I. PURPOSE:

To provide the respiratory care practitioner a standardized and evidence–based approach to identify patients at increased risk for Obstructive Sleep Apnea (OSA) with the STOP-BANG assessment tool, to safely monitor, and to treat these patients with a non-invasive positive pressure breathing apparatus to maintain airway patency during sleep.

II. TEXT

Obstructive sleep apnea (OSA) consists of episodes of partial or complete closure of the upper airway that occur during sleep and lead to breathing cessation (defined as a period of apnea greater than 10 sec). Symptoms include restlessness, snoring, recurrent awakening, morning headache, and excessive daytime sleepiness. Diagnosis is based on sleep history, and polysomnography or home sleep testing. Treatment is provided with continuous positive airway pressure.

The goals of non-invasive positive pressure ventilation are the elimination of apneas, hypopneas and snoring; normalization of oxygen saturation and ventilation; improvement of sleep architecture and continuity.

APAP treatment is recommended for all patients during sleep who are at increased risk for OSA and for those who have been previously diagnosed with OSA with a sleep study. Patients who have been diagnosed with OSA and have had significant weight gain without a follow-up sleep study may still experience airway obstructions and oxygen desaturations if the amount of positive airway pressure is inadequate to maintain airway patency.

III. DEFINITIONS:

A. RCP – Respiratory Care Practitioner
B. OSA – Obstructive Sleep Apnea
C. BMI – Body Mass Index
D. EMR – Electronic Medical Record
E. NPPV – Non-invasive Positive Pressure Ventilation
F. CPAP – Continuous Positive Airway Pressure
G. APAP – Auto-titrating Positive Airway Pressure
H. BiPAP – Bi-level Positive Airway Pressure
I. AIDET – A Sharp communication/service tool for, “Acknowledge, Introduce, Duration, Explanation, and Thank You”
J. LIP - Licensed Individual Practitioner (MD’s, Nurse Practitioners, Physician Assistants)
K. RN – Registered Nurse
L. Code Delta – Rapid Response Team activation code
M. PPE - Personal Protective Equipment

III. POTENTIAL COMPLICATIONS:

Contraindications – NPPV Treatment should be withheld for any patient who exhibits one or more of the following contraindications.

Absolute Contraindications to Non-invasive positive pressure ventilation:
  • Need for immediate intubation
  • Hemodynamic instability
  • Uncooperative patient
  • Facial burns or trauma
  • Need for airway protection
  • Substantially impaired level of consciousness
  • Copious secretions
  • Cardiac arrest or acute myocardial infarct
  • Persistent nausea/vomiting

Note: All Inpatients should be screened for OSA risk. Treatment options may differ from policy due to clinical condition. The RCP should screen the patient when appropriate and add a note in the EMR stating that treatment is contraindicated based on the patient’s unstable condition.

V. Infection Control

Standard precautions must be followed in all patient care activities per Sharp policy. A new single-use filter between the CPAP device and the patient is to be used inline with the single-use circuit tubing for each patient on hospital supplied equipment.

VI. Equipment:
• Auto-titrating CPAP machine (APAP) or non-invasive positive pressure ventilator
• Bacterial Filter
• Ventilator circuit
• Assortment of full or nasal mask sizes and nasal cradles
• Mask sizing template
• Humidifier and oxygen supplies, if indicated
• Continuous pulse oximeter

Note: Patient-owned CPAP or BiPAP medical devices per Sharp policy 18006.99 (click here to access). Patients who have demonstrated that they can manage their own equipment will not be routinely monitored by Respiratory Care Services or billed for a non-invasive ventilator.

VII. PROCEDURE:

A. Screening by PAES

PAES staff will obtain height and measured weight on elective surgical patients and will screen patients with a BMI of 30 and greater with the validated STOP-BANG assessment tool in the EMR. Patients should be asked to weigh themselves at home or to provide their most recent measured weight to obtain the most accurate BMI when screened over the phone.

Screen the patient with the STOP-BANG tool utilizing AIDET to assess the following: History of Sleep Apnea, Home Device with settings if known, in addition to Snoring, Tired, Obstruction, and Pressure (blood) as part of the STOP assessment. The BANG portion of the tool assesses BMI, Age, Neck Circumference and Gender.

Note: For any routine surgical patient who is uncertain if their neck size is greater than 16 inches for women or greater than 17 inches for men, score this question with a YES on the STOP-BANG form found on the Surgical Intake form in the EMR.

A positive screen is 2 or more “Yes” answers to the STOP questions. 3 or more “Yes” answers to the BANG questions or a combination of 3 or more “Yes” answers to both the STOP and BANG questions. If the screen is positive, the patient is considered at increased risk for Obstructive Sleep Apnea (OSA).
TITLE: PATIENT DRIVEN PROTOCOL - OSA

SUBJECT: Patient Care

KEYWORD(S): OBSTRUCTIVE SLEEP APNEA, APAP, CPAP

VII. PROCEDURE:

Note: If a patient has a current diagnosis of OSA, the entire STOP-BANG screening form does not need to be completed: only complete the top section regarding History of Sleep Apnea, and Home Device with settings if known.

B. Screening by Respiratory Care

A BMI of 30 or greater from nursing documentation in the EMR will initiate an OSA screening referral to Respiratory Care Services for medical and surgical inpatients.

Identify the patient using at least two approved patient identifiers.

Screen the patient with the STOP-BANG tool in the EMR utilizing AIDET to assess the following: History of Sleep Apnea, Home Device with settings if known, in addition to Snoring, Tired, Obstruction, and Pressure (blood) as part of the STOP assessment. The BANG portion of the tool assesses BMI, Age, Neck Circumference and Gender.

A positive screen is 2 or more “Yes” answers to the STOP questions. 3 or more “Yes” answers to the BANG questions or a combination of 3 or more “Yes” answers to both the STOP and BANG questions. If the screen is positive, the patient is considered high risk for Obstructive Sleep Apnea (OSA) and needs to have a patient assessment performed.

Note: If a patient has a current diagnosis of OSA, the entire STOP-BANG screening form does not need to be completed: only complete the top section related to History of Sleep Apnea, and Home Device type (CPAP, APAP, BiPAP) with settings if known.

Note: A STOP-BANG assessment is not performed if a valid NPPV order with desired settings from a LIP is received for treatment of suspected or diagnosed OSA.

C. Treatment Order (PAES)

The PAES RN will call the admitting physician or licensed provider prior to admission to notify them of all elective surgery patients with an increased risk of OSA and obtain a TO/VO treatment order for a Non-invasive Ventilator (APAP mode) and Continuous Oximetry for the entire duration of their hospital visit for the ACC nurse to initiate upon admission which will populate the RCP’s PAL (Patient Access List) in the EMR.
If a patient has a current diagnosis of OSA, call the attending MD or LIP for a TO/VO treatment order for a Non-invasive Ventilator (APAP mode) and Continuous Oximetry.

D. **Treatment Order (Respiratory Care)**

1) If a medical, or surgical inpatient screens positive on the STOP-BANG tool, the RCP will call the attending physician or LIP to notify them of the patient’s increased risk of OSA and obtain a TO/VO treatment order for a non-invasive ventilator (APAP mode) and Continuous Oximetry for the entire duration of their hospital visit.

2) If a, “RCP OSA Eval and Treatment” order has been placed by LIP, the RCP will perform a patient assessment, screen for OSA risk with STOP-BANG tool, enter an order for the “APAP” mode of the CPAP non-invasive ventilator per protocol for patients found to be at increased risk for OSA, and add a Follow Up Care entry and Exit Care information on Sleep Apnea as part of the Depart process in the EMR.

3) If a patient has a current diagnosis of OSA without a treatment order for OSA, call the attending MD for a TO/VO treatment order for a Non-invasive Ventilator (APAP mode) and Continuous Oximetry for the entire duration of their hospital visit.

E. **Patient Assessment**

A patient assessment should be performed on all patients who have a positive STOP-BANG score and/or an existing diagnosis for OSA.

Every attempt should be made to assess surgical patients prior to surgery and sedation whenever possible. Upon meeting patients in their room, the RCP will discuss the results of the STOP-BANG screen, provide educational material on Sleep Apnea, assess the patient, explain the treatment and offer NPPV.

F. **Patient Education**

Education provided should be documented in the EMR for all topics discussed with the patient.

G. **Treatment**

RCP
Treatment for OSA with NPPV should be offered to patients as soon as possible upon arriving to their room and should be utilized while sleeping during the day as well as the night. RCP’s will monitor the PAL in the EMR to track the patient’s return to the floor and ask nursing to promptly notify the RCP of the patient’s arrival to their room.

Per protocol, if the patient refuses NPPV therapy, the RCP will notify the nurse and enter the discontinuation order for treatment in the EMR. See Documentation Standards below for further instruction.

H. Monitoring

All patients found to be at increased risk of OSA will be monitored with continuous pulse oximetry for the duration of their inpatient admission. Verify that a continuous oximeter has been properly placed on the patient and it is on and functioning including adequate alarm volume. If a continuous oximetry order is not ordered for the duration of the patient’s inpatient admission, the RCP will enter a continuous oximetry order per protocol.

Note: Activate a Code Delta (RRT) for patients at increased risk of OSA for treatment and/or monitoring options when they are refusing treatment and experiencing oxygen desaturations below 80% \( S_pO_2 \) on room air.

I. Mask Fitting/Treatment Application

Assemble and bring the needed equipment and supplies to the properly identified patient if not already done, verify the NPPV device is plugged into a red outlet and verify appropriate machine settings (REMstar Setup and Default Settings). Wash hands, don gloves, introduce yourself, explain the equipment and purpose of NPPV to the patient utilizing AIDET. Carefully fit the appropriate interface (nasal mask, full face mask, nasal cradle or nasal pillows) as follows:

1. Select the smallest size interface to comfortably fit the patient, using the mask sizing template provided with each new interface.

2. Adjust the straps of the interface until all significant leaks are
VII. PROCEDURE:

eliminated and for patient comfort; avoid over-tightening.

**Note:** Full face masks are not allowed to be used on the auto-titrating non-invasive vents due to the device’s lack of ability to detect a leak and generate an alarm condition and also the risk of CO₂ retention with power or equipment failures. Nasal Pillows are not allowed to be used on the critical care non-invasive ventilators or auto-titrating units due to the small holes in the pillows mask that may prevent the vent from recognizing a sufficient loss of pressure due to a patient leak or disconnection from the mask or non-invasive ventilator. Nasal cradles have one large hole that covers the nose that allows a sufficient loss of pressure and subsequent triggering of a leak or disconnection alarm condition and are allowed to be used on the critical care or auto-titrating units.

Patient-owned masks or nasal pillows: Verify the presence of an exhalation valve on the mask, cradle, pillows or circuit to allow for adequate CO₂ clearance before applying any of these devices to a patient.

J. **Therapeutic Treatment Ranges**

For patients who accept NPPV treatment, the RCP will routinely apply the “APAP” mode initially to patients identified of having an increased risk of OSA. The APAP mode will deliver a therapeutic pressure range of 4 - 20 cmH₂O to overcome airway resistance to maintain airway patency and ventilation. If a patient is aware of their cmH₂O pressure prescribed for their home equipment, enter that pressure as the lower therapeutic APAP value and set 20 cmH₂O as the high therapeutic value for patient comfort and safety.

K. **Treatment Options**

If APAP is not tolerated, a back-up rate, set respiratory rate, or alarms are desired, the RCP may use the critical care non-invasive ventilator for CPAP or BiPAP ventilation. CPAP and BiPAP ventilation settings may be set empirically by RCP staff to patient tolerance with a difference of 4-8 cmH₂O pressure between BiPAP pressures.

L. **Default APAP Settings** – See Attachment 1
M. Documentation Standards:

a. A positive screen will require the entry, “Possible” to be added in the Confirmation cell on the Problem List in the EMR for Sleep Apnea.

A positive sleep study diagnosing OSA will require the entry, “Confirmed” to be added in the Confirmation cell on the Problem List in the EMR.

Note: OSA can only be confirmed with a sleep study.

For all patients found to be positive with the STOP-BANG tool, add an Ad hoc “Assessment, Initial or Subsequent” charge as appropriate, then document the mandatory comment, “STOP-BANG” in the EMR.

The RCP must document a Follow Up Care entry and Exit Care information on Sleep Apnea as part of the Depart process in the EMR for patient discharge education on Sleep Apnea and sleep studies for all patients found to be at increased for OSA including those who have refused treatment.

b. Continuous Oximetry - Verify documentation has occurred through the use of the RCP General Assessment Power Form for every day the patient is monitored.

c. Unstable Patients - The RCP should screen the patient and add a clinical note in the EMR stating that treatment is contraindicated based on the patient’s unstable condition and notify the patient’s registered nurse. Document that education was provided, as well as the Follow-up and Exit Care information on Sleep Apnea under the Depart tab.

d. Patient Refusals - If the patient found to be at increased risk of OSA refuses NPPV therapy, it is mandatory that the refusal be documented in the EMR. Per protocol, the RCP will notify the nurse and enter the discontinuation order for treatment in the EMR.

If the patient found to be at increased risk of OSA refuses to be monitored with continuous pulse oximetry, notify the nurse and call the attending physician for treatment options or a discontinuation order.
### VII. PROCEDURE:

<table>
<thead>
<tr>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>e. Patient Tolerance</strong> - Assess and document treatment and patient tolerance on the appropriate medical record initially and every four hours treatment is provided.</td>
</tr>
</tbody>
</table>

Documentation standards should include, but are not limited to:

Auto-titrating Non-invasive Ventilators:
1. Mode (APAP)
2. A-Flex level of support
3. HR
4. \( S_{O_2} \)
5. RR
6. \( F_{O_2} \)
7. Humidifier/Temperature
8. Patient Tolerance
9. \( S_{O_2} \)
10. Alarm Limits and Function

Critical Care Non-invasive Ventilators:
1. IPAP
2. EPAP
3. BPM/Total RR
4. \( F_{O_2} \)
5. Humidifier/Temperature
6. Heart Rate
7. Breath Sounds
8. Patient Tolerance

**N. Supplemental Oxygen** – Supplemental oxygen should be administered continuously to all patients who are at increased risk from OSA if they are unable to maintain their baseline oxygen saturation while breathing room air.

Note: Oxygen desaturations occurring commonly in OSA patients is a possible indication of a loss of applied pressure to the airway. Check for leaks around the mask and circuit and reassess oxygen status of the patient. If the room air \( S_{O_2} \) is then less than 92%, administer and titrate a \( F_{O_2} \) to maintain \( S_{O_2} \) above 91%. Document oxygen therapy in the EMR under RCP General Assessment Power Form.

Note: Supplemental oxygen may increase the duration of apneic episodes and may hinder detection of atelectasis, transient apnea, and hypoventilation by pulse oximetry.

**O. Continuous Oximetry** - Document oximetry results through the use of the RCP General Assessment Power Form for every day the patient is monitored.

**P. Patient Charges** - Enter a daily charge into the EMR for the non-invasive ventilator and continuous oximetry for each day used. A daily charge is to
be entered if the NPPV equipment is used for any length of time in that day; whether a short or long period of time per Sharp policy.

The RCP will place the appropriate patient assessment charge in the EMR for all patients screened to be at increased risk for OSA.

VII. REFERENCES:


VIII. CROSS REFERENCES:

A. Patient-Supplied Medical Device, Sharp policy 18006.99
B. Noninvasive Positive Pressure Ventilation, Sharp policy 44203.99
C. Infection Control for Pulmonary Medicine, Sharp policy 44018
D. Rapid Response Team, Sharp policy 30341.99

IV. ATTACHMENTS: (Click on Attachment name to access)

A. REMstar Setup and Default Settings
B. OSA Protocol Flow Chart
C. STOP-BANG Down-time Screening Tool
D. OSA Screening and Treatment Orders Flow Chart: PAES Process

X. APPROVALS:

A. Respiratory Care Services Management Coronado – 10/2010, 10/2013
B. Pharmacy and Therapeutics Committee Coronado – 01/2012, 10/2013
D. System Policy and Procedure Committee – 09/2012
E. System Pulmonary Committee – 09/12; 02/13, 11/7/2013
F. SCOR Medical Director – 02/13, 10/2013

XI. REPLACES: None
XII. **HISTORY**: System #44362.99; originally dtd. 09/12
   Revised/Reviewed: 02/13; 10/13
Patient Driven Protocol: OSA

REMstar Setup and Default Settings

Prior to patient use, verify proper setup by reviewing the following information by selecting the Setup menu from the Home Screen by turning the wheel knob and depressing it as Setup is highlighted. Parameters should be set as follows:

- A-Flex 3
- Tubing type 22
- Auto on on
- Auto off off
- Mask alert on
- Ramp backlight on
- Silent mode on
- Language EN[GLISH]

To access the Provider Screen (if further set up changes are needed):

Turn the wheel to toggle between options and settings on the screen. Press the wheel to choose an option or setting that is highlighted. If you choose “Back” on any screen, it will take you back to the previous screen.

Note: Choosing “EXIT” from the Provider Screen will exit provider mode and the device will return to the Home Screen in the patient mode.

Note: Provider mode will time out after 1 minute of inactivity and automatically exit the provider mode and return to the Home Screen in the patient mode.

Provider Mode Screen Descriptions

The following sections will describe the options available under the 3 choices from the Provider Screen (Reminder, Setup, and Info).

Reminder Screen

From the Provider screen, highlight “Reminder” and press the wheel. The following Reminder screen will appear. The default is set to off.

Info Screen

Therapy hours, blower hours, Large Leak, AHI, Periodic Breathing, machine hours
The SD card will not be used; the data above will not be recorded routinely.

Setup Screen

From the Provider screen, highlight “Setup” and press the wheel. The following Setup screen will appear:
<table>
<thead>
<tr>
<th>Mode</th>
<th>Auto CPAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto max</td>
<td>(auto min)-20.0</td>
</tr>
<tr>
<td>Auto min</td>
<td>4.0-(auto max)</td>
</tr>
<tr>
<td>CPAP pres</td>
<td>4.0-20.0</td>
</tr>
<tr>
<td>Flex type</td>
<td>none, C-Flex (A-Flex) or (C-Flex+)</td>
</tr>
<tr>
<td>Flex</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Tubing type lock</td>
<td>on, off</td>
</tr>
<tr>
<td>Tubing type</td>
<td>15, 22</td>
</tr>
<tr>
<td>SYSTEM ONE resistance</td>
<td>0, X1, X2, X3, X4, X5</td>
</tr>
<tr>
<td>Lock SYSTEM ONE</td>
<td>on, off</td>
</tr>
<tr>
<td>Ramp time</td>
<td>0:00-0:45</td>
</tr>
<tr>
<td>Ramp start</td>
<td>4.0-(auto min) or (CPAP pres)</td>
</tr>
<tr>
<td>SYSTEM ONE humidification</td>
<td>on, off</td>
</tr>
<tr>
<td>Humidifier</td>
<td>0, 1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>Auto on</td>
<td>on, off</td>
</tr>
<tr>
<td>Auto off</td>
<td>on, off</td>
</tr>
<tr>
<td>Mask alert</td>
<td>on, off</td>
</tr>
<tr>
<td>Mask fit check</td>
<td>on, off</td>
</tr>
<tr>
<td>Humidifier LED backlight</td>
<td>on, off</td>
</tr>
<tr>
<td>Show AHI/leak/PB</td>
<td>on, off</td>
</tr>
<tr>
<td>Split night</td>
<td>on, off</td>
</tr>
<tr>
<td>Split night start</td>
<td>on, off</td>
</tr>
<tr>
<td>Language</td>
<td>EN, ES</td>
</tr>
<tr>
<td>Back</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The screen will only show 4 lines at a time. As you rotate the wheel to toggle over different options the screen will slide up and down accordingly. If the text is too long to completely fit on the screen, it will scroll horizontally across the screen when highlighted.
• **Mode** - This screen displays the therapy mode setting. You can select CPAP therapy or Auto-CPAP therapy. CPAP therapy provides one level of output pressure for both the inspiratory and expiratory breathing phases. Auto-CPAP therapy provides CPAP therapy while automatically adjusting the pressure level when apnea, hypopnea, flow limitation, or snoring events are detected.

**Note:** The menu options will vary between CPAP mode and Auto-CPAP mode. **The default mode is Auto (APAP).**

• **Auto max** - This screen allows you to modify the Auto Maximum pressure setting. The setting you specify here will be the maximum pressure for the device. Auto therapy will adjust the CPAP pressure between the Auto Maximum and the Auto Minimum pressure settings. **The default Auto Max should be 20 cmH2O**

**Note:** This screen only displays if Auto-CPAP therapy is enabled.

• **Auto min** - This screen allows you to modify the Auto Minimum pressure setting. The setting specified here will be the minimum pressure for the device. Auto therapy will adjust the CPAP pressure between the Auto Maximum and the Auto Minimum pressure settings. **The default Auto Min should be 4 cmH2O unless a patient has been prescribed a specific pressure for home use. Set the Auto min to the prescribed pressure for patient comfort and tolerance.**

**Note:** This screen only displays if Auto-CPAP therapy is enabled.

• **CPAP pres** - This screen displays the current CPAP pressure setting. You can adjust the setting from 4 cm H2O to 20 cm H2O.

**Note:** This screen only displays if CPAP therapy is enabled.

• **Flex type** - This screen displays the comfort mode setting. You can select None, C-Flex, or C-Flex+ (if in CPAP mode). You can select None, C-Flex, or A-Flex (if in Auto-CPAP mode). **The default mode should be A-Flex.**

• **Flex** - You can modify the Flex setting (1, 2 or 3) on this screen if you enabled Flex. The setting of “1” provides a small amount of pressure relief, with higher numbers providing additional relief. **The default Flex level of support should be 3**

(See A-Flex Comfort Feature section below for more information)

**Note:** The patient also has access to this setting, if Flex is enabled.

• **Tubing type lock** - If available on your device, this enables you to lock the Tubing type setting if you do not want the patient to change it.

**Note:** If you lock this setting, the device defaults to a setting of 22, and the patient will not see the Tubing type setting. **The default is set to on.**

• **Tubing type** - If available on your device, this setting allows you to select the correct size diameter tubing that you are using with the device. You can choose either (22) for the Respironics 22 mm tubing, or (15) for the optional Respironics 15 mm tubing. **The default is the 22 mm tubing.**

**Note:** only 22 mm diameter circuits are allowed on the REMstar units.
• **SYSTEM ONE resistance** - This setting allows you to adjust the level of air pressure relief based on the specific Respironics mask. Each Respironics mask may have a "**System One**" resistance control setting. System One resistance compensation can be turned off by choosing the setting “0”. **The default is set to off**

**Note:** The patient also has access to this setting, if Lock SYSTEM ONE is off.

• **Lock SYSTEM ONE** - This enables you to lock the “System One” resistance control setting if you do not want the patient to change it. **The default is set to on**

**Note:** If you lock this setting, the patient will see a “lock” icon next to the setting.

• **Ramp time** – This feature reduces the air pressure when the patient is trying to fall asleep and then gradually increases (ramps) the pressure until the necessary pressure is reached, allowing the patient to fall asleep more comfortably.

  **Note:** In APAP mode, there is no ramp at minimum pressure when starting. Ramp would only be useful to the patient if they awaken at a higher pressure.

• **Ramp start** - This displays the ramp starting pressure. You can increase or decrease the ramp starting pressure in 0.5 cm H2O increments. **This is only available if Ramp time has been set to >0 and auto min or CPAP pressure >4 cm H2O.**

• **SYSTEM ONE humidification** - System One humidity control maintains a consistent mask humidity by monitoring and adjusting for changes in room temperature and room humidity. You can enable or disable this feature. If the System One humidity control has been disabled, the classic style of basic temperature controlled heated humidification will be used. This will only display if the humidifier is attached. **The default is set to off** – Only a cascade humidifier will be used in the hospital setting for infection prevention.

• **Humidifier** - This setting allows you to choose the desired humidity setting: 0, 1, 2, 3, 4 or 5. If the System One humidity control has been disabled, the classic style of basic temperature controlled heated humidification will be used and the display will show: 0, C1, C2, C3, C4 or C5 for these settings. This will only display if the humidifier is attached. **The default is set to off** – Only a cascade humidifier will be used in the hospital setting for infection prevention.

**Note:** Cascade Heated Humidifier – A heated humidifier should be available for patient comfort. Resources may be rare and heated humidification should be reserved for patient preference. Please refer to the humidifier manual if using a humidifier.

• **Auto on** - You can enable or disable this feature if you want the device to automatically turn the airflow on whenever the patient applies the interface (mask) to their airway. **The default is set to on**

• **Auto off** - You can enable or disable this feature if you want the device to automatically turn the airflow off whenever the patient removes the interface (mask) from their airway. **The default is set to off**
• **Mask alert** - You can enable or disable the mask alert setting. If this feature is enabled, the mask alert will appear on the display screen when a significant mask leak is detected, and an audible alert will sound. **The default is set to on**

• **Mask fit check** - You can enable or disable the mask fit check setting if it is available on your device. If this feature is enabled, it allows the patient to check the fit of their mask prior to starting therapy. This is done by measuring the amount of leak in the patient circuit. **The default is set to off**

Note: This screen only displays if Auto-CPAP therapy is enabled.
Note: If Split night is enabled, Mask Fit Check will be disabled.

• **Humidifier LED Backlight (Ramp Backlight)** - You can enable or disable the LED backlight for the humidifier number settings and Ramp button on the device. **The default is set to on**

Note: If the humidifier is not attached, this feature will display as “Ramp Backlight” and control the LED backlight for the Ramp button only.
Note: If the Humidifier LED Backlight is enabled or disabled, the humidifier icon will always remain on (if humidifier is attached and heat is being applied), but will dim after 30 seconds of inactivity. **The Respironics System One humidifier will not be used.**

• **Show AHI/leak/PB** - You can select whether or not the Apnea/Hypopnea index, System Leak averages, and Periodic Breathing averages are displayed on the Patient Info screens. **The default is set to off**

• **Split night** - You can enable or disable Split Night on this screen, which splits the therapy throughout the night, first in CPAP therapy before transitioning to Auto-CPAP therapy. **The default is set to off**

Note: This screen only displays if Auto-CPAP therapy is enabled.

• **Silent Mode** – Silent Mode allows the machine to turn on with or without an alarm which “beeps” once notifying you that the machine has been turned on. This is a useful feature for home use when a bed partner is present and does not want to be awakened by this alarm. **Default is set to off** (The “beep” will occur upon startup).

**C-Flex Comfort Feature – Used with CPAP – Use non-invasive vent if CPAP or BiPAP is desired. APAP is to be used routinely on all REMstar units.**

**A-Flex (C-Flex+) Comfort Feature:**
The device consists of a special comfort feature called A-Flex if Auto-CPAP therapy is enabled (or C-Flex+ if CPAP therapy is enabled). When A-Flex is enabled, it enhances patient comfort in three ways: 1) by smoothing the transition between the end of inhalation and the beginning of exhalation, 2) by providing significant pressure relief during the beginning of exhalation, and 3) by reaching an end exhalation pressure of no more than 2 cm H2O below the high point of inspiration.

In the diagram below, the dashed line represents CPAP pressure in comparison to the bold line representing A-Flex. A-Flex levels of 1, 2, or 3 progressively reflect increased pressure relief during the beginning of exhalation.
With A-Flex, the level of pressure relief at the beginning of exhalation is determined by the A-Flex setting and the amount of patient flow in any one breath.

**Note:** The patient also has access to this setting, if A-Flex (C-Flex+) is enabled.

**Note:** A-Flex transitions from no A-Flex at 4.0 cm H2O to full A-Flex at 6 cm H2O. A-Flex is top limited at 20.0 cm H2O pressure. **The default is set to A-Flex, level 3**
## Stop-Bang Sleep Apnea

### Assessment Tool

<table>
<thead>
<tr>
<th>Screen</th>
<th>STOP</th>
<th>BANG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S</strong> (snore)</td>
<td>Have you been told that you snore?</td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>T</strong> (tired)</td>
<td>Are you often tired during the day?</td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>O</strong> (obstruction)</td>
<td>Do you know if you stop breathing or anyone told you that you stop breathing when you sleep?</td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>P</strong> (pressure)</td>
<td>Do you have high blood pressure or take medications to control high blood pressure?</td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>B</strong> (BMI)</td>
<td>Is the patient's Body Mass Index greater than or equal to 35? BMI_______</td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>A</strong> (age)</td>
<td>Is the patient's age 50 or older?</td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>N</strong> (neck)</td>
<td>If male, is the patient's neck circumference greater than 17 inches or if female greater than 16 inches?</td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>G</strong> (gender)</td>
<td>Is the patient a male?</td>
<td>Yes / No</td>
</tr>
</tbody>
</table>

A positive screen is 2 or more Yes answers to the STOP questions. 3 or more Yes answers to the BANG questions or a combination of 3 or more Yes answers to both the STOP and BANG questions. If the screen is positive the patient is considered high risk for Obstructive Sleep Apnea (OSA).

RCP______________ Date _________ Time_______

File STOP-BANG hardcopy into patient's medical record.