Team Name: Surgical Care Team Lead: Regional Director- Acute Care Approved by: Executive Director- Mid	Reference Number: CLI.6611.PL.001 Program Area: Perioperative Policy Section: Surgical Unit/Operating Room
Issue Date: August 3, 2018 Review Date: Revision Date:	Subject: Humidity Management Perioperative

POLICY SUBJECT:
Humidity Management Perioperative

PURPOSE:
- To monitor and prevent relative humidity levels in the Operating Room (OR), Medical Device Reprocessing (MDR) and OR/MDR dedicated sterile storage areas from exceeding recommended Canadian Standards Association/Operating Room Nursing Association of Canada (CSA/ORNAC) Standards.
- To determine when surgery should be cancelled due to potential contamination of sterile supplies and increased risk of microbial growth in the OR.
- Minimize financial impact as a result of disposal or reprocessing of sterile supplies contaminated due to an "event".
- Provide patients with safe care in the OR.

BOARD POLICY REFERENCE:
Executive Limitation (EL-01) Global Executive Restraint and Risk Management
Executive Limitation (EL-02) Treatment of Clients

POLICY:
The temperature and humidity monitoring of the OR and MDR is a shared responsibility of OR/MDR and Physical Plant Services personnel. All surgical sites follow the CSA standards Z314.

DEFINITIONS:
OR/MDR Dedicated Storage Area: a controlled storage area used to store clean and sterile supplies within or adjacent to the OR/MDR.

Ambient Temperature: CSA/ORNAC standard set as the acceptable parameters to be maintained in order to reduce microbial growth and static electricity. These parameters are 20°C - 23°C (68°F-73°F).

Relative Humidity: the acceptable parameters set by CSA/ORNAC Standards, be maintained in order to reduce microbial growth and static electricity. These parameters are 30% - 60% relative humidity.

Medical Device Reprocessing: area where the steps to prepare a used medical device for reuse are performed. These steps can include the collection and transportation of soiled devices, cleaning, inspection, disinfection, sterilization, packaging, clean transportation and storage of clean and disinfected/sterilized devices.

New Relative Humidity (RH) Maximum Limit Event: an event where RH Maximum Limit was exceeded on the previous day, RH levels have returned to acceptable levels, followed by RH Maximum Limit being exceeded again in a 24-hour period.

Relative Humidity (RH) Maximum Limit: 60% is the Standard set as the maximum humidity level.

Relative Humidity (RH) Control Point: the level of RH at which Physical Plant Services personnel would take action to prevent humidity levels from increasing further. The upper limit is **52%.**

Relative Humidity (RH) Event: the level of RH that would result in advance warning to the OR and MDR of exceeding is **56%** of the RH Maximum Limits. **This warning may indicate that an increase in the ambient temperature is inevitable in order to correct the Relative Humidity.**

PROCEDURE:

1. Monitoring Relative Humidity (RH) Level:

1.1 At a minimum, monitor and record RH levels daily in the following areas.

- Each operating room,
- OR Sterile Supply corridor,
- Medical Device Reprocessing and
- OR/MDR Dedicated Sterile Storage Area.

1.2 During times of high outside temperature and humidity increase frequency of monitoring and recording RH levels (i.e. every three hours). Predictable times of the year are May through October.

1.3 Daily RH monitoring occurs in at least one of the following ways:

- By Physical Plant Services personnel in areas where field sensors (humidity monitoring devices) are directly monitored by the building controls,
- By use of a hand-held (hydrometer) or wall mounted device approved by the Regional Physical Plant Services Program in areas not directly monitored by the digital building controls or
- By OR nursing staff in the OR.

1.4 Calibrate the hand held hydrometers as per manufacturer's instructions, in compliance with ISO/IEC 17025:2005 and ANSSI/NCSL Z540-1-1994 part 1.

- The Physical Plant Services program or personnel replaces components required as a result of the calibration.
- Physical Plant Services personnel calibrates each of the RH monitoring device directly connected to the building controls occurs as recommended by the manufacturer.
    - Perform at the implementation of this policy and repeat in six months and annually thereafter dependent on the results.
    - More frequent calibration occurs as indicated by manufacturer's instructions.

2. Actions when RH Control Point Level Reaches 52% Humidity

Physical Plant Services personnel or designate:

- Check humidity levels captured by the field sensors or hand held hygrometers.
- Recheck RH level every three hours until RH levels are below Control Point Level.
- Notify Operating Room CSM or designate of changes in RH levels.
- Do not use fans or dehumidifiers to decrease humidity levels.
- Anticipate RH levels may reach RH Event Levels.

3. Actions when RH Event Level Reaches 56% Humidity

3.1 Physical Plant Services personnel or designate:

- Check humidity levels captured by the field sensors or hand held hygrometers.
- Notify Operating Room CSM and/or designated contact person(s) when these levels are reached. Contact will occur 7 days per week 24 hours per day.
- Check and adjust ambient temperature to remain within acceptable parameters of 20°C - 23°C (68°F - 73°F) to lower the humidity to the Control Level of 52%.

3.2 The Operating Room CSM or designate:

- Move sterile supplies immediately to area(s) where RH level is below RH Control Point if possible.
- Anticipate RH level is likely to continue rising and will exceed Maximum Limit.

4. Actions when RH Maximum Limit exceeds 60% humidity and for each new RH event where humidity control exceeded maximum limit in previous 24hrs.

- Physical Plant Services personnel or designate in collaborating with the CSM Operating Room or designate make every effort to correct the exceeded RH Maximum Limit.

4.1 Physical Plant Services personnel or designate:

- Notify Operating Room CSM or designate, Director of Health Services, Infection Control Practitioner and Regional Director of Acute Care.
- Check and adjust ambient temperature to remain within acceptable parameters of 20°C - 23°C (68°F - 73°F) to lower the humidity to the Control Level of 52%.

4.2 The Operating Room CSM or designate:

- Assess sterile packages and supplies for moisture. If not visibly wet or damaged and packages do not feel wet or damp, packages may be used.
- After 24 hours of RH exceeds RH Maximum Limit, assess risk of contamination of sterile supplies considering permeability of packaging material to moisture.
    - Discard, return to manufacturer, or reprocess as required.
    - Consider disposable packs.

4.3 Determine Continuation of Surgery for the Day Based on:

- There is no condensation in the OR.
- Sterile packs and supplies remain dry.

4.4 The Surgeon and another Surgical Team Member:

- Disclose information to the patient of the situation and potential risk for infection that may be associated with performing their surgery.

4.5 The ICP (Infection Control Practitioner) and Surgeon:

- Ensure active surveillance of affected patients for SSI's (Surgical Site Infections) occurs.

5. Determine Surgery Cancellation of Elective/Open/Laparoscopic Procedures Surgeries Based on:

5.1 Criteria for Cancellation

- The exceeded RH Maximum Level has not been corrected from the previous day.
- There is condensation in the OR.
- Sterile packs and supplies are moist or wet.

5.2 Gastroscopies and Colonoscopies are excluded from elective cancellation.

5.3 Emergency surgeries will be on a case by case basis in consultation with surgeon and anesthesia.
5.4 The Operating Room CSM or designate notifies the Surgeon, the Surgical Team, and Director of Health Services and Regional Director of Acute Care of surgery cancellations.
5.5 Reopening of the OR when the recommended humidity levels below 60% are reached.

6. Occurrence Reporting;

- An Occurrence Report is completed when:
  - The RH level exceeds 60% for 3 hours;
  - Surgery is cancelled as a result of exceeding the RH Maximum level.

7.0 Quality Assurance:

- Monitor and record ambient temperature and RH levels in designated areas every 24 hours during the months of May through October using Humidity Record (CLI.6611.PL.001.FORM.01).
- Monitor and record ambient temperature and RH levels in designated areas at a minimum of every 3 hours during times of increased environmental humidity from May through October.
- Include in the humidity record any service completed and actions taken on the humidity and temperature monitoring equipment.
- Maintain all records in accordance with regional policy.

SUPPORTING DOCUMENTS:

CLI.6611.PL.001.FORM.01	Humidity Record

REFERENCES:

CLI.4110.PL.001	Consent for Procedures, Treatment and Investigation
ORG.1411.PL.502	Use and Disclosure of Personal Health Information

AORN. (2015). Relative humidity in Operating Rooms: Joint Communication to Health Care Delivery Organizations. https://www.aorn.org/-/media/aorn/guidelines/position-statements/...

Canadian Standards Association. (2017). Z314.3-18 Effective sterilization in health care facilities by the steam process.

Canadian Standards Association. (2017). Z317-15-6. Special requirements for heating, ventilation, and air conditioning (HVAC) systems in health care facilities.

Canadian Standards Association. (2017). Z314.15-03 Warehousing, storage, and transportation of clean and sterile medical devices.

Operating Room Nurses Association of Canada (ORNAC). April 2017. Standards, guidelines, and position statements for perioperative registered nursing practice. 13th edition.

Operating Room Nurses Association of Canada (ORNAC) Standards for Perioperative Registered Nursing Practice *13th Edition – April 2017*