

Approach to the Patient with Disordered Sleep

Kryger Chapter 57



Overview

- Sleep disorders are common, causing problems for those affected by them
- Patients with sleep problems usually have one or more of 3 types of problems:
 - Insomnia
 - Abnormal movements, behaviors, or sensations during sleep or awakenings
 - EDS





Overview

- Diagnosis dependent on sleep history
 - Try to get patient's perspective as well as those who have witnessed patient's sleep (bed partner, family member, friend)
 - Medical, family, and social history and physical exam help in diagnosis as well
- Sometimes diagnosis is easy to determine, other times difficult
- Sleep questionnaires help to get an overview of patient's background, environment, and sleep habits

Chief Complaint and History

- Evaluation begins with chief complaint
 - Chief complaint is the reason why they are visiting sleep center
 - Includes patient's concerns and history behind concerns
- Ask patient why they are seeking help with sleep problem
 - Is it prompted by a spouse or family member?
 - Do they notice the problem?
 - Do they actually want help, or are they seeking help to appease someone else?

Chief Complaint and History

- Obtain a patient profile
 - Includes age, sex, occupational or academic status, marital status, living arrangements, how sleep problem is affecting daily life
- 2 types of nocturnal symptoms:
 - Those that occur during sleep
 - Movements or behaviors not noticed by patient: Snoring, apneas, twitching or kicking, bruxism, sleepwalking, screams, violence
 - Those that occur during nocturnal awakenings
 - Sensations or events evident to patient: Headaches, wheezing, shortness of breath, palpitations, heartburn, cramps, feelings of paralysis or numbness

Chief Complaint and History

- After chief complaint, get supporting details
 - Duration
 - Circumstances at onset
 - What (if anything) makes it improve
 - Any associated symptoms
- Review patient's daily schedule
 - What time do they go to bed and wake up?
 - Is their schedule consistent, or do they have a different schedule on weekends and holidays?

Chief Complaint and History

- How do they wake up? Spontaneous? Alarm?
Family member/spouse?
- Ask if there are any morning symptoms
 - Headaches, nasal congestion, dry mouth, sore throat
- Find out about their sleep environment
 - Noise, temperature, mattress comfort, bedtime routine

Chief Complaint and History

- For insomnia patients:
 - Find out when the insomnia began
 - Was there a trigger that caused it?
 - Are there triggers that keep them awake?
 - Stressors, environment, caffeine, exercise, TV watching, nicotine/alcohol consumption

Medical History

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- Medications affect sleep and the ability to initiate and maintain it
 - Ask patient what medications they take as well as herbal supplements and any illicit drugs
 - Past medical, surgical and psychiatric histories also provide insight into sleep problems



Family History

- Do sleep disorders run in the family?
- If a direct family member has a sleep disorder, the probability of the patient having the sleep disorder is greater

Social History

- Patients may be faced with psychosocial, occupational, or academic stresses that affect sleep
- Patients may face relationship problems as a result of their sleep disorders
- More at risk for occupational hazards
- Does the patient use alcohol, caffeine, nicotine, or illicit drugs?

Review of Systems

Are there recent illnesses that affect sleep?

Has the patient gained weight or noticed an increase in collar size in shirts?

Is there high blood pressure? Wheezing or shortness of breath?

Is the patient a frequent sufferer of nocturnal heartburn and acid reflux?

Does the patient experience a lot of cramping or pain?

Does the patient have to get up frequently to urinate?

Physical Exam

- Exam of head and neck important in cases of suspected OSA
 - Respiratory related conditions and allergies can contribute to OSA
 - Does the patient have an elongated soft palate and uvula? Enlarged tongue? Tonsils and adenoids? All contribute to OSA

Diagnosis

After evaluation, physician forms diagnosis

ICSD-3 provides classification of sleep disorders and criteria

Can use radiologic tests, lab tests, sleep logs, and sleep studies in diagnosis

PSGs and MSLTs most often used for diagnosis

Diagnosis

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- Occasionally ambulatory tests and actigraphy used in selected patients
 - Only licensed physician can provide diagnosis
 - Sleep techs cannot and should not provide patients with information that can be deemed a diagnosis

Patient Flow Process

Physician Screening

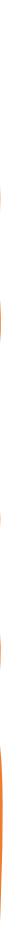
- There are several factors that could predispose a patient to a sleep disorder
- Physician looks at physical factors:
 - Height
 - Weight
 - BMI
 - Neck circumference
 - Airway constriction (for example, enlarged tonsils, crowding of the airway)



Physician Screening

- Height is typically measured in cm
- Weight is typically measured in kg
- Neck circumference is usually measured in cm as well
- These are useful measures in determining the likelihood of a sleep disorder

BMI

- 
- **Body mass index (BMI) is helpful indicator as to whether a patient may suffer from OSA due to obesity**
 - **Calculated by multiplying weight in pounds by 703 and dividing by the height in inches squared**
 - **Metric = Weight in kg ÷ height in meters squared**

BMI CATEGORY	BMI CALCULATION
Underweight	< 18.5
Normal	18.5 – 24.9
Overweight	25 – 29.9
Obese	> 30

BMI

- Example: If person is 5'6" and 200 lbs
 - $200 \text{ lbs} \times 703 = 140,600$
 - Height in inches is 66" so $66 \times 66 = 4356$
 - $140,600 \div 4356 = 32.3$
- BMI chart

Questionnaires

- **Questionnaires help to establish sleep habits and routines**
- **Most widely-used questionnaires include:**
 - **Epworth Sleepiness Scale**
 - **Berlin Questionnaire**
 - **Stanford Sleepiness Scale**
 - **Pittsburgh Sleep Quality Index**
 - **STOP BANG**

Epworth Sleepiness Scale

- 
- **Designed to determine patient's subjective level of sleepiness during given situations**
 - **Patient rates each situation on a scale of 0-3**
 - **3 = high chance of falling asleep**
 - **0 = never fall asleep**
 - **Scores are added up**
 - **Highest possible score is 24**

Epworth Sleepiness Scale

- **Situations evaluated are:**
 - **Sitting and reading**
 - **Watching TV**
 - **Sitting inactive in a public place**
 - **Being a passenger in a car for an hour or more**
 - **Lying down in the afternoon**
 - **Sitting and talking to someone**
 - **Sitting quietly after lunch without alcohol**
 - **Stopped for a few minutes in traffic while driving**

Epworth Sleepiness Scale

- **Scale for evaluation:**
 - **0 – 6 = Normal sleepiness**
 - **7 – 8 = Moderate sleepiness**
 - **9 – 24 = Excessive sleepiness**
- **If patient is sleepy based on this score, he/she likely suffering from a treatable sleep disorder**
- **This questionnaire is simple, short, and easy**

Epworth Sleepiness Scale

- Provides physicians with quick insight
- Usually used repetitively to gain insight before treatment and post treatment to see effectiveness of treatment
- Has drawbacks
 - Just determines sleepiness but not cause
 - Patient may not be honest
 - Patients with sleep disorders may not feel they are sleepy

Berlin Questionnaire

- **Consists of 3 categories related to risk of OSA**
 - **Snoring**
 - **Daytime sleepiness**
 - **Hypertension**
- **Questions grouped together by category**
- **Risk of OSA determined by responses**
- **Scoring this questionnaire is difficult but quite useful**

Berlin Questionnaire

- Patient first asked for height and weight to calculate BMI
- Patient is high risk for OSA if 2 or more categories have a positive score
 - Low risk if 0-1 categories have positive score
- Considered to be one of most valid questionnaires for OSA
- Drawbacks:
 - Only identifies OSA patients

Stanford Sleepiness Scale

Degree of Sleepiness	Scale Rating
Feeling active, vital, alert, or wide awake	1
Functioning at high levels, but not at peak; able to concentrate	2
Awake, but relaxed; responsive but not fully alert	3
Somewhat foggy, let down	4
Foggy; losing interest in remaining awake; slowed down	5
Sleepy, woozy, fighting sleep; prefer to lie down	6
No longer fighting sleep, sleep onset soon; having dream-like thoughts	7
Asleep	X

Stanford Sleepiness Scale

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- Similar to Epworth
 - Very easy and quick
 - Helps physicians assess circadian rhythm disorders or effects of poor sleep hygiene
 - But is limited in approach
 - Can't help identify cause of sleepiness

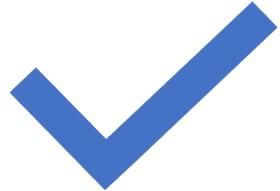
Pittsburgh Sleep Quality Index

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- Developed in 1989 by doctors at UPMS
 - More comprehensive screening tool
 - Patient rates sleep over one month period
 - Asks about quality of sleep and sleep disturbances

Pittsburgh Sleep Quality Index

- 
- Gives ratings in 7 categories:
 - Sleep duration
 - Sleep latency
 - Quality of sleep
 - Sleep efficiency
 - Sleep disturbances
 - Sleep medications
 - Daytime dysfunction

Pittsburgh Sleep Quality Index



Studies have shown high validity and reliability



Presents broad viewpoint of potential sleep problems



Only useful if patient is honest

STOP BANG

- 
- Takes OSA indicators and presents them in a straight forward questionnaire that quickly gives physician an overview of OSA likelihood

Referral Process

- Patient usually has to have a referral from PCP or specialist to see sleep physician
- Usually several considerations to make as far as which sleep lab to go to:
 - Insurance coverage
 - Lab accreditation
 - Lab reputation
 - Convenient location
 - Facilities to meet patient needs
 - Quickness of scheduling

Referral Process

- Quick turnaround time
- Qualified and professional staff
- Patient to tech ratio
- Lab security
- Referrals should always include:
 - Patient name, DOB, SS #
 - Contact info
 - Diagnosis code
 - Type of study ordered
 - Physician signature

Scheduling and Billing

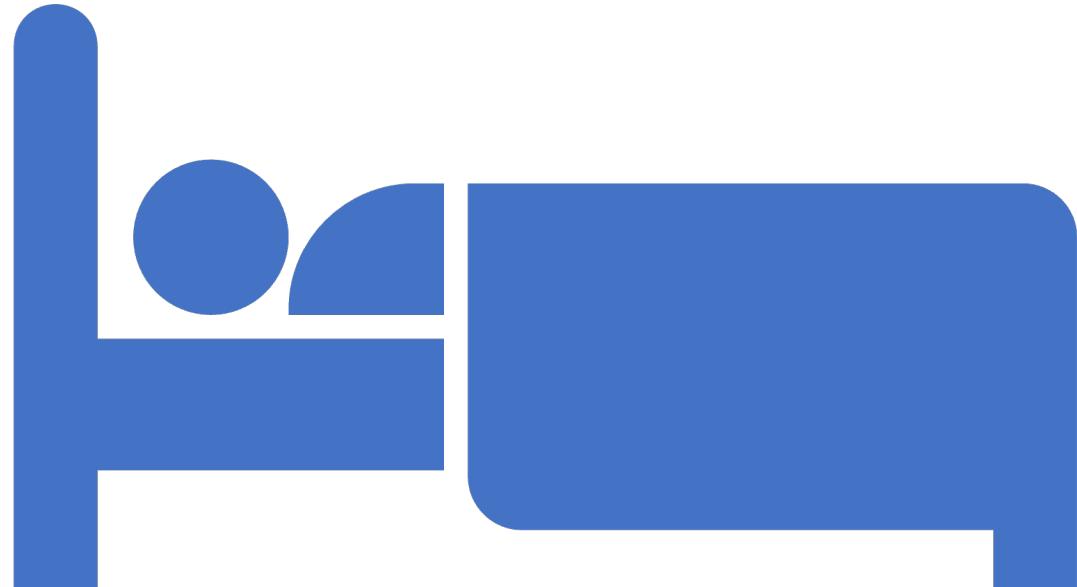
- Lab should contact patient once referral received to schedule study
- Schedulers should discuss:
 - Purpose of study
 - Process of study
 - Lab setup
 - Lab location
 - What to wear (appropriate pajamas) and not to wear (makeup, hair products, lotions)
 - Patient needs (handicap accessible, scheduling requirements)

Scheduling and Billing

- Schedulers should also get insurance info
 - Verify insurance coverage prior to patient's study
 - Show documentation that study is needed
- Schedulers should remind patients of study and what to bring to their study

Patient Education

- Crucial element of sleep lab experience
- Patients who are more informed are likely to be more cooperative and compliant
- Patient education and support groups help patients to learn more about sleep disorders and treatments
 - AWAKE – CPAP support group
 - Stands for Alert, Well, and Keeping Energetic
 - Founded in 1988 by ASAA



Patient Education

- National Sleep Foundation (NSF) educates patients and the public on sleep disorders
 - Operates primarily from grants, sponsorships, memberships, and other contributions
 - Provides brochures, flyers and pamphlets that are distributed in physician offices and sleep labs
- Sleep techs are also valuable resources for educating patients
- Clinical educator is new position aimed at educating sleep disorder patients for therapy compliance

Scoring and Interpretation

- Scoring technologist reads sleep study epoch by epoch
 - Epoch is 30 second screen of the study
 - Scoring tech is an RPSGT, usually with several years (> 5 yrs) of sleep tech experience
- Sleep studies have to be at least 6 hours long (720 epochs), so scoring is time consuming
- Each epoch is assigned a sleep stage, and abnormal events are marked



Scoring and Interpretation

- Common events that are marked:
 - EEG Arousals
 - Apneas
 - Hypopneas
 - RERAs
 - Leg Movements
 - O₂ desats
 - EKG arrhythmias

Scoring and Interpretation

- Scorer looks at questionnaires, patient histories, and tech notes
- After study is scored, a report is generated
- Scorer writes brief assessment for physician before physician looks over study and provides interpretation
- Physician briefly reviews raw data but mostly analyzes reports from scorer

Scoring and Interpretation

- Physician thoroughly reviews chart, history, questionnaires and tech notes from recording tech and scoring tech
- After interpreting study, physician either reviews findings and recommendations with patient or submits these to the referring physician (if referred) to distribute to patient

Second Night Studies

If patient is positive for OSA,
physician will recommend patient
come back for a CPAP titration study

New physician orders are sent to
sleep lab, and process is repeated

Wiring process the same as diagnostic
PSG except cannula/thermistor
replaced with CPAP mask

Second Night Studies

- 
- Tech needs to educate patient about CPAP and fit patient with an appropriate mask
 - Talk about pressure changes throughout the night
 - First time CPAP users often experience “first night effect” and may have difficulty falling asleep as they acclimate

DME Setup

- If PAP therapy is prescribed to patient, order is typically sent to a durable medical equipment (DME) company
- Prescription only contains recommended pressure not mask type or machine brand
- Sometimes patients use masks during sleep studies that is not carried by their DME
- DME company contacts patient, verifies insurance, and schedules setup

DME Setup

- 
- DME rep will either meet patient at their home, at sleep lab, or at DME office
 - Usually brings a variety of masks for patient to try
 - Mask fit is essential for maintaining patient compliance with PAP therapy

Mask Types



- **Nasal masks**
 - **Cover only the nose**
 - **Most commonly-used mask type**
 - **Sometimes have to use chin strap to keep patient from opening mouth**

Mask Types



- **Full face masks**
 - **Covers nose and mouth so good for those who can't keep their mouth closed while on CPAP**
 - **Typically large and bulky**
 - **Good for those on very high PAP pressure**

Mask Types



- **Nasal pillow masks**
 - **Pillows rest on end of nose – two soft cone-like pieces that rest just inside each nare**
 - **Very popular as they are small, light, and comfortable**

Mask Types



- **Oral masks**
 - **Patient does not breathe through nose**
 - **Held in place by a small device that reaches under the tongue**

Mask Types



- **Hybrid masks**
 - **For those who want the convenience of the nasal pillows but open their mouth during sleep**

Mask Types

- **Dental devices with PAP**
 - **For those who prefer going with a dental device for OSA but still need PAP pressure to maintain the airway during sleep**
 - **No headgear is involved**



PAP Machines

- Many different manufacturers
- Most commonly seen in sleep labs:
 - ResMed
 - Respironics
 - Fisher & Paykel
 - DeVilbiss
 - Puritan Bennett
- Most machines are small and quiet now



PAP Machines

- Many offer pressure relief or ramping to ease the pressure for patient exhalation
- Most have a water reservoir for humidification

Patient Follow-Up

Follow up essential for maintaining compliance with therapy

Ask patient questions and find out their concerns

Patient needs may change over course of time due to things like weight gain, weight loss, aging, and other factors

Educate patients on best practices and inform of product developments that may help