requirements for ordering, storing and monitoring vaccines.

This policy should be read in conjunction with the current edition of the National Vaccine Storage Guidelines: Strive for 5 (referred to as ‘Strive for 5’) and the current edition of The Australian Immunisation Handbook.

1.2 Key definitions

Ambient temperature: temperature of the surrounding environment in which the vaccine refrigerator is operating.

Salvage plan: a plan of actions that ensures that vaccines will continue to be stored between +2°C to +8°C during power supply or refrigerator failures.

Cold chain: the system of transporting and storing vaccines within the safe temperature range of +2°C to +8°C.

Cold chain breach: exposure of vaccines to temperatures outside the recommended range of +2°C to +8°C (excludes fluctuations up to +12°C, lasting no longer than 15 minutes, for example, when stock taking or restocking). A cold chain breach may also be referred to as an ‘adverse vaccine storage event’.

Cold chain monitors (CCMs): transport monitors that accompany vaccines during transit from the NSW Vaccine Centre to the immunisation provider. CCMs must be discarded after delivery and not used for routine temperature monitoring.

Data logger: a small electronic device that continuously measures temperatures and stores an electronic record of the refrigerator temperatures during a monitored period.

Public Health Unit (PHU): a team of health professionals based within a local health district who are responsible for a range of health protection issues, including immunisation. The PHU contact number is 1300 066 055.
**Purpose built vaccine refrigerators:** refrigerators designed and constructed specifically for vaccine storage.

**Vaccines:** complex biological products designed to induce a protective immune response effectively and safely.

**Vaccine management:** the storage and monitoring of vaccines, including stock rotation, effective management of cold chain breaches and nomination of a staff member responsible for cold chain management to ensure timely reporting to the local PHU when required.

## 2 VACCINE COLD CHAIN MANAGEMENT

- Health professionals have a legal and professional obligation to ensure their patients receive effective health products, for example, vaccines that have been stored appropriately and not adversely affected by heat, cold or light.
- Vaccines must be transported and stored within the recommended temperature range +2°C to +8°C at all times.
- Effective vaccine storage and cold chain management are essential as:
  - Freezing of vaccines can cause loss of potency which can never be restored.
  - Effective cold chain management ensures patients are vaccinated with potent vaccines to reduce their risk of disease. Patients vaccinated with ineffective vaccines may need to be recalled, counselled and revaccinated. In addition to the inconvenience of this, the total cost of a cold chain breach can be significant.

### 2.1.1 Cold Chain Management Principles

- Store vaccines in a purpose-built vaccine/medication specific refrigerator (refer to section 3 Equipment).
- Nominate a staff member responsible for vaccine storage and cold chain management within their area, and a back-up staff member(s) in their absence. Refer to section 2.1.2 Governance.
- Ensure policies, procedures and protocols are in place for vaccine management in each facility (refer to the Vaccine Management Protocol in Appendix 1 of ‘Strive for 5’, 2nd edition for detailed information).
- Develop procedures for orientating new staff and staff with new roles who are responsible for cold chain management. Staff education records must be maintained for ongoing education as required. Refer to section 7 Education for detailed information.
- Ensure local procedures are in place and essential equipment is readily available for responses to cold chain breaches and power failures in each facility (refer to Management of Power Failure in Section 8 of ‘Strive for 5’, 2nd edition). A local
procedure could include a salvage plan that provides a reference guide/chart for display on the front of the refrigerator that contains the contact details for the local public health unit (PHU) to seek advice following a cold chain breach. An example of a refrigerator protocol is provided at Attachment 4.

- Report temperatures outside the +2°C to +8°C range (excludes fluctuations up to +12°C, lasting no longer than 15 minutes) to the local PHU on 1300 066 055. The facility pharmacist should also be contacted as appropriate for advice on temperature sensitive medications that are stored in the refrigerator.

- Vaccines must not be discarded until PHU advice is received (refer to Cold Chain Breach Protocol in Appendix 3 of ‘Strive for 5’, 2nd edition).

- Follow the guidelines for using ice packs/gel packs and monitoring vaccines in coolers and cold boxes (refer to Coolers in Section 9 of ‘Strive for 5’, 2nd edition) as required during power outages.

- Refer to Caring for Vaccines During Immunisation Sessions in Section 7 of ‘Strive for 5’, 2nd edition if outreach and/or community clinics are conducted.

- Perform vaccine storage self-audits at least 12 monthly (refer to section 6 Vaccine Management and Storage Self-Audit).

2.1.2 Governance

In some health facilities vaccines may be stored in the central pharmacy, ward or clinic. In this situation, the following governance arrangements must be followed:

- the on-duty pharmacist or delegate is responsible for the cold chain management of vaccines that are stored in a central pharmacy, and;

- the Nursing Unit Manager (NUM)/Midwifery Unit Manager (MUM) or delegate is responsible for the cold chain management of vaccines that are removed from the central pharmacy and stored in the ward or clinic refrigerator until they are administered.

- Vaccines should be transferred from the pharmacy to the ward in a monitored cooler using a battery operated minimum/maximum thermometer. Refer to Coolers of ‘Strive for 5’ 2nd edition for detailed information. The person who transfers the vaccine (may be pharmacy or ward staff, as determined by local protocols) is responsible for ensuring the cooler is packed appropriately, the temperature of the cooler is recorded during transfer and at arrival to the ward. The person receiving the vaccines must record their receipt and that the cold chain was maintained during transfer on the reverse of the NSW Health Vaccine Refrigerator Temperature Chart (NH700227) or on a locally developed vaccine register. The vaccines must be unpacked and stored immediately in the ward/clinic refrigerator.

- The nurse administering the vaccine is responsible for maintaining the cold chain from the time it has been removed from the refrigerator to administration.
3 EQUIPMENT

Regular maintenance of cold chain equipment should be conducted as specified in Key Recommendations for Effective Vaccine Storage Management in ‘Strive for 5’, 2nd edition and includes the following:

- Service the refrigerator (including a thermostat and calibration service) every 12 months and following any refrigerator malfunction;
- Recalibrate the data logger annually or as indicated by the manufacturer;
- Change the data logger battery at least every 12 months or as indicated by the manufacturer;
- Check the accuracy of the battery operated minimum/maximum thermometer at least annually or as indicated by the manufacturer (as appropriate);
- Change the battery operated minimum/maximum thermometer battery at least every 12 months or as indicated by the manufacturer (as appropriate).

− Purpose-built Refrigerators

Purpose-built refrigerators are the best-practice storage option as they are designed to store vaccines and temperature sensitive medication. They have a stable, uniform and controlled cabinet that maintains the temperature between +2°C to +8°C, however they must be monitored as specified in section 4 Refrigerator Monitoring. The following principles must be followed:

- Each refrigerator must have an audible alarm (preferably with a back to base/nurse call system) with preset parameters set outside +2°C to +8°C (to activate when temperature reaches less than +2°C and greater than +8°C and is maintained until the alarm is manually deactivated). A visual temperature display must accompany the auditory alarm.
- The refrigerator plug electricity connection must be clearly labelled¹ “DO NOT turn off power or disconnect this refrigerator” so that it is not unplugged accidentally. Consideration should be given to hard-wiring the power board to prevent it from being accidentally disconnected.
- The refrigerator should be plugged into an uninterruptible power supply (UPS). Where a UPS is not available, an emergency generator should be used during interruptions to the power supply.
- Where a refrigerator door does not close easily, consider using a door closing device or leveraging the refrigerator to ensure the door closes freely and not left ajar after accessing the vaccines (front feet higher than back feet, check that this is acceptable with refrigerator manufacturer).

¹ Refrigerator stickers and posters are available to download from the Australian Government website at: http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/IMM77-cnt
The refrigerator must be placed with enough space between the wall and cabinet to ensure adequate air flow as specified by the refrigerator manufacturer (confirmed by asset/maintenance staff as appropriate).

The refrigerator must be placed in a secure room where only appropriate staff have access. Alternatively, if a secure room is not available, the refrigerator door must be locked at all times with access only provided to the appropriate staff.

Bar refrigerators and domestic refrigerators must **not** be used for vaccine storage in NSW facilities.

**Data Loggers**

To investigate temperature excursions, all refrigerators that store vaccines must have a data logger in place (portable or in-built) or back to base data logging. The data logger should be set to record temperatures at five minute intervals. Where a portable data logger is used, it should be secured to a shelf in the middle of the refrigerator to ensure consistent monitoring. Where a data logger has a probe, it should be placed inside a vaccine box to record the vaccine temperature rather than the ambient air. All facilities must have the appropriate equipment and software to download data logging/back to base monitoring reports.

Data logging reports must be downloaded and saved weekly and/or when a potential cold chain breach has been identified during the twice daily temperature checks to ensure viable vaccines are administered to patients. All staff should be trained on how to operate/manage the data logger and interpret its readings. Any actions taken in response to data logging should be documented and these records managed in accordance with the appropriate retention and disposal authorities.

**Twice daily minimum/maximum temperatures must also be manually recorded on the NSW Health Vaccine Refrigerator Temperature Chart**² (NH700227) in addition to ongoing data logging/back to base monitoring as this process ensures a **timely** alert to any cold chain breach.

**Minimum/maximum thermometers**

A portable minimum/maximum digital thermometer must be simultaneously used to monitor the temperature of the refrigerator when it does not have a battery back-up for the in-built temperature monitoring system (or generator power back-up) or is not plugged into a UPS. Minimum/maximum thermometers are also required to monitor coolers that are used as alternate storage, for example during a power outage.

² Order the NSW Health Vaccine Refrigerator Temperature Chart via the Stream Direct Catalogue as a POD print item (item number NH700227)
Cold Chain Monitors

Cold chain monitors (CCMs) are used to detect heat and freeze breaches and accompany vaccines during transport from the NSW Vaccine Centre. When the vaccine order arrives from the NSW Vaccine Centre, the CCMs should be checked and recorded on the reverse of the NSW Health Vaccine Refrigerator Temperature Chart (NH7000227) or on a locally developed vaccine register. CCMs must be discarded following receipt of the vaccine delivery and must not be stored in the refrigerator and/or used to monitor vaccines after delivery. All breaches following vaccine delivery must be reported immediately to the NSW Vaccine Centre on 1300 656 132. The vaccines must be quarantined in a functioning refrigerator until advice is received on the fate of the vaccines.

4 REFRIGERATOR MONITORING

- Manually record the refrigerator’s current, minimum and maximum temperatures twice daily (refer to Monitors in section 6 of "Strive for 5, 2nd edition") on the NSW Health Vaccine Refrigerator Temperature Chart (NH7000227; refer to Attachment 3). These ‘current/minimum/maximum’ manual recordings are required regardless of continuous data logging or back to base alarm systems. This is to ensure vaccines have not been subjected to a cold chain breach prior to administration.

- Where a facility is not operational 24 hours/day for seven days/week, the refrigerator’s current/minimum/maximum refrigerator temperature must be checked on the first operational day (since the last recording) and twice daily thereafter. The data logging report should also be downloaded and checked before any vaccines are removed for administration.

- Reset the minimum/maximum thermometer after each reading, following any excursion outside +2°C to +8°C and on receipt of a new vaccine delivery. Ensure the refrigerator has returned to within +2°C to +8°C before resetting. If the refrigerator temperature reaches greater than 12°C for more than 15 minutes, refer to section 5 Management of Cold Chain Breaches.

- Record any events for example, refrigerator restocking following a vaccine delivery, or refrigerator servicing, on the NSW Health Vaccine Refrigerator Temperature Chart (NH7000227).

- Continuously data log the refrigerator. The data logging/back to base monitoring report must be downloaded and reviewed by the NUM/MUM/delegate weekly and following any identified cold chain breach (excludes fluctuations up to 12°C for less than 15 minutes).

- Each facility must have a local procedure for downloading and reviewing the data logging reports.

- All staff responsible for cold chain management must have access to and know how to download and review the data logging reports (stored centrally in an appropriately named folder for each refrigerator and date), including back to base monitoring reports as appropriate.
• A back-up hard copy of the data logging graphs should be stored centrally in a file by the NUM/MUM/delegate.

• For cold chain breach management, refer to Section 5 Management of Cold Chain Breaches.

5 MANAGEMENT OF COLD CHAIN BREACHES

5.1.1 Cold Chain Breach Protocol

A ‘cold chain breach’ has occurred if a purpose-built refrigerator’s temperature has been outside the recommended range of +2°C to +8°C. It excludes fluctuations up to +12°C, lasting no longer than 15 minutes, which may occur for example when stock taking or restocking a refrigerator. Such fluctuations must be recorded on the NSW Health Vaccine Refrigerator Temperature Chart (NH700227) to cross reference when reviewing the corresponding data logging report. All other cold chain breaches greater than +8°C that cannot be accounted for and any less than +2°C must be reported to the PHU for advice. Once a cold chain breach has been identified, the following procedures must be followed:

• Refrigerate and quarantine the potentially compromised vaccines (in a functioning refrigerator) between +2°C to +8°C and label ‘Do not use’.

• Inform the NUM/MUM/delegate immediately.

• Download and review the data logging report.

• Contact the local PHU on 1300 066 055 as soon as possible during business hours.

• Vaccines must not be discarded until advice has been provided by the local PHU on the fate of the vaccines.

• Report the type and number of vaccines wasted to the PHU as required.

• Contact the relevant manufacturer for advice on privately purchased vaccines (vaccines not sourced from the NSW Vaccine Centre) as the PHU is unable to provide advice on private stock.

• Contact the facility pharmacist for advice on temperature sensitive medications.

5.1.2 Patient Recall and Revaccination

Cold chain breaches that have been identified after patients have been vaccinated with potentially compromised vaccine(s) require detailed information to be forwarded by the ward/unit manager/delegate to the local PHU for advice on whether revaccination is required (refer to Attachment 1).

The PHU will assess each report on a case-by-case basis as not all cold chain breaches will result in patient recall and revaccination. A number of factors are considered by the PHU, including the type of vaccine and its thermostability, duration of breach and history of any previous breaches and the patient’s vaccination history. The PHU will consult with Health Protection NSW to decide on the need for revaccination.
6 VACCINE MANAGEMENT AND STORAGE SELF-AUDIT

Vaccine management and storage self-auditing is an essential component of routine quality assurance and risk management processes to ensure potent vaccines are administered. Facilities must ensure that:

- A base-line vaccine management self-audit is undertaken initially and at least annually thereafter (using the Quality Audit Reporting System-QARS). Audits may be required more frequently where there have been issues with equipment or cold chain breaches. All NUMs/MUMs/delegates must have access to QARS. The audit tool is also available on the NSW Health cold chain webpage.
- Facility managers retain a record of the results and discuss them as a standing agenda item on the relevant LHD locally agreed committee.
- The local public health unit (PHU) is contacted on 1300 066 055 for vaccine storage/management queries and/or issues identified during the audit.
- An Incident Information Management System (IIMS) report must be completed for cold chain breaches that result in patient recall/revaccination.

7 EDUCATION

- All staff involved in vaccine transport, storage and administration must be trained in vaccine management to ensure the vaccines remain effective and potent.
- All cleaning and maintenance staff must be educated on the importance of vaccine storage and cold chain management.
- To facilitate staff education, cold chain management resources are available on the NSW Health website at: www.health.nsw.gov.au/immunisation and the vaccine online ordering system at: https://nsw.csldirect.com.au/
- The online Health Education and Training Institute (HETI) module ‘Vaccine Storage Cold Chain Management’ (available from mid-2017), must be undertaken by the following staff employed in NSW public facilities:
  - managers (in clinical areas where immunisations are administered)
  - staff members and their delegate(s) that have been nominated as responsible for vaccine storage and cold chain management;
  - pharmacy staff (where vaccines are stored in the pharmacy department);
  - clinical governance/quality audit staff that are involved vaccine storage and cold chain management audits and policy development, and;
  - staff that are involved in vaccine administration.

The HETI module will also be made available on the NSW Health cold chain webpage for staff employed in private facilities.
Refer to section 2.1.1 Cold Chain Management Principles for more information on the roles and requirements for cold chain management.

8 VACCINE ORDERING

- Review current stock to ensure order does not overload or exceed refrigerator capacity.
- Login to the web based online vaccine ordering system at www.nsw.csldirect.com.au using the facility login or coordinate vaccine ordering via the facility pharmacy department. Contact the local PHU on 1300 066 055 for queries regarding vaccine ordering procedures.
- Facilities must have a local procedure for detailing the login and password details for vaccine ordering. The details must be accessible only by staff responsible for ordering vaccines.

9 VACCINE DELIVERIES

- Each facility must have a written operating procedure for receiving vaccines from the NSW Vaccine Centre and where vaccines are transported from a central pharmacy to an alternate refrigerator in a ward/unit within the facility.
- The CCMs must be checked immediately upon delivery from the NSW Vaccine Centre to identify any cold chain breach that has occurred during transport.
- The CCMS must be discarded following delivery and must not be stored in the refrigerator with the vaccines.
- The vaccine delivery, including the CCM status, must be recorded on the reverse of the NSW Health Vaccine Refrigerator Temperature Chart (NH700227).
- All vaccines must be refrigerated immediately following delivery, placing the oldest stock with the shortest expiry date to the front of the purpose-built refrigerator.
- Care should be taken so that that stock is not placed in such a way as to block or isolate a sensor that is located inside the refrigerator. Where this is a potential risk to block or isolate the sensor, add a label adjacent to the sensor to instruct staff not to place vaccines in front of it.
- If a cold chain breach has been identified following a vaccine delivery from the NSW Vaccine Centre, the vaccines must be quarantined in a functioning refrigerator and the breach reported to the NSW Vaccine Centre on 1300 656 132 (refer to section 3 Equipment; Cold Chain Monitors).
• To prevent overstocking, the maximum amount of vaccine stock must be determined (as specified by the refrigerator manufacturer and confirmed by pharmacy as appropriate) for each refrigerator and vaccine stock maintained accordingly.

• Minimise refrigerator door opening to prevent the temperature rising above +8°C. The use of a vaccine location map on the front of the refrigerator may assist in quickly locating vaccines and reduce door opening to a minimum. The use of labelled baskets may also reduce clutter and assist in the ordering and restocking process.

• Any temperature excursions (excludes fluctuations up to +12°C, lasting no longer than 15 minutes, when stock taking or restocking) must be reported to the NUM/MUM/delegate immediately and recorded on the NSW Health Vaccine Refrigerator Temperature Chart (NH700227). The data logging report must be downloaded and reported to the local PHU on 1300 066 055. Refer to section 5 Management of Cold Chain Breaches.

10 LIST OF ATTACHMENTS

1. Recall and Revaccination Cold Chain Breach Report
2. PHU Cold Chain Breach Risk Assessment
3. NSW Health Vaccine Refrigerator Temperature Chart
4. Refrigerator Protocol

11 RELATED POLICIES AND LEGISLATION

PD2013_043 Medication Handling in NSW Public Facilities.

12 REFERENCES


**ATTACHMENT 1: RECALL AND REVACCINATION REPORT**

**Cold Chain Breach Report**

The form must be completed by the manager/delegate of the ward/unit/facility where the cold chain breach occurred and forwarded to the local PHU as requested.

| Hospital: | ____________________________________________________________ |
| Facility/ward/clinic: | ____________________________________________________________ |
| Minimum temperature reached: | _____ °C |
| Maximum temperature reached: | ______°C |
| Duration of breach: | _____________________________ minutes/hours/days (delete as appropriate) |

Data log report attached?  Yes___ No___

Reason for breach:

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<th>Patient 2x2 ID</th>
<th>DOB Dd/mm/yyyy</th>
<th>Vaccine(s) Administered</th>
<th>Dose</th>
<th>Date Administered</th>
<th>Revaccination Advice</th>
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<tbody>
<tr>
<td>First two initials of the first name and surname</td>
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<td></td>
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<td>PHU staff to complete</td>
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## ATTACHMENT 2: PHU COLD CHAIN BREACH RISK ASSESSMENT

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<tr>
<td><strong>Fridge type:</strong> Vaccine specific □</td>
<td>Domestic □</td>
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<tr>
<td><strong>Fridge location:</strong> Ward/clinic □</td>
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### ASSESSMENT

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<th><strong>COMMENTS</strong></th>
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</thead>
<tbody>
<tr>
<td>Date of last vaccine delivery (from NSW Vaccine Centre or vaccine transfer to ward/unit)</td>
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<td></td>
</tr>
<tr>
<td>Does facility rotate vaccine stock following each delivery?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is this the first known breach for these vaccines?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reason for breach known?</strong></td>
<td><strong>Reason:</strong></td>
<td></td>
</tr>
<tr>
<td>If power outage and no data logging available, facility to contact electricity company and request information regarding duration of power outage</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Date of last fridge service?</strong></td>
<td>Date: / /</td>
<td></td>
</tr>
<tr>
<td><strong>Has fridge temperature been stable prior to the breach?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min/max recordings available? <strong>Attach the NSW Health Vaccine Refrigerator Temperature Chart NH700227</strong></td>
<td>Within range +2°C to +8°C? Yes □ No □</td>
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</tr>
<tr>
<td>Zero reached?</td>
<td>Yes □ No □</td>
<td></td>
</tr>
<tr>
<td><strong>Is it possible that the min/max thermometer is faulty?</strong></td>
<td>Date last battery change: / /</td>
<td></td>
</tr>
<tr>
<td>Date last calibration: / /</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data logging (DL) / back to base monitoring available?</strong></td>
<td>Within range +2°C to +8°C? Yes □ No □</td>
<td></td>
</tr>
<tr>
<td><strong>Attach data logging/report</strong></td>
<td>Zero reached? Yes □ No □</td>
<td></td>
</tr>
<tr>
<td><strong>Is it possible there is a problem with the location of the data logger (if used instead of a back to base monitoring system)</strong></td>
<td>Last calibration of DL:</td>
<td></td>
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<tr>
<td><strong>Ambient room temperature during breach known?</strong></td>
<td>i.e. was it a very hot/cold day/night?</td>
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<td><strong>Air conditioning in room on/off/not installed?</strong></td>
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<td><strong>Is it possible that the breach is due to staff incorrectly recording the fridge temperature/not resetting the minimum/maximum thermometer?</strong></td>
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<td><strong>Were patients vaccinated with compromised vaccine?</strong></td>
<td><strong>The facility must provide a list of patients to the PHU</strong></td>
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<td>If yes, request a list of patients from the facility using the Recall and Revaccination Report (Attachment 1)</td>
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ATTACHMENT 3: NSW HEALTH VACCINE REFRIGERATOR TEMPERATURE CHART

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**Instructions for use:**
- Record and plot maximum, minimum and current temperatures on chart TWICE daily.
- RETEN temperature monitoring device after recording temperatures.
- TAKE CORRECTIVE ACTION if temperatures out of range (+2 to -8°C) remaining fluctuates up to +2°C for 15 minutes.
- Refer to cold chain breach steps below.

**Cold Chain Breach Steps: (Refer to Appendix A in Drive for 5)**
1. Take corrective action where possible. Ensure fridge door is closed, fridge is plugged in properly. Contact engineering if broken.
2. Identify and isolate the vaccines, keep refrigerated between +2°C and +8°C (move stock to another fridge) and label "CARTRIDGE USED/STOCK - DO NOT USE".
3. Label affected vials "OUT OF ORDER - DO NOT USE".
5. Contact the local public health unit (PHU) on 1300666655 for advice. Do not discard any vaccines until advice is provided by the PHU (next working day if out of hours).
6. Notify managed care (next working day if out of hours).
7. Report fridge temperature issues and actions on this chart.
8. Determine if anyone has received compromised vaccine. Discuss re-vaccination requirements with PHU as necessary.
9. Report the incident on IMIS (excludes breaches due to power outages).

Order the NSW Health Vaccine Refrigerator Temperature Chart via the Stream Direct Catalogue as a POD print item (item number NH700227)
ATTACHMENT 4: REFRIGERATOR PROTOCOL

Check Fridge Temperature Twice Daily
Aim for 5°C

Record the Current, Minimum & Maximum Temperature on Chart
Press ‘RESET’ after Temperature check completed

If inside range of +2°C to +8°C
No action required

If Fridge Temp range is <+2°C or >+8°C or the fridge has alarmed
Quarantine Vaccines/Medications
Label ‘DO NOT USE’

Report breach immediately to your Manager/delegate

If temperature <+2°C or >+8°C and/or the fridge alarm is activated
Action MUST be taken immediately & documented on the NSW Vaccine Refrigerator Temperature Chart
Refer to the cold chain breach steps on the chart

OTHER MEDICATIONS
- Notify facility Pharmacy Service provider
- Do NOT use meds until advice is received from Pharmacy

VACCINES
- Notify PHU on 1300 066 055
- Do NOT use vaccines until advice received from PHU

Additional Information
- Document all activity on the back of the NSW Vaccine Refrigerator Temperature Chart - Fortnightly, i.e. thermostat adjustment, restocking, power outage, data logger removal etc.
- Refer to the current edition of The Australian Immunisation Handbook and the National Vaccine Storage Guidelines – ‘Strive for 5’.
- NSW Health ‘Vaccine Refrigerator Temperature Chart – Fortnightly’ must be used on all fridges
- Vaccine Refrigerator Temperature Chart and cold chain management records must be managed according to the appropriate retention and disposal authorities

Vaccine Refrigerator Temperature Chart
NSW Vaccine Refrigerator Temperature Chart – Fortnightly: order from Toll Stream Direct, Order Number: NH700227