

COVID Withdrawal of Mechanical Ventilation at End of Life

Scope

This policy and procedure applies to all adult PUI/COVID-19 patients in Henry Ford Health System undergoing withdrawal of mechanical ventilation (WMV) at the end of life.

Background

Respiratory distress is common during ventilator withdrawal at the end of life. This guideline is designed to minimize respiratory distress and minimize health care worker exposure during withdrawal of mechanical ventilation (WMV) in a PUI/COVID-19 patient.

Definitions

COVID-19: Coronavirus disease of 2019. Highly contagious novel coronavirus (SARS-CoV-2) COVID-19 is spread when an infected person has with close contact with another person (within 6 feet) usually by respiratory droplets produced when an infected person coughs or sneezes, similar to how influenza is spread or droplets are aerosolized such as in CPR or intubation.

PUI: Person under investigation of being COVID-19 positive

PPE: Personal Protective Equipment

RDOS Respiratory Distress Observation Scale. Validated measurement for quantifying respiratory distress that requires physical expression.

RASS Richmond Agitation Sedation Scale

WMV Withdrawal of Mechanical Ventilation

RT Respiratory Therapy

RN Registered Nurse

ETT Endotracheal Tube

AICD Automated internal cardioverter defibrillator

WMV Timeout Provider, RT, and RN face to face discussion to ensure that all patient and family communication is complete. All necessary individuals are or will be present at agreed upon time and aware of individualized care plan for patient.

AGP: Aerosol Generating Procedure

Policy

Inclusion Criteria

Patients with ETT or tracheostomy

Exclusion Criteria

Patients on neuromuscular blocking agents (this must be discontinued and return of neuromuscular activity prior to WMV)

Patients with conditions that impair physical expression are excluded such as:

Bulbar amyotrophic lateral sclerosis

C1-C4 quadriplegia

Locked-In Syndrome secondary to brainstem disease

Patients that have been determined to be brain dead

Procedure

Planning Phase

Ensure the patient and family wishes have been discussed, documented and honored whenever possible.

Educate patient and family about the process of WMV. Include discussion about maintaining the endotracheal tube to minimize exposure to aerosolized particles and changes in breathing pattern. Discuss symptom management and the medications and non-pharmacologic measures used to minimize them. Discuss with family that death may occur within minutes, hours or even days and that stable cardiopulmonary function will lead to an alternate plan of care that may include hospital discharge. Discuss presence at the bedside and have a plan to minimize family exposure during WMV.

Determine if family or surrogate decision maker would like a chaplain/clergy to be present before or during WMV.

Ensure that Gift of Life has been notified as soon as withdrawal of treatment is being considered.

Ensure that code status of DNAR is entered in the electronic medical record.

Discontinue neuromuscular blocking agents and ensure return of neuromuscular activity prior making any ventilator changes.

Discontinue enteral or parenteral nutrition.

Discontinue any dialysis.

Discontinue all diagnostic or therapeutic procedures that do not contribute to the patient's comfort (blood draws, x-rays).

Coordinate time with healthcare team and family and determine if family will be present for WMV.

If patient is on sedation or pain medication infusions these should be maintained.

The provider will enter a nursing communication order to follow the PUI/COVID-19 withdrawal of mechanical ventilation at end of life guidelines. The existing ventilator setting order will be modified in manage orders to:

- Invasive CPAP
- FIO2 21%
- PEEP 5
- PSV of +7
- Place a 0 in the titrate FIO2 (oxygen will not be used for respiratory distress, but treated with medications)

Click "YES" to wean to department policy and in the comments place PUI/COVID-19 WMV.

Initiation of WMV

RN, RT and provider will complete a face to face timeout immediately prior to beginning PUI/COVID-19 WMV to ensure that all patient and family communication is complete and discuss the individualized care plan. Ensure that plans for ventilator weaning are understood during the time out.

Begin morphine infusion at 2 mg/ hour in addition to existing sedation or pain medication infusions. If allergy to morphine, may use fentanyl or hydromorphone.

Place head of bed up to at least 30 degrees.

For patients with an AICD, place a magnet on the patient's chest over the device to inactivate.

Discontinue all vasoactive infusions prior to any ventilator changes.

COVID WMV			
Place monitor on comfort care profile.			
Discontinue any neuromuscular blocking agents and ensure that there is return of neuromuscular activity prior to continuing.			
Discontinue any vasoactive infusions			
Assess RDOS. If RDOS > 3, give initial dose of Morphine 4mg IV bolus once and Ativan 1 mg IVP once. Assess RDOS in 5 minutes.			
If RDOS is > 3, give morphine 8 mg IV bolus. Assess the RDOS in 5 minutes.			
If RDOS > 3, give morphine 12 mg IV bolus. Assess the RDOS in 5 minutes.			
If RDOS > 3, give morphine 16 mg IV bolus. Assess RDOS in 5 minutes.			
Continue to use the bolus dose that achieves a RDOS of ≤ 3 . If at any time during the weaning process established bolus dose does not achieve a RDOS of ≤ 3 , continue to escalate morphine by 4 mg until morphine 16 mg is reached.			
If RDOS remains > 3 and morphine 16 mg IV bolus dose is reached, notify provider to consider increasing morphine bolus dose or adding propofol.			
Once RDOS is ≤ 3 , ventilator changes can be made			
Weaning Step	Ventilator Setting	Weaning Action	Minimum or Maximum Setting
1	FiO ₂	Decrease FIO ₂ to by 50% every 1 minute until FIO ₂ is at 21%	FiO ₂ 21%
Wait 2 minutes and assess RDOS. If RDOS > 3 medicate as needed. Go to next step once RDOS is ≤ 3 .			
2	PEEP	IF PEEP $\geq +10$ decrease by 50%, every 1 minute until PEEP is +5 ***IF PEEP at +5 skip this step***	Minimum PEEP +5
Wait 2 minutes and assess RDOS. If RDOS > 3 medicate as needed. Go to next step once RDOS is ≤ 3 .			
3	Change to PSV with CPAP	Set PSV to match peak airway pressure	Max peak airway pressure 30
Wait 2 minutes and assess RDOS. If RDOS > 3 medicate as needed. Go to next step once RDOS is ≤ 3 .			
4	PSV	IF PSV $\geq +14$, decrease by 50% every 1 minutes until PSV of +7 ***IF PSV at +7 skip this step	Minimum PSV +7

Once Mechanical Ventilator is Discontinued

Once ventilator is on minimum ventilator settings (FIO₂ 21%, CPAP 5, PSV 7) change morphine infusion rate to 50% of the total morphine given prior to reaching the minimum ventilator settings. (including the initial morphine dose). The morphine infusion order will need to be modified by provider to account for this change in dosage.

For RDOS > 3, give morphine dose that achieved RDOS ≤ 3 during the ventilator weaning process and increase the morphine infusion by 2 mg/hour.

References

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Campbell ML, Yarandi HN, Mendez M. A Two-Group Trial of a Terminal Ventilator Withdrawal Algorithm: Pilot Testing. *Journal of palliative medicine*. 2015;18(9):781-785.