HACKETTSTOWN REGIONAL MEDICAL CENTER
CENTER FOR SLEEP RELATED DISORDERS
PROTOCOL FOR CPAP/BILEVEL TITRATION STUDIES

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PURPOSE: A specific protocol for CPAP/bilevel titration assures consistency among technicians and improves the adequacy and reliability of the acquired data.

POLICY:
Indications for CPAP therapy:

1) A full-night of CPAP therapy with polysomnography is indicated for patients with AHI > 15 events/hr of sleep, or with AHI greater than 5 events/hr, but < 15 events/hr, for patients with documented symptoms of excessive daytime sleepiness, impaired cognition, mood disorders or insomnia, or documented hypertension, ischemic heart disease, or history of stroke.

PROCEDURE:

- CPAP titration procedure is fully explained to the patient during their initial testing in the laboratory if they are being referred for the diagnosis of sleep-disordered breathing.
- This is done verbally by the sleep technologist/technician while they are applying sensors to the patient prior to their bedtime.
- Prior to bedtime, the patient is also fitted with a variety of nasal mask interfaces to assess the best fit before implementing CPAP therapy.
- The patient is also given a few minutes prior to bedtime to acclimate to CPAP therapy (typically at low pressure settings of 4- 6 cm H_2O).

CPAP titration procedure:

1) Start at CPAP pressure of 4-6 cm H_2O.
2) Increase pressure by 2 cm H_2O until frank obstructive events are eliminated.
3) If hypopnea or snoring still persist, increase pressure by 1 cm H_2O.
4) WAIT 15 MINUTES BEFORE INCREASING CPAP PRESSURES TO ALLOW PATIENT TO ACCLIMATE TO NEW PRESSURE SETTING.
5) If CPAP pressure > 20 cm H_2O, or patient is intolerant to CPAP, switch to bilevel pressure therapy (SEE BILEVEL TITRATION PROTOCOL).

    - **NOTE: Attempt to obtain optimal CPAP/bilevel titration by having patient in supine position during REM sleep.**

Indications for bilevel titration:

a) Non-tolerance of CPAP during split-night study or CPAP-only study:
    - Difficulty exhaling against CPAP
    - Continued obstructive events at CPAP $\geq$ 20 cm H_2O.
    - Expiratory mask leak not corrected by mask adjustment.

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    - Document reason for bilevel use.

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    - Start at EPAP setting < 2 cm H_2O from level used to eliminate obstructive events.
    - Start IPAP a minimum of 4 cm H_2O above EPAP level.

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- Increase EPAP only for frank obstructive events by 1-2 cm H_2O.
- Increase IPAP only for hypopneas and snore-arousals. Use 1 cm H_2O increments.
- WAIT ~15 MINUTES BEFORE INCREASING PRESSURES. **Please note: IPAP and EPAP should never be increased at the same time.**
- FOR VERY SEVERE PATIENTS (SaO_2 remains < 80%), INCREASE PRESSURE WITHIN 10 MINUTES.

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- Patient intolerant of higher EPAP pressures or unable to sleep, resume bilevel therapy at lowest pressure settings of IPAP = 8 cm H_2O/ EPAP = 4 cm H_2O.

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- If central apneas with significant desaturation persist, consider switching to bilevel at S/T mode, with a minimum back-up rate of 10-12 bpm.
- If oxygen saturations are not maintained above 88 % for 5 consecutive minute implement supplemental oxygen therapy

b) Bilevel titration for the beginning of the study:

- Start IPAP at 8 cm H_2O.
- Start EPAP at 4 cm H_2O.
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- Increase EPAP only for frank obstructive events by 1-2 cm H_2O.
- Increase IPAP only for residual hypopneas and snore-arousals. Use 1 cm H_2O increments.
- WAIT ~ 15 MINUTES BEFORE INCREASING PRESSURES.
- FOR VERY SEVERE PATIENTS (SaO_2 remains < 80%), INCREASE PRESSURE WITHIN 10 MINUTES.
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- Try to maintain difference of 3-6 cm H_2O between IPAP and EPAP.
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- NOTE OF CAUTION:
  - Appearance of central apneas during titration may indicate “over-titration” with excessive pressure.
  - If “true” central events with significant oxygen saturation appear, see above protocol for treatment of central events in Part A of protocol.