Appendix C **Removal of Mechanical Ventilation (RMV) Guidelines**

This guideline has been developed to assist physicians, nurses, respiratory care therapists, social workers, spiritual counselors and other staff in providing a compassionate process for removing mechanical ventilation (RMV) from a dying patient in ICU. This guideline is to be used when death is the expected outcome following RMV.

Step 1. Decision and Documentation

1. The prognosis, options and goals of care have been fully explored with the patient/legal surrogates/family; consensus has been reached that RMV with expected death is the optimal treatment course. The Attending Physician must be involved in this discussion. The patient's primary nurse, respiratory therapist, social worker/case manager, chaplain and palliative care team may be included in this discussion unless the family requests otherwise. Related issues to be discussed prior to RMV include:
   - withdrawal of artificial hydration/feeding
   - withdrawal of blood pressure support
   - withdrawal of antibiotics and blood products
   - wishes concerning organ donation-(see *Organ & Tissue Donation Policy* if applicable)
   - withdrawal of endotracheal tube (ET) tube after ventilator is discontinued

   Note: there is no compelling ethical or medical rationale for continuing the above treatments once a decision has been made to RMV.

2. The Attending Physician documents in the medical record the date/time of the RMV discussion, who was present and the agreed goals and plan. A Do Not Resuscitate (DNR) order is written.
3. When prolonged survival is expected, the Palliative Care team is notified of the plan for RMV and potential for transfer to non-ICU patient room.
4. A time/date is established for RMV.
5. Nursing staff to initiate Nursing Tip Sheet (**Appendix C-2**) – not to be retained as part of the patient's permanent record.

Step 2. Preparation for RMV

1. A staff physician (attending physician or Palliative Care physician) will be available before, during and immediately after RMV, to supervise symptom control and provide counseling/support to family and staff. An order is written to discontinue mechanical ventilation.

   (see Appendix C-1: Discussion points for educating Patients/families about ventilator withdrawal)

2. The primary nurse and physician will provide information to the patient or family attending the RMV process: potential outcomes (rapid vs. delayed death), potential symptoms/signs, process of withdrawal (Ventilator, ET tube, other tubes).
3. Notify Respiratory Therapy of RMV timing; ask therapist to be present.
4. Notify chaplain; ask family/surrogates if they wish chaplain or other clergy present before or during RMV.
5. Pre-medication for analgesia and sedation is indicated. (Note: the primary goal of sedation is to prevent post-extubation dyspnea. Unintentional apnea following sedative administration may occur, but in general, if all parties have agreed upon the plan of care, a decision to continue with ventilator withdrawal is appropriate. Reversing agents (e.g. Naloxone) should not be administered.)
   [***See Medication section*** **of Appendix C-3: Removal of Mechanical Ventilation (Comfort Care/ICU)**]

6. Discontinue paralytics and test for return of neuromuscular function.

7. If previously agreed to, discontinue blood pressure support medication, artificial hydration/nutrition, antibiotics, and dialysis. Remove OG/NG tubes.

8. Remove restraints and unnecessary medical paraphernalia.

9. Discontinue vital signs, labs, x-rays, and pulse oximetry.

Step 3. Removal of Mechanical Ventilation

1. Ensure adequate sedation and analgesia.
2. Prepare space at the bedside for family members.
3. A nurse or respiratory therapist should be stationed at the opposite side of the bed with a washcloth and oral suction catheter.
4. Follow ***Ventilator Management section*** **of Appendix C-3: Removal of Mechanical Ventilation (Comfort Care/ICU)**
5. A clean towel should be placed over the ET tube to collect any secretions. If excessive secretions are observed, suction them away.
6. Nursing to have extra tissues available for extra secretions, if needed, and for family use. Family should be encouraged to hold the patient's hand and provide assurances to their loved one.

7. Observe for signs of respiratory distress; adjust medication if indicated.

Step 4. Actions following RMV

1. Document in the medical record the procedure, medications and immediate outcome of the process of RMV.
2. Continually monitor for adequate sedation and comfort.
3. Have additional support (Palliative Care, Spiritual care, etc) available to family.
4. Transfer to a non-ICU bed if patient status remains stable (for example, after 2 hours).

5. Offer family the option of Complementary Therapies or Caring Presence assistance if desired.

References:

Campbell, M. (2010) Mechanical Ventilation. (Nelson, P.) Withdrawal of Life-Sustaining Therapies (pp. 35-43) Pittsburgh, PA, Hospice and Palliative Nurses Association

Principles and practice of withdrawing life-sustaining treatment in the ICU. Rubenfeld GD and Crawford SW, in Managing death in the Intensive Care Unit. Curtis JR and Rubenfeld GD (eds) Oxford University Press, 2001 pgs: 127-147.

Krieger BP. Compassionate extubation: Withdrawing mechanical ventilator support. Mediguide to pulmonary medicine. 2001; 8:1-5.

Von Gunten, C & Weissman, D. (2005) #33 Ventilator Withdrawal protocol 2nd edition . Retrieved July 2011 from www.eperc.mcw.edu/fastFact/ff_33.htm

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Appendix C-1

Discussion points for Staff in educating Patients and families about ventilator withdrawal

Removal of mechanical ventilation is a medical decision made by the physician. The role of the family is to ensure the physician understands the patient's wishes. Family support is a critical aspect of care for the dying patient who is to be removed from a ventilator. Before withdrawal, the following issues should be discussed.

Potential outcome of ventilator withdrawal

When all other life-sustaining treatments have been stopped, including artificial hydration and nutrition, there are several possible outcomes: rapid death within minutes (typically patients with sepsis on maximal blood pressure support), death within hours to days, or stable cardiopulmonary function leading to a different set of care plans, including potential hospital discharge. If the latter possibility is realistic, future management plans should be discussed prior to ventilator removal, since some families may desire to resume certain treatments, notably artificial hydration/nutrition. Generally, by the nature of the underlying illness and the established goals, it is fairly easy to predict which category will be operative, but all families should be prepared for some degree of prognostic uncertainty.

The procedure of ventilator withdrawal

Explain to family, clergy and others how they can best support their loved one at the bedside before, during and after withdrawal. Encourage family to make arrangements for special music or rituals or support during and following the procedure. If asked, provide examples and model comfort measures such as showing love and support through touch, wiping of the patient's forehead, holding a hand and talking to him or her.

Never make assumptions about what the family understands. Describe the procedure in clear, simple terms and answer any questions. Families should be told before-hand the steps of withdrawal and whether or not it is planned/desired to remove the endotracheal tube. In addition, they should be counseled about the use of oxygen and medications for symptom control. Tell families that sedative medication may lead to decreased breathing, but this does not represent euthanasia or assisted suicide. Assure them that the patient's comfort is of primary concern. Explain that breathlessness may occur, but that it can be effectively managed with medication. Confirm that you will have medication available to manage any discomfort. **Ensure they know that the patient will likely need to be kept asleep to control their symptoms and that involuntary moving or gasping does not reflect suffering if the patient is properly sedated or in a coma.**

Support the decision

When a family is able to make a definite decision for ventilator withdrawal, such a decision is always emotionally charged. Families will constantly second-guess themselves, especially if there is a prolonged dying process following ventilator withdrawal. Support, guidance and leadership from the entire medical team is crucial, as the family will be looking to the team to ensure them that they are "doing the right thing". Furthermore, it is common for families to have concerns that their decision constitutes euthanasia or assisted suicide—explicit support, education and explanations from the team will be needed.

Appendix C-2

NURSING TIP SHEET
(Not a part of the Patients permanent record)

REMOVAL OF MECHANICAL VENTILATION (COMFORT CARE/ICU)

Progress Notes

___Chart documentation: goal of care and plan; Date/time for RMV is established

___Decisions established re: hydration/feeding/pressors/antibiotics/ET tube

Orders

___DNR order

___Referral call to Donor Referral Line

___Order to discontinue ventilator

___RMV order form completed and faxed to Pharmacy

___Comfort Cart from Dietary (if requested)

Staff

___Respiratory therapy

___Case Management

___Palliative Care (if consulted)

___ Spiritual Care notified (if requested)

___ Complementary Therapies (if requested)

___ Staff physician is available for RMV (Attending, Palliative Care or Critical Care)

Families

___Information provided to families (By ____ICU staff ____Palliative Care _____Other)

___Encourage family to make arrangements for special music, rituals or support during and following the procedure.

___Bereavement kits: Offer to make clay hand prints, and clip keepsake locks of hair for family/loved ones.

___Condolence cards available for staff to send to families after patient expires.

Procedural steps

___Pre-medications and palliative medications at bedside for pain, dyspnea, sedation

___Ventilator alarms and other monitors silenced

___Wash cloth and oral suction equipment ready

___Tissues available in room for family and/or staff

___T-piece and/or aerosol delivery devices available at bedside if indicated

___Oxygen therapy devices available at bedside if indicated

___Restraints removed

___Side rails down when appropriate

Appendix C-3

REMOVAL OF MECHANICAL VENTILATION (COMFORT CARE/ICU)

Preparations:

- Do Not Resuscitate (DNR) order written
- Verify that patient has been evaluated for organ donation before withdrawal
- Chart documentation of rationale for withdrawal of life-sustaining treatments, discussions with physicians and family/legal surrogates (or attempts to contact)
- Verify adequate IV access (consult physician if access is insufficient)
- Notify Respiratory Therapy, Case Management, Palliative Care, Spiritual Care & Complementary Therapy (if consulted) of the planned time of withdrawal
- Remove gastric contents by suctioning gastric tube until no return of material
- Remove devices not necessary for comfort including monitors, blood pressure cuffs, leg compression devices. Remove all unnecessary restraints, lines, and equipment from room.
- Liberalize visitation and determine which family members desire to be present for withdrawal
- Provide family members with items to assist their comfort (tissues, chairs, comfort cart, etc)
- Position patient to facilitate hand holding with family.
- Evaluate and ensure symptom control is present;
    - Consult with family about their perception of patient comfort
- Keep head of bed elevated 30 degrees
- Reposition patient PRN comfort.

Medications:

- Discontinue all paralytic orders.
- Discontinue all previous medication orders unless ordered below.
- Goals of medication therapy:
    - Respiratory rate less than 28
    - No labored breathing
    - No signs of pain or discomfort

ESTABLISH ANALGESIA AND SEDATION

ANALGESIA: (CHOOSE ONE)

☐ **Morphine** ☐ **Hydromorphone**

- ☐ Bolus ____ mg IV **prior to extubation** AND begin continuous infusion at ____ mg/hour; If signs of discomfort; may increase infusion rate up to 50% every 30 minutes
- ☐ Give additional boluses up to 50% of current infusion rate every 5 minutes if discomfort persists

☐ **Fentanyl**

- ☐ Bolus ____ mcg IV **prior to extubation** AND begin continuous infusion at ____ mcg/hour; If signs of discomfort; may increase infusion rate up to 50% every 30 minutes
- ☐ Give additional boluses up to 50% of current infusion rate every 5 minutes if discomfort persists

DATE:_____ **TIME:**_____ **SIGNATURE:**_____ **MD/DO/**____

DATE:_____ **TIME:**_____ **SIGNATURE:**_____ **RN**

Please Attach Patient Sticker Here

SEDATION: (CHOOSE ONE)

☐ **Lorazepam** ☐ **Midazolam**

☐ Bolus ____ mg IV **prior to extubation** AND begin continuous infusion at ____ mg/hour; May increase infusion rate up to 50% every 30 minutes PRN anxiety or agitation

OR

☐ Bolus ____ mg IV **prior to extubation** AND every ___ minutes PRN anxiety or agitation

☐ **Other**_____

VENTILATOR MANAGEMENT:

Once patient is adequately sedated and comfortable, proceed with following:

☐ **Weaning protocol:**

1. Silence all ventilator alarms.
2. Set FiO2 to 21% and PEEP to zero over approximately 5 minutes. Observe for signs of respiratory distress; titrate medication for sedation and comfort.
3. Wean IMV to 4 and/or pressure support to 5 over 5-15 minutes; Observe for signs of respiratory distress and adjust medications to optimize patient comfort.
4. When patient is comfortable on IMV of 4 and/or pressure support of 5, THEN (choose one):
   - ☐ Extubate patient to air, suction if necessary.
   - ☐ Extubate to cannula at ___L/min; titrate to comfort
   - ☐ T-piece with air (not CPAP on ventilator)
5. Move ventilator away from bedside.

☐ **Extubate without weaning.**

DATE:_____ **TIME:**_____ **SIGNATURE:**_____ **MD/DO/**____

DATE:_____ **TIME:**_____ **SIGNATURE:**_____ **RN**

Please Attach Patient Sticker Here