Policy/Procedure: Use of Non-Invasive Positive Pressure Mechanical Ventilation	
ENTITY: ☒ **CMMC** ☐ **CMMG** ☒ **BRIDGTON HOSPITAL** ☒ **RUMFORD HOSPITAL** ☐ **ELSEMORE/DIXFIELD FAMILY MEDICINE (RCHC)** ☐ **SWIFT RIVER FAMILY MEDICINE (RCHC)** ☐ **BOLSTER HEIGHTS** ☐ **RUMFORD COMMUNITY HOME**	**BOOK:** Clinical **CHAPTER:** Patient Care **ORIGINATION DATE:** 4/1/2009 **FINAL APPROVAL DATE:** 6/14/2023

PERFORMED BY

This Policy applies to all team members of Bridgton Hospital, Rumford Hospital and Central Maine Medical Center.

PURPOSE

Non-Invasive Positive Pressure Ventilation (NPPV)

It is expected that some patients will be diagnosed as being in respiratory failure by clinical grounds alone and this is entirely appropriate. These definitions should be used as guidelines only.

STATEMENT OF POLICY

Performed by the healthcare team including the Respiratory Care Practitioner, Registered Nurse (RN), and the Provider.

DEFINITIONS

For the purpose of this document NPPV includes both continuous positive airway pressure (CPAP) and bilevel positive airway pressure (BiPAP) administered by any non-invasive interface. This includes any interface involving only the nose or both the nose and mouth.

Acute respiratory failure by definition implies onset within minutes to hours and encompasses hypoxic, hypercarbic or mixed respiratory failure.

Hypoxic respiratory failure is defined as po2 (partial pressure of oxygen) below 55 mm/Hg (mercury) with the patient breathing 60% oxygen or more. Hypercarbic respiratory failure is defined as an elevation in PCO2 (partial pressure of carbon dioxide) above 45 mm/Hg (mercury) with an associated drop in pH (potential of hydrogen)

PROCEDURE/PROCESS

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1. Contraindications
    a. Cardiac or respiratory arrest.
    b. Non-respiratory organ failure.
        i. Encephalopathy with a Glasgow Coma Scale below 10.
        ii. Severe upper gastro-intestinal (GI) bleeding.
        iii. Hemodynamic instability.
        iv. Unstable cardiac dysrhythmia.
    c. Facial surgery, trauma or deformity, detached retina, or recent eye surgery.
    d. Upper airway obstruction.
    e. Inability to clear respiratory secretions.
    f. High risk for aspiration.
2. In the setting of acute respiratory failure, NPPV may be used in place of the more traditional invasive mechanical ventilation. Such as, only those physicians credentialed by the medical staff for the institution and maintenance of NPPV or mechanical ventilation shall write or approve orders for the intuition of NPPV for this indication. If the ordering provider is not credentialed and the therapy is emergently required, NPPV will be initiated by and supervised while contacting a credentialed provider.
3. The application of this potentially life-saving modality of therapy should never be delayed. If another licensed practitioner other than a Respiratory Therapist, is initiating this therapy, he/she must show competency and have documentation of training.
4. NPPV will require close monitoring and dedicated personnel during the initiation period. One on one monitoring by the Respiratory Therapist is required for the first twenty (20) minutes of therapy. If the patient is stable after 20 minutes, the Respiratory Therapist in consultation with RN and/or provider may leave the bedside. **See NPPV Assessment Algorithm**. Patients will be monitored for vital signs, pulse oximetry, level of consciousness, skin integrity and tolerance of therapy. **Refer to Special Considerations**.
5. If the therapy is felt to be successful (improved work of breathing, improved vital signs, decrease in anxiety, synchrony with the ventilator) the team will devise a plan for ongoing monitoring based on the individual patient's response. If the patient's condition has not improved, (increase work of breathing, agitation/anxiety, decline of vital signs, dis-synchrony with the ventilator, gastric distention) the respiratory therapist and nurse will consult with the provider to consider a higher level of care. Initial documentation is done in the electronic medical record (EMAR) and will include but not limiting to the following:
    a. Oxygen saturation.
    b. Arterial blood gas, if drawn.
    c. Type of interface chosen NPPV settings including FiO2 (fraction of inspired oxygen).

SPECIAL CONSIDERATIONS:

1. Patient should remain NPO (Nothing by Mouth), (at least for the first hour) during acute phase of BiPAP therapy. NPPV should be initiated with caution if the patient has recently eaten.
2. Continuous pulse oximetry monitoring may be necessary.

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3. If the patient is started on NPPV in Emergency, the NPPV must be reordered or discontinued upon admission to the hospital.
4. Any patient with a pH of less than or equal to 7.30, or requires greater than 60% FiO2, should be reevaluated for appropriateness of NPPV outside of the critical care units.
5. Avoid shearing of mask on patients' face.
6. Secure with the least amount of pressure needed to maximize therapy.
7. Document and report any changes in skin integrity. Skin integrity will be assessed during the ongoing assessment by nursing staff and routine systems checks by the respiratory therapist. **See Mask Interface Assessment Algorithm**.
8. If the patient is on noninvasive ventilation for longer than 4-6 hours, the patient will be assessed for an alternative style mask. **See Mask Interface Assessment attachment**. This will help to alleviate areas of pressure on the patient's face and avoid skin breakdown. See below.

Avoiding Skin Breakdown with Noninvasive Ventilator (NIV) Masks

1. All patients should be assessed for skin integrity on admission. Check for redness, sores, or any breakdown of skin where the device will sit. See Mask Interface Assessment Algorithm.
2. Assessment of skin risk factors should be determined on admission and prior to NIV initiation.
3. Relative risk should determine monitoring frequency and prevention strategy.

Noninvasive Ventilator Mask Selection

1. Estimated length of use.
2. Compatibility with device.
3. Safety features.
    a. Quick release clips.
4. Facial features
    a. Skin condition.
    b. Facial abnormalities.
    c. Facial hair.

Mask Interface Considerations

1. Mask types:
    a. Total face mask.
    b. Full face mask.
    c. Nasal mask.
2. Headgear:
    a. Four-point straps.
    b. Cap straps.
3. Self-sealing cushions
    a. Balanced pressure on nose, chin and forehead.

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DISCLAIMER STATEMENTS
Extenuating circumstances may necessitate deviation from the terms of a Policy. It is understood that emergent situations may occur, which require immediate resolution. Where applicable, appropriate documentation should be created to support the necessity for such deviations.

CROSS REFERENCES
None

REFERENCES AND SOURCES OF EVIDENCE
Phillips "Saving Face" Strategies to avoid skin breakdown, August 2011
AARC Clinical Practice Guidelines
Sandra M. Nettina, MSN, ANP-BC, ed. 2019. Lippincott Manual of Nursing Practice - 11th Ed. Philadelphia, PA. Lippincott Williams & Wilkins. ISBN-10: 1-49637-994-2. STAT!Ref Online Electronic Medical Library. http://online.statref.com/document/cQrDdVaUlzMA9prc2Dw2zj. 5/25/2023 9:16:09 PM CDT (UTC -05:00).

REVIEW/APPROVAL SUMMARY
SUPERSEDES: None
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APPROVALS: System Clinical Policy Advisory Group and Nursing Executive Council.

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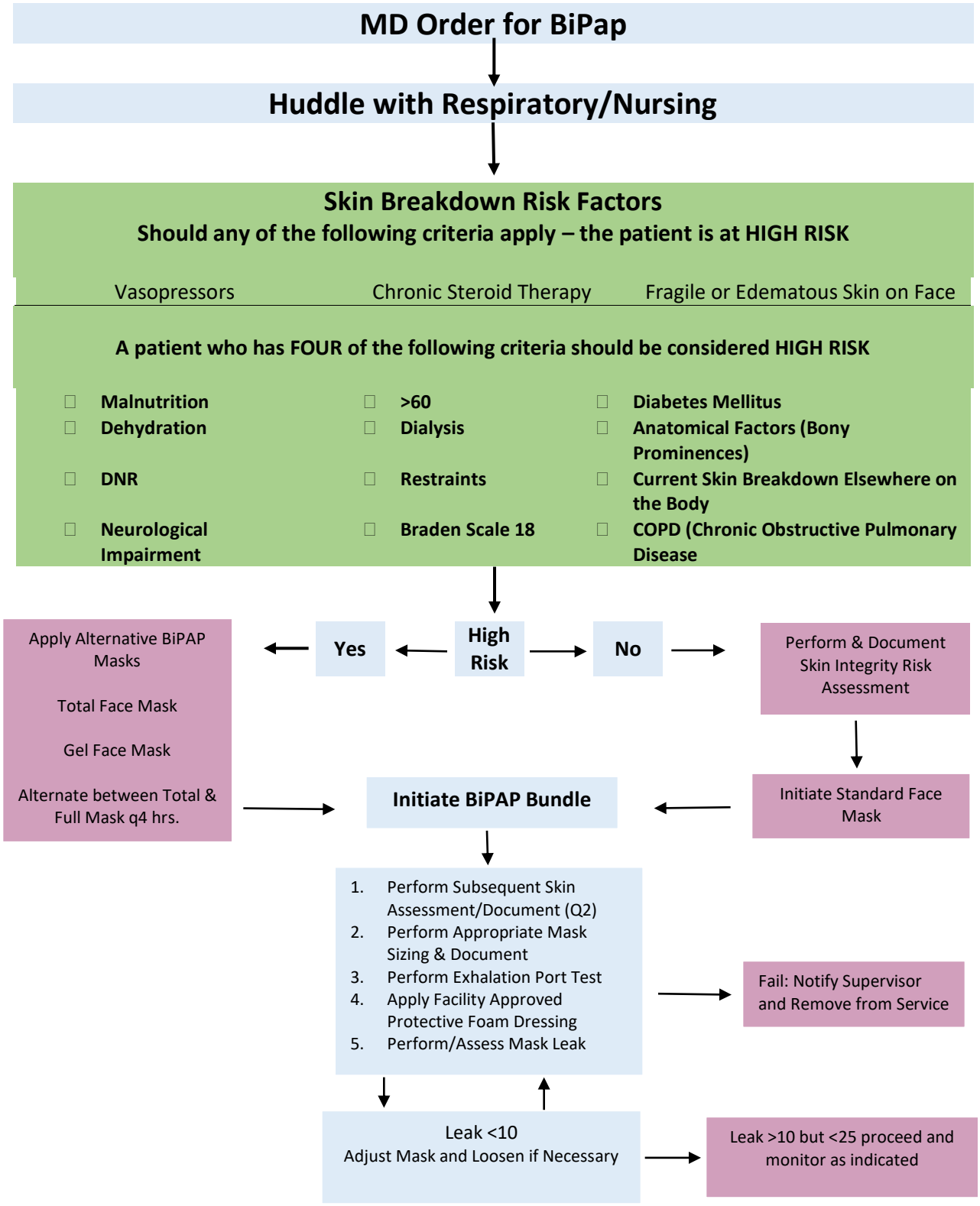
Mask Interface Assessment



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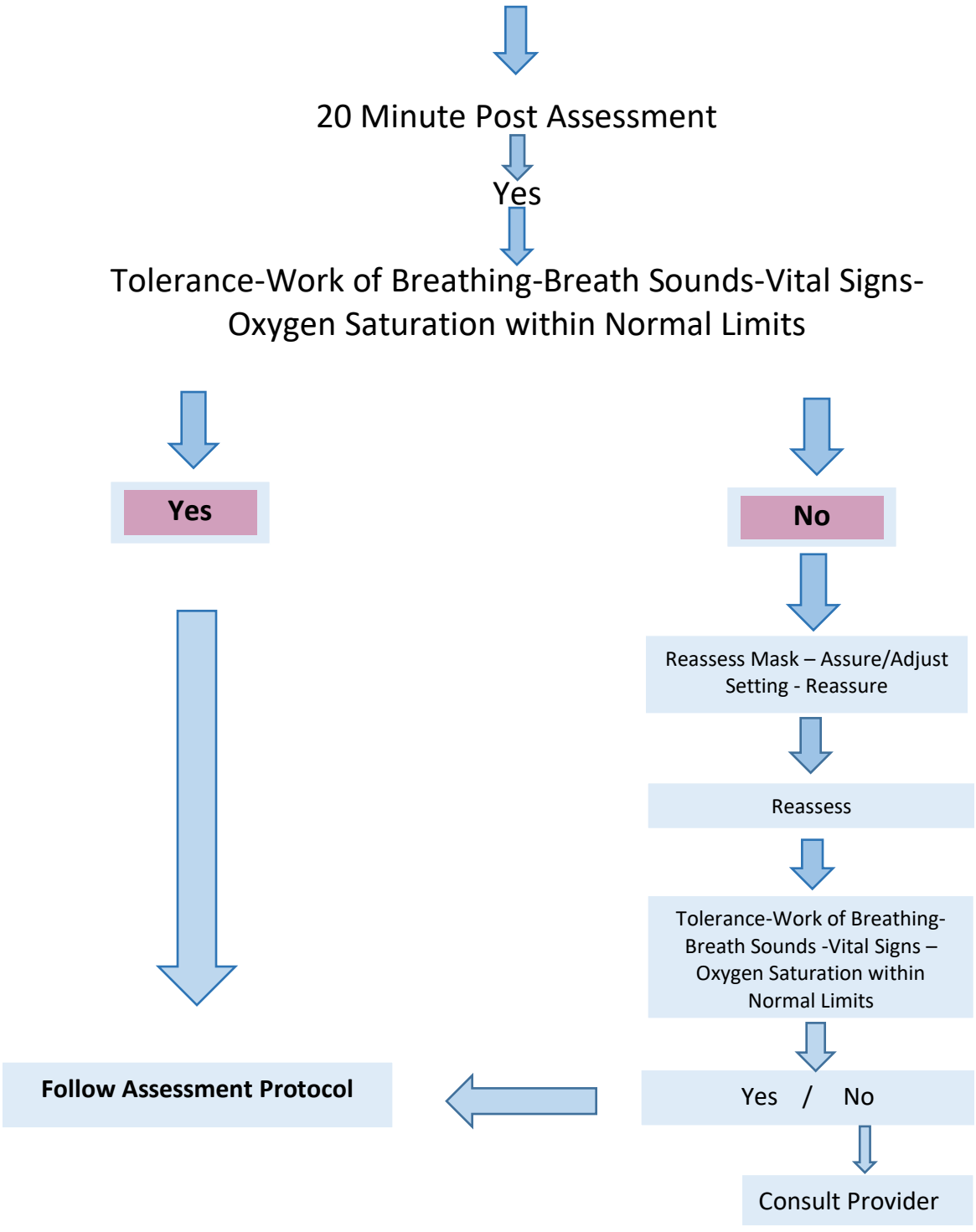
Non-Invasive Positive Pressure Ventilation Assessment



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