Specialist LINK Linking Physicians | Primary Care Networks CALGARY AND AREA | Alberta Health Services | UNIVERSITY OF CALGARY CUMMING SCHOOL OF MEDICINE

Division of Respiratory Medicine

Primary Care Pathway: Uncomplicated Obstructive Sleep Apnea

PLEASE NOTE: Home sleep apnea testing has not been validated in the pediatric patient and they require traditional in-lab testing for assessment and recommendations.

1. Focused summary of Uncomplicated OSA relevant to primary care

Obstructive sleep apnea (OSA) is a sleep-related breathing disorder that is characterized by intermittent closure of the upper airway associated with desaturation and arousal from sleep. Approximately 25% of the Canadian population is at risk of OSA, but only about 5% have been diagnosed.

Untreated OSA is associated with excessive daytime sleepiness, which leads to an increased risk of motor vehicle crashes, poor quality of life and decreased workplace productivity. Patients with moderate-severe OSA are at increased risk of cardiovascular complications such as hypertension, ischemic heart disease and stroke. Patients with OSA are also at increased risk of perioperative complications. However, there is considerable variability between patient presentations so that not all patients with severe OSA have symptoms and some individuals will be symptomatic with relatively mild disease.

Treatment of OSA has been shown to improve subjective symptoms of OSA, reduce motor vehicle crashes and reduce blood pressure. CPAP may improve cardiovascular outcomes in patients with severe OSA based on data from observational studies; this benefit has not been confirmed in definitive intervention studies.

IMPORTANT NOTE:

Fatigue is often multifactorial and is different from excessive daytime sleepiness. It is very important to look at the pretest probability of OSA and consider other work up and management of fatigue before considering testing for OSA. A finding of mild OSA in a patient with low pre-test probability may represent a false positive; thus, clinical judgement should guide the decision to initiate a trial of treatment.

Acronyms:
AHI - Apnea-Hypopnea Index
HSAT – Home Sleep Apnea Test
OSA – Obstructive Sleep Apnea
PSG - Polysomnography
RDI - Respiratory Disturbance Index

2. Checklist to guide your in-clinic review of your patient with Uncomplicated OSA
☐ Use STOP-BANG or Adjusted Neck Circumference to determine pre-test probability of OSA
☐ Refer for HSAT or PSG as appropriate based on pre-test probability of OSA and presence or absence of complicating factors
☐ If patient has uncomplicated OSA based on HSAT, initiate CPAP or oral appliance therapy
☐ If patient has evidence of suspected hypoventilation or sustained hypoxemia, refer for Sleep Specialist assessment and consideration of PSG

3. Links to additional resources	
For physicians:	**CPAP Providers – Calgary and Area** A current list of CPAP providers that have met with our team and agreed to adhere to management guidelines established at the FMC Sleep Centre and is listed on the Alberta Health Services website (albertahealthservices.ca/assets/programs/ps-1771-sleep-pap-providers.pdf)
	Alberta Health Services Primary Health Care Resource Centre: albertahealthservices.ca/info/Page15705.aspx
	Canadian Medical Association Driving Guide: joule.cma.ca/en/evidence/CMA-drivers-guide.html
	Ministry of Transportation in Alberta: transportation.alberta.ca/1929.htm or transportation.alberta.ca/542.htm or transportation.alberta.ca/2561.htm
	Ramar K, Rosen IM, Kirsch DB, Chervin RD, Carden KA, Aurora RN, Kristo DA, Malhotra RK, Martin JL, Olson EJ, Rosen CL, Rowley JA; American Academy of Sleep Medicine Board of Directors. Medical Cannabis and the Treatment of Obstructive Sleep Apnea: An American Academy of Sleep Medicine Position Statement. J Clin Sleep Med. 2018 Apr 15;14(4):679-681. doi: 10.5664/jcsm.7070. PubMed PMID:29609727; PubMed Central PMCID: PMC5886446.
For patients:	American Thoracic Society - patient factsheets a-z: thoracic.org/patients/patient-resources/fact-sheets-az.php
	MyHealth.Alberta.ca
	The Lung Association of AB and NWT: ab.lung.ca/
	UpToDate: Sleep Apnea in Adults (Beyond the Basics) uptodate.com/contents/sleep-apnea-in-adults-beyond-the-basics?search=day%20time%20sleepiness&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2
	Driving safety – patients are responsible to self-report their diagnosis of OSA to the Ministry of Transportation in the province of Alberta (transportation.alberta.ca/1929.htm).

4. Clinical flow diagram with expanded detail

This AHS Calgary Zone pathway incorporates current literature and evidence-based clinical guidelines for diagnosis and management of OSA:

1: Laratta CR, Ayas NT, Povitz M, Pendharkar SR. Diagnosis and treatment of obstructive sleep apnea in adults. CMAJ. 2017 Dec 4;189(48):E1481-E1488. doi:10.1503/cmaj.170296. Review. PubMed PMID: 29203617; PubMed Central PMCID: PMC5714700.
2: Ayas N, Skomro R, Blackman A, Curren K, Fitzpatrick M, Fleetham J, George C, Hakemi T, Hanly P, Li C, Morrison D, Series F. Obstructive sleep apnea and driving: A Canadian Thoracic Society and Canadian Sleep Society position paper. Can Respir J. 2014 Mar-Apr;21(2):114-23. PubMed PMID: 24724150; PubMed Central PMCID: PMC4128516.

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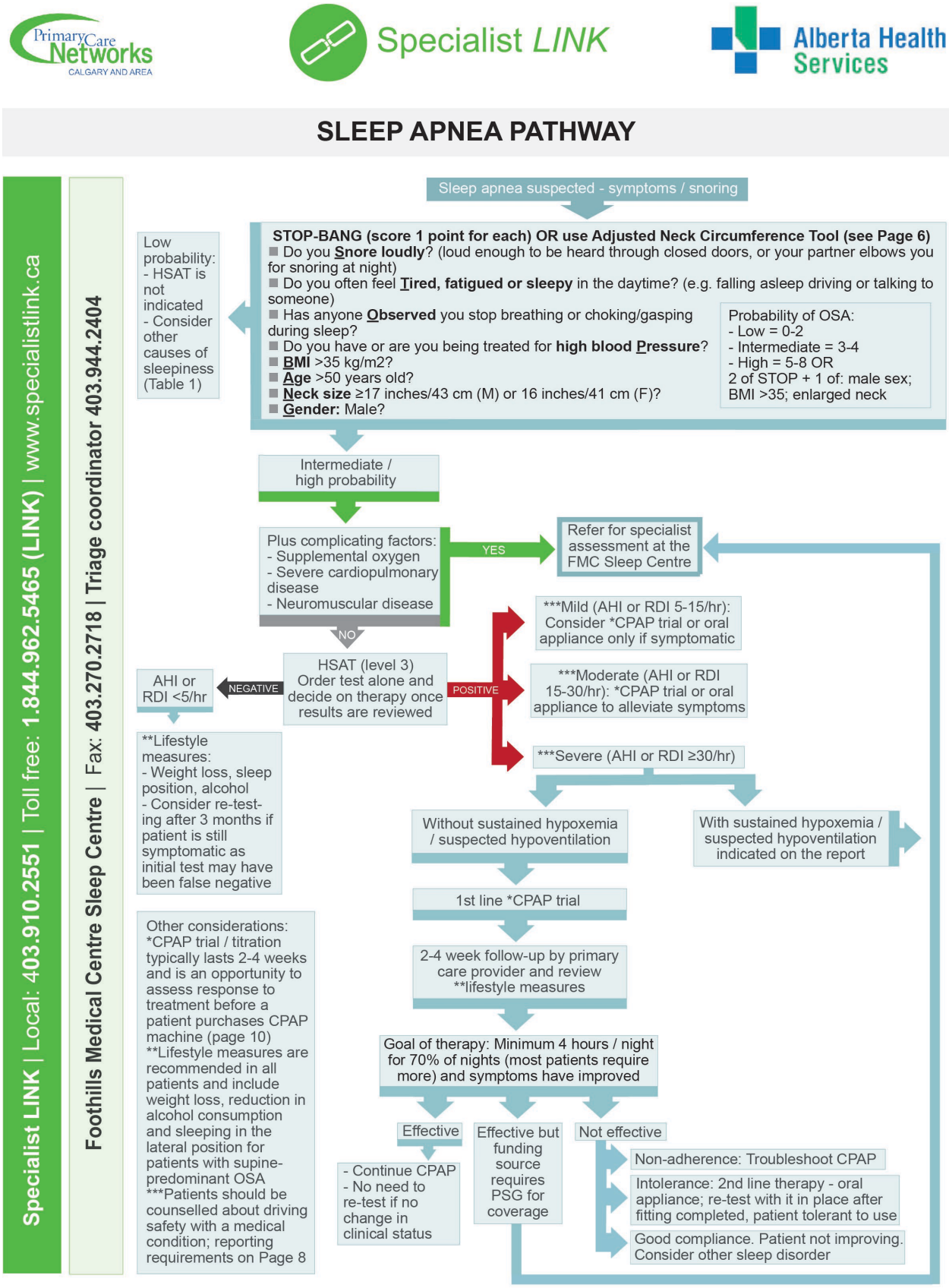

Flow Diagram: Uncomplicated OSA Diagnosis and Management - Expanded Detail

Differential diagnosis of excessive daytime sleepiness

It is important to recognize the broad differential diagnosis of a patient with excessive daytime sleepiness. These disorders, which can co-exist, are listed in the table below:

Table 1: Causes of Daytime Sleepiness

Sleep Restriction	Sleep-Disordered Breathing	Movement Disorders in Sleep	Primary hypersomnia	Medications	Medical/Psychiatric Disease
Behavioural	Obstructive sleep apnea	Restless legs syndrome (delays sleep onset)	Narcolepsy	Antidepressants (almost all)	Mood/anxiety disorder
Jet lag	Sleep-related hypoventilation	Periodic limb movement disorder (disrupt sleep)	Idiopathic hypersomnolence	Sedatives/Alcohol	Chronic disease (e.g. CHF, CKD)
Shift work	Central sleep apnea	Parasomnia (e.g. sleep-talking; sleep-walking)		Narcotics	
Circadian Rhythm Disorder				Stimulant withdrawal	

Identifying patients at high risk for OSA

Several tools for assessing risk of OSA have been described – we suggest using either the STOP- BANG questionnaire or the Adjusted Neck Circumference. Patients with intermediate or high probability should be tested for OSA.

STOP-BANG (score 1 point for each)

- Do you **Snore Loudly**? (loud enough to be heard through closed doors or your bed partner elbows you for snoring at night)
- Do you often feel **Tired**, **Fatigued** or **Sleepy** during the daytime? (such as falling asleep during driving or talking to someone)
- Has anyone **Observed** you Stop Breathing or Choking/Gasping during sleep?
- Do you have or are you being treated for **High Blood Pressure**?
- **BMI** > 35 kg/m^2?
- **Age** > 50 years old?
- **Neck size** ≥ 17 inches/43 cm (M) or 16 inches/41 cm (F)?
- **Gender** = Male?

Probability of OSA:
Low = 0-2
Intermediate = 3-4
High = 5-8 ***OR***
2 of STOP + 1 of:
Male sex
BMI > 35
Enlarged neck

Adjusted Neck Circumference (add number of points to measured neck circumference)

- Neck circumference (in cm) +
- HTN (4)
- gasping/choking (3)
- witnessed apneas (3)

Probability of OSA:
Low = < 43 cm
Intermediate = 43-48 cm
High = > 48 cm

Diagnostic tests for OSA

- PSG (Level 1) – gold standard for OSA/other sleep disorders; available through accredited laboratories in Alberta (e.g. FMC Sleep Centre)
- HSAT – identifies OSA in individuals with high pre-test probability and no significant cardiopulmonary comorbidity; available as part of clinical consultation at FMC Sleep Centre and from private respiratory homecare providers
    - Preferable to Level 1 in appropriate patients due to access and cost
- Severity of OSA is determined on polysomnography by the AHI and on HSAT by the RDI. These both represent the number of respiratory events per hour.
    - Normal – AHI or RDI < 5/hr
    - Mild OSA – AHI or RDI 5-15/hr
    - Moderate OSA – AHI or RDI 15-30/hr
    - Severe OSA – AHI or RDI ≥ 30/hr

Any sleep test should have a formal physician interpretation. This interpretation ideally would include a comment on the quality of the raw data, an assessment of severity of OSA and nocturnal hypoxemia, and recommendations for further testing or treatment based on current evidence.

IMPORTANT NOTE: Once HSAT results are available, in office review with the patient is recommended to synthesize the results in the clinical context. This conversation may facilitate better understanding of risk/benefits/options and importance of treatment of OSA.

Treatment recommendations

Considerations in ALL patients

- Lifestyle modification
    - Reduction/cessation of alcohol consumption and sedative use
    - Weight loss if overweight
    - Positional therapy (sleeping in lateral position) if supine-predominant OSA
- Driving safety (transportation.alberta.ca/1929.htm)
    - All patients should be counselled about driving safety
    - Patients are required by law to disclose any medical or physical condition that may interfere with safe operation of a motor vehicle – this will lead to a requirement for a Medical Examination for Motor Vehicle Operators form (available at transportation.alberta.ca/542.htm)
    - In Alberta, duty to report unsafe drivers is discretionary. If the condition is well treated there would be no reporting obligation. If you need to report an unsafe driver to the Ministry of Transportation the Canadian Medical Protective Association (CMPA) recommends advising the patient prior to reporting.
    - Commercial Drivers – require Medical Examination for Motor Vehicle Operators form and sleep apnea is handled as per any other chronic illness – if the patient is stable and symptoms are managed, there may not be an obligation to report the patient outside of this requirement

Reporting Concerns About Driver Fitness: (transportation.alberta.ca/2561.htm)

Concerns regarding drivers who are a risk to the public can be reported to Alberta Transportation. The report must provide as much detail as possible and be signed by the individual making the report.

The report must include the following information:

- Date of complaint
- Full name of unsafe driver
- Address of unsafe driver
- Unsafe driver's licence number, if known
- Birth date or approximate age of unsafe driver, if known
- Specific concerns about the driver describing why they are a safety risk
- Any known medical or physical conditions that may affect safe driving
- Name, signature and phone number of the complainant
- The complainant should indicate whether they wish the information submitted to be held in confidence

Concerns can be sent by mail, email or fax to:
Alberta Transportation, Driver Fitness and Monitoring
Main Floor, Twin Atria Building
4999 - 98 Avenue, Edmonton, Alberta, T6B 2X3
Fax: 780-422-6612
E-mail: Driver.Fitness@gov.ab.ca

Once a complaint is received, a complete file review will be conducted and a decision will be made as to what is required to determine fitness to drive.

The Registrar has the authority to require a person to submit to a medical or physical examination, and may place special conditions or restrictions on a driver's licence or suspend driving privileges. These actions will only be taken where there are reasonable and probable grounds to believe that the person is a safety risk to him or herself or to the motoring public.

In accordance with Section 60.1 of the *Traffic Safety Act*, information received relating to unsafe drivers remains confidential and is not disclosed. As per Section 17 of the *Freedom of Information and Protection of Privacy Act*, the circumstances and/or actions surrounding the subject of your complaint will not be disclosed.

Devices

The decision to treat OSA and choice of treatment depends on disease severity and presence or absence of OSA symptoms (e.g. daytime sleepiness, unrefreshing sleep, fatigue, poor concentration) or related comorbidity (e.g. depression, hypertension, cardiovascular disease).

Importantly, the decision to treat is dependent upon the results of sleep diagnostic testing *in the context* of a clinical sleep assessment and patient preference. Below we provide an overview of appropriate treatment and follow-up, with practical information (e.g. sample prescription) in the appendix.

Many respiratory homecare providers administer home sleep apnea testing and offer CPAP trials and purchase. However, there is no obligation for patients to have testing and treatment with the same provider. Patients and physicians may choose the most appropriate treatment provider after discussion about the benefits of treatment and choice of therapy.

**NOTE: Patients with suspected nocturnal hypoventilation should not be started on therapy (including oxygen) outside of a monitored setting (i.e., a sleep laboratory). Such patients are at increased risk of worsening respiratory failure and should be referred for polysomographic titration of PAP therapy.

Table 2: Comparison of OSA Therapies

	CPAP	Oral Appliance	UA Surgery
Reduction in AHI (or RDI)	• AHI should normalize	• AHI ↓ by > 50% in 65% of patients • AHI < 5/hr in 35% of patients	• 87% ↓ in AHI on average • AHI < 10/hr in most
Symptomatic Improvement	• Excellent (if adherent)	• Similar to CPAP	• Improves (limited studies)
Adherence	• 50-70%	• 80-90%	• 100%
Established Outcomes	• ↓ Blood pressure • ↓ MVA • ↑ Mood/Cognition • ↑ quality of life	• ↓ Blood pressure • ↑ Mood/Cognition • ↑ quality of life	• Symptomatic improvement
When to Use	• Any patient • Severe OSA	• Mild-mod OSA • Intolerant of CPAP	• Selected patients who are intolerant of CPAP/OA • Weigh surgical risk • Recommend sleep specialist consultation before surgery
Monitoring	• Monitor clinically (no further testing required if stable) • Machine downloads (available from CPAP provider) may help with troubleshooting	• Repeat HSAT after titration is complete to confirm treatment adequacy • Annual assessment by a dentist to watch for wear and tear, and family physician to watch for recurrence of symptoms	• n/a
Cost	• **CPAP Trial $100-$200** • **Purchase $1500-$3000** • Costs typically include education, troubleshooting and service by CPAP provider	• $300-$3000 • Custom-made appliances are more effective but also more costly	• n/a

- **All** patients who start a CPAP trial (also called a CPAP titration) of therapy should be clinically reassessed within 2-4 weeks to ensure that symptoms have improved and that OSA is adequately treated
    - For patients whose symptoms are not clearly due to OSA, a trial of CPAP allows the patient to avoid committing to custom-fitted oral appliances until the effectiveness of OSA treatment has been established
    - Hours of PAP use, mask leak and reduction in RDI can be obtained from CPAP machine downloads that are generally sent to the referring physician by the CPAP provider. CPAP usage of 4 hours/night on at least 70% of nights is generally

considered the minimum required to see improvement in symptoms and quality of life (although many patients require greater nightly use for maximal effect)

Upper airway surgery

- Upper airway surgery for OSA is a complex multi-stage surgery that is typically reserved for patients that are intolerant or unwilling to use CPAP or oral appliance therapy in the long term
- In highly selected patients, referral for upper airway surgery may be an option; consultation with a sleep specialist should be considered before the patient commits to this therapy

Troubleshooting OSA therapy

Three common issues that arise during follow-up are non-adherence to CPAP therapy, CPAP intolerance and persistent sleepiness on therapy. Some practical tips for each of these are:

- Non-adherence to CPAP – considerations include
  - Lack of interest/understanding of OSA – extent to which importance of treatment is reinforced depends on indication for treatment and severity of disease
  - CPAP intolerance (see below)
  - Lack of improvement in symptoms (see below)
- CPAP intolerance – this is common and should be addressed by CPAP provider.

Table 3: Causes of CPAP Intolerance

Reason for CPAP Intolerance	Recommended Treatment
Mouth/nasal dryness	Adequate hydration and heated humidity on CPAP machine – this option is recommended for all machines given dry Calgary climate
Nasal congestion	Saline nasal rinses +/- intranasal steroid
Claustrophobia	Trial of CPAP while sitting or awake and supine before using during sleep
High pressure	Ramp feature on CPAP machine; habituate with lower pressure; auto-titrating CPAP may be preferred by some (note: these features typically incur an extra cost and are not required by all patients)
Noise	Current machines are very quiet; may need to upgrade if older machine (>5 years) or in poor condition

- Persistent sleepiness – several easily remedied issues that should be explored by history and by reviewing CPAP machine downloads
  - Non-adherence/intolerance – typically aim for 4 hrs/night on 70% of nights
  - Mask leak – due to facial hair, weight gain, mask breakdown (mask should be replaced every 6-12 months)
  - Equipment failure – uncommon; should see CPAP provider if this occurs
  - Sub-therapeutic pressure – weight gain, alcohol/sedative use
  - Another sleep disorder – 25-30% of OSA patients have a concomitant sleep disorder
    - Review differential diagnosis of excessive daytime sleepiness and

consider referral to a sleep specialist (see table above)

Funding for CPAP

There is currently no universal public funding program for CPAP or oral appliance therapy in Alberta. For patients who are on AISH, Alberta Works, NIHB, or for low-income senior citizens, there is funding support for CPAP; however, PSG is often required to confirm the diagnosis of OSA (RDI>15) and its response to CPAP. More information can be found at the websites below, but CPAP providers should be well versed in these rules:

- AISH (alberta.ca/aish.aspx)
- AB Works (humanservices.alberta.ca/financial-support/3171.html)
- SNAP (seniors-housing.alberta.ca/seniors/special-needs-assistance.html)
- NIHB (canada.ca/en/indigenous-services-canada/services/first-nations-inuit-health/reports-publications/non-insured-health-benefits/guide-medical-supplies-equipment-benefits-non-insured-health-benefits-2017.html#chp3_8)

Many private insurance plans pay some or all of the cost of CPAP and oral appliances. Patients are encouraged to call their insurance company and/or work with their healthcare provider for details.

Questions

If you have questions about this information package or concerns about your patient please **call Specialist Link,** a phone consultation service available 08:00-17:00 weekdays at 403.910.2551 or toll-free at 1.844.962.5465, to speak with a Respirologist. For referral specific information please call the Triage Coordinator at: 403.944.2404.

Appendix A

Sample CPAP prescription

CPAP Prescription

Date:_____

RDI / AHI _____

☑ Auto CPAP min___6___-max___16___ cmH2O

☑ Auto CPAP may be switched to standard CPAP based on Auto trial 90% pressure

☐ If you are unable to contact or arrange set up with patient within two weeks of receiving prescription, please contact the ordering physician

☐ Share CPAP usage download with ordering physician

Physician Signature_____

Print name_____

FMC Sleep Clinic
UCMC Area 1B
Tel: 403-944-2404 Fax: 403-270-2718
Email: sleep.centre@ahs.ca
www.albertahealthservices.ca/services/Page11137.aspx

Appendix B

Sample oral appliance prescription

ID

Patient Name

Address

Dental Device Prescription

Foothills Medical Centre Sleep Centre
Room EG 12, 1403 29th Street NW
Calgary, Alberta. T2N 2T9
(403) 944-2404

Date_____

Patient Name_____

RDI / AHI _____

- **Mandibular advancement device for Sleep Apnea**

Physician Signature

Print Name