

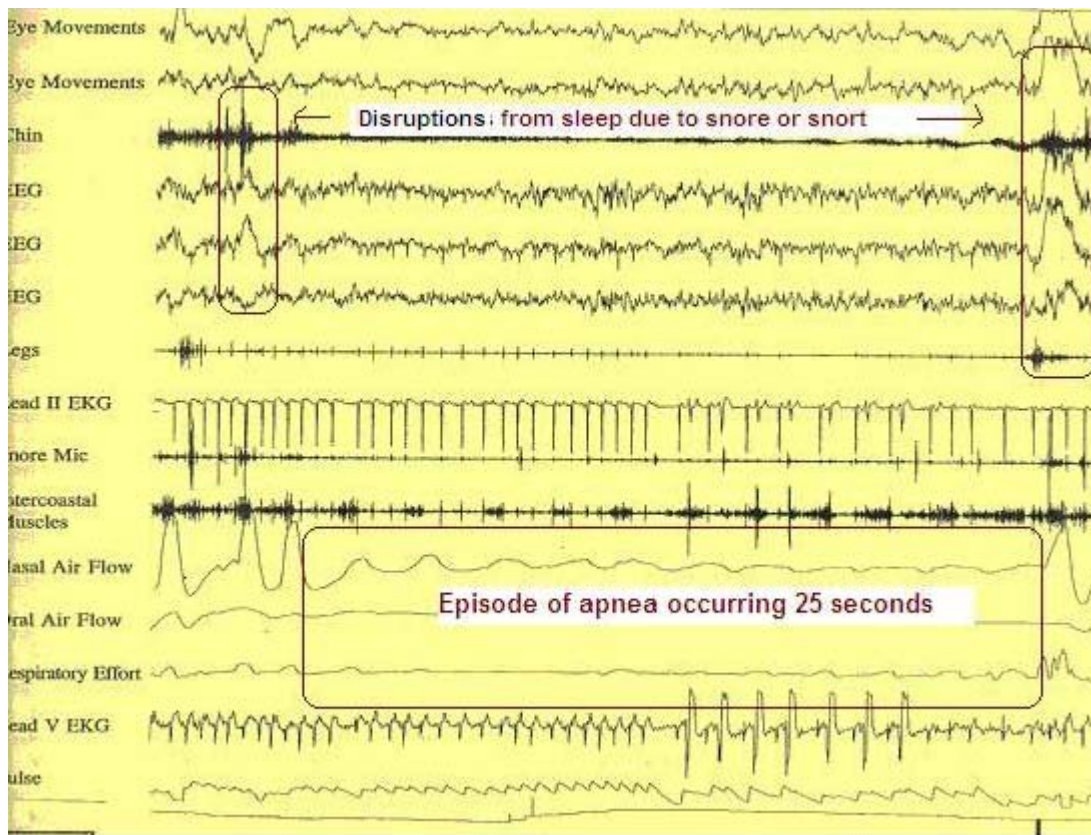
A Proactive Approach for Identification of Patients at Risk for Sleep Apnea

Sleep apnea is the most widely known sleep disorder besides insomnia. Estimates are that more than 18 million people have sleep apnea, and it is more common in men than women. People of all ages and both sexes can have sleep apnea. Due to the apneic events, restful sleep patterns are interrupted resulting in excessive sleepiness and next-day fatigue.

What is Sleep Apnea?

- ★ Sleep Apnea (SA) is a serious condition characterized by brief interruptions in breathing during sleep
- ★ Apnea is the absence of breath
- ★ Sleep apnea is caused by relaxed throat muscles, due to decreased muscle tone, that sag and block the airway.
- ★ Restful sleep is interrupted, resulting in excessive sleepiness, next-day fatigue, and decreased concentration
- ★ These apneic episodes may occur more than 20 times every hour and can last from 10 seconds to several minutes.

This example demonstrates the impact of sleep apnea on the sleep process. Note the cardiac arrhythmia recorded during the apneic event. Cardiac abnormalities are a common co-morbidity with untreated sleep apnea.



What Happens When Someone has Sleep Apnea or is at Risk for Sleep Apnea?

The obstruction of the airway passage causes a person to snort, jerk awake, gasp for air and then fall back asleep, and they are not even aware it is happening. Breathing pauses almost always are accompanied by loud snoring, though not everyone who snores has this condition. Reduced oxygen levels and elevated carbon dioxide levels associated with each incident of apnea, which alters and strains heart and lung function.

Anesthetics produce increased muscle relaxation of the throat and tongue, and in someone at risk for sleep apnea, may create a blockage of the airway. When administering anesthetics, the doctors and surgeon may need to alter the medications received to protect the breathing responses. Management of pain after surgery may require adjustment of doses and pain medication to prevent decreased breathing. As a result, narcotic pain medication or sedation will be balanced to prevent respiratory depression.

Use of positive air pressure may be required to support breathing after surgery or after a procedure requiring sedation or pain medication, if depressed respirations become a risk.

What causes the airway to collapse during sleep?

- ★ Extra tissue in the back of the throat, such as large tonsils or uvula
- ★ Nasal Obstruction
- ★ Certain jaw or facial structures, recessed chin
- ★ Obesity
- ★ Large neck: Men normally have a 17 inch or larger neck; Women may have a 16 inch or larger neck
- ★ Enlarged abdominal girth which requires extra effort to breath when supine or sedated

Normal Breathing



Airway is open
Air flows freely to lungs
Brain rests

Obstructed breathing



Airway collapses
Airflow is blocked
Brain is kept on alert,
unable to effectively rest

What is Normal Sleep?

Sleep helps us physically, mentally and emotionally. The gift of sleep helps us to feel well and function at our best. Sleep helps us to relax, restore and revitalize our body, mind and emotions every twenty-four hours. During sleep our physical bodies are repaired to improve and maintain general health.

Sleep is a diverse and complex process that includes two sleep states: NREM (non-rapid eye movement) and REM (rapid eye movement) sleep. Each sleep state performs a different type of function, both are important to overall daytime effectiveness.

NREM, which consists of light sleep and deep sleep, restores our physical body, while REM sleep rejuvenates us mentally and renews us emotionally.

Going to sleep is like descending a stairway. As brain activity slows we transition into NREM sleep until we reach deep sleep. We drift into light sleep, characterized by a feeling we are in twilight sleep. As we progress into deeper sleep our brain's activity continues to sleep down and the body's functions are also slowed. When in deep sleep our body functions are very quiet and metabolic functions are very slow to facilitate physical healing, building of immunities, expression of growth hormone, and physical rejuvenation.

What happens during NREM Sleep:

- Pulse and respiration slow
- Blood pressure drops
- Muscles relax
- Body temperature decreases to conserve energy
- Digestion and metabolism slow to allow for physical repair
- Growth hormone and other hormones are released to promote tissue growth and repair

If we are sleep-deprived or not getting adequate sleep, this process works less efficiently and less effectively. Our resistance to illness is impaired without adequate sleep.

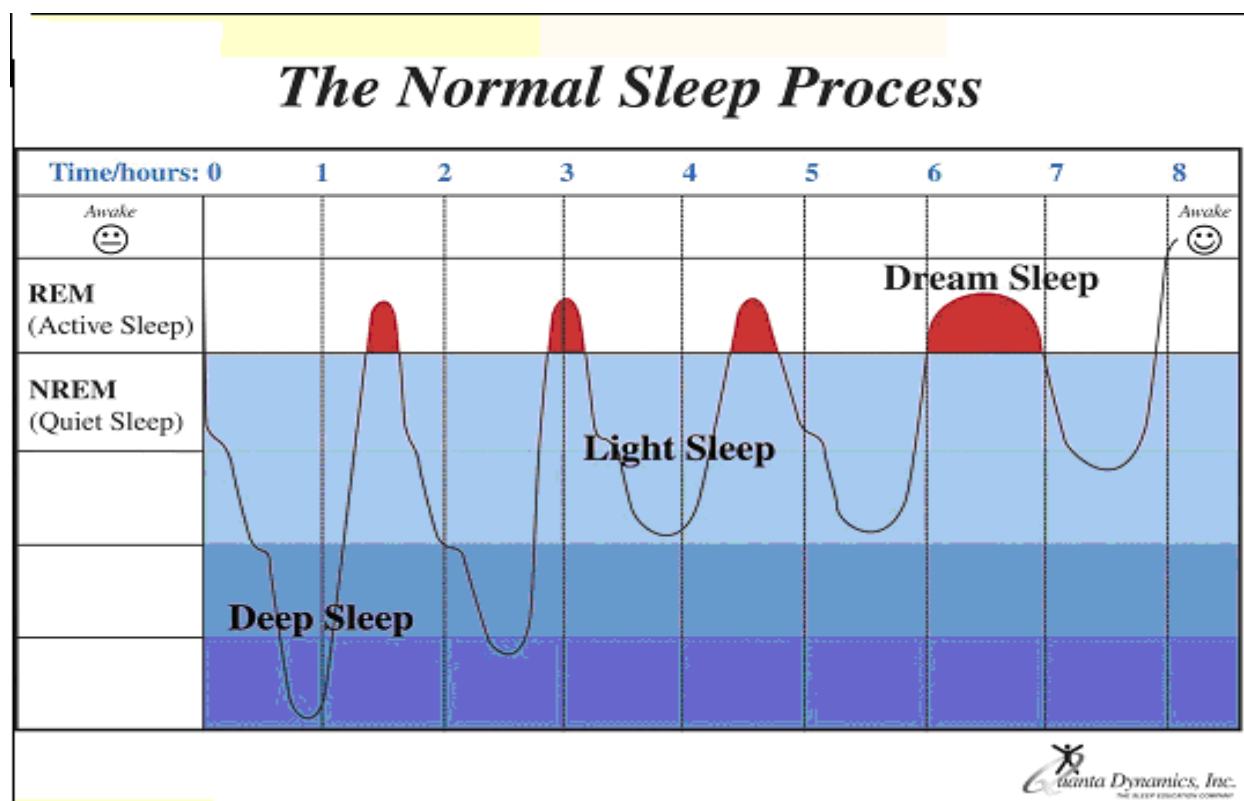
About every 90 minutes we ascend out of deep sleep into REM sleep, a very active state of sleep. This is where the brain's activity increases to a level similar to when we are awake. We are nearly awake. It is when we process activities of the day, problem solve issues and concerns, and move from short-term to long-term memory that which we have learned or experienced during the day. It is commonly called "paradoxical" sleep since our brain is nearly awake working actively to restore us psychologically and enhance memory, while we are "sleeping."

What happens during REM Sleep:

- Ideas and memories important to us are stimulated and developed
- Memory is enhanced and transferred into long-term memory
- Neurotransmitters important for learning and memory are replenished
- Access to memories and emotions is available
- Problems are resolved during our dreams

REM sleep is very important since our breathing, blood pressure, pulse rate, and blood flow to the brain all increase during this phase. A message is sent to our muscles to keep them from moving so we can be very active in our dreams without physically moving. During REM sleep our peripheral muscles are atonic.

REM presents a challenge to sustain breathing, oxygenation, and cardiac stability in patients at risk for sleep apnea. These clinical functions all become more difficult to sustain: apneic events are longer during REM, oxygen desaturation is lower during REM, and more cardiac arrhythmias are noted during REM sleep. Since the longest REM period occurs in the early morning hours between 4:00 – 6:00 AM, we need to closely monitor our patients during this time to protect them from an adverse event.



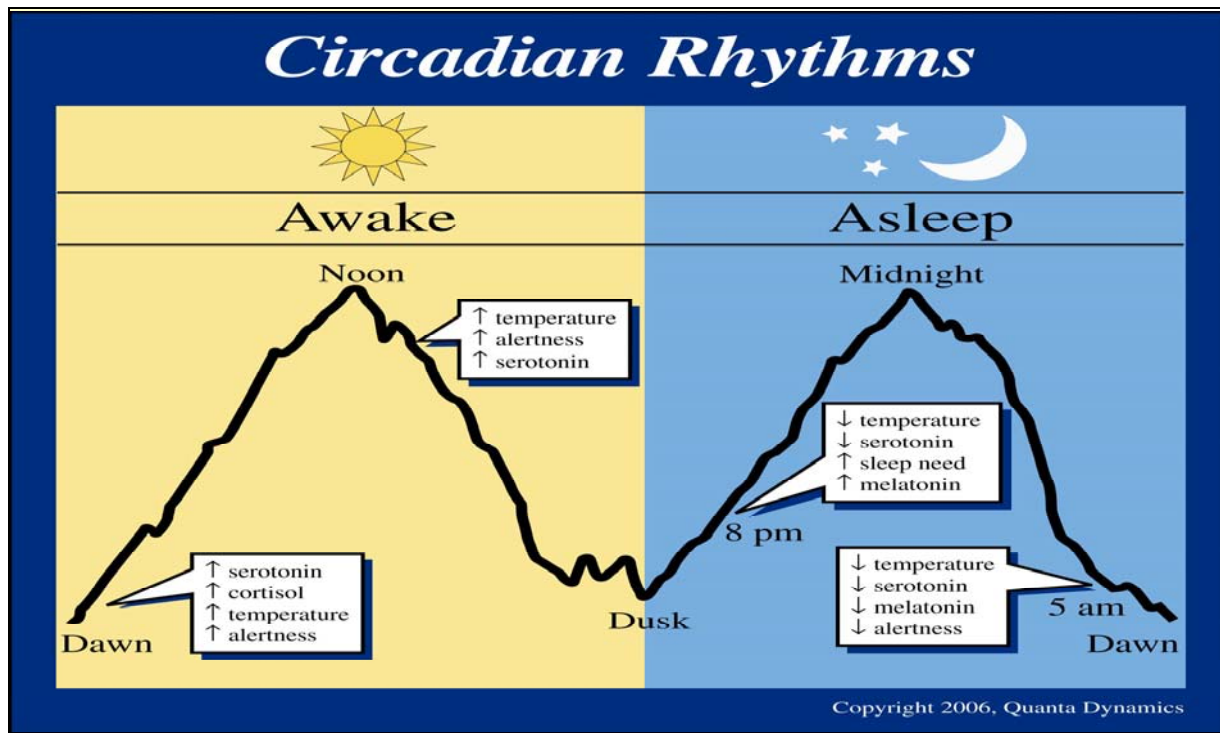
Our Circadian Clock

This is our personal timekeeper, and we rely on it every day without consciously being aware of it. It is what enables us to know when to awaken each morning at the same time without an alarm. Established early in childhood, it varies only slightly from individual to individual.

It is located deep in the brain and regulates our sleep/wake cycle, body temperature and hormone levels. When these natural rhythms and cycles are disrupted or changed, they affect how well we feel physically, mentally and emotionally.

Light and Darkness Affects Sleep

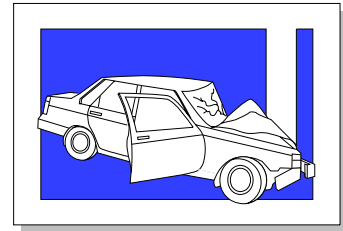
- Melatonin is the natural sleep promoting chemical required to overcome alertness
 - Accentuated by low light and initiated by dusk
- Serotonin is required to be alert and have an upbeat mood
 - Accentuated by sunlight or bright light
 - Released in the early morning hours
- Cortisol is the naturally occurring stress hormone
 - Stress hormone
 - Rises with daylight
 - Failure to reduce cortisol at night in preparation for sleep reduces the capacity to fall asleep easily and obtain good quality sleep
- Body Temperature
 - Higher body temperature, within normal limits, promotes alertness and productivity
 - When body temperature normally falls with dusk and anticipation of sleep, we begin to feel sleepy
 - Our lowest temperature is normally around 4:00 – 6:00 AM
- Artificial light
 - May alter our natural sleep/wake cycle
 - Bright light in the evening can reduce melatonin levels causing sleep difficulties



What are Consequences of Untreated Sleep Apnea?

★Increased risk for:

- High blood pressure
 - Blood pressure is normally elevated in the AM in a patient with untreated sleep apnea. Normally, blood pressure is lower after awakening from sleep.
- Coronary Artery Disease
- Ischemic heart disease
- MI
 - If a person has had an MI, Sleep Apnea is a contributing risk for another cardio-vascular event
- CVA / Cardiac arrhythmia
 - Atrial fibrillation is twice as likely to occur if Sleep Apnea is untreated
- Heart failure
 - Poor pumping action of the heart causes swelling, shortness of breath and fatigue
- Diabetes
- Fatigue-related motor vehicle/work accidents
- Decreased quality of life
- Weight gain
- Memory problems
- Decreased concentration



Sleep deprivation contributes to elevated blood sugar and blood pressure plus weight gain. When sleep deprived, we crave carbohydrates and fats, which metabolize to sugars. Regular intake of these foods not only causes weight gain, but keep insulin levels elevated. Left untreated, elevated insulin caused insulin resistance, which contributes to diabetes. Also, with increased weight gain, sleep apnea becomes more severe, contributing to elevated blood pressure. This condition is the metabolic syndrome.

When sleep deprivation is reduced through treatment of the sleep apnea, blood sugar levels and blood pressure will lower, and in some patients may normalize.

Symptoms seen in a patient at risk for sleep apnea:

- Day-time:
 - Excessive daytime sleepiness
 - Fatigue
 - Irritability
- Night-time:
 - Loud **habitual** snoring
 - Gasping/choking during sleep
 - Apneic events



How is Sleep Apnea Diagnosed and Treated?

If you suspect your patient has sleep apnea, evaluation by a doctor specializing in sleep disorders is recommended. A sleep study can be done providing information as to the seriousness of the breathing disorder. A screening for sleep apnea should be done prior to receiving pain medications, sedation, or anesthesia.



Treatment

The most common treatment is Positive Air Pressure (PAP), equipment designed to splint open the posterior airway:

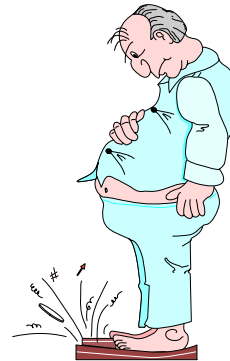
- **Continuous Positive Airway Pressure (CPAP)** is the most accepted and effective treatment for SA
 - Works by placing a breathing mask over the nose when sleeping. A small machine delivers gentle, continuous pressurized air through the nose during sleep, keeping the airway open.
 - CPAP Results:
 - Breathing becomes regular; snoring stops; restful sleep is restored; daytime fatigue is decreased; risk for HTN, MI, CVA and accidents are reduced
- **Bi-level PAP**
 - Two different levels of air pressure
 - IPAP - Higher inspiratory pressure/
 - EPAP - Lower expiratory pressure
- **Auto PAP**
 - Pressure is kept low until apnea detected
- **Dental Devices**
 - These devices can open the airway by moving the tongue forward out of the airway. Dentists, experienced with this treatment, can create these devices.
- **Surgery**
 - This method of treatment increases the size of the airway. The most common of these is removal of adenoids and tonsils, especially in children. Combined soft tissue and bone surgery could include changes in jaw placement and may treat the causes for sleep apnea if PAP does not work.



Lifestyle Changes

Lifestyle changes often are effective in treating mild cases of sleep apnea:

- Sleep on the side since sleep apnea worsens sleeping on your back
- Lose weight
- Stop smoking
- Regular exercise
- Avoid alcohol in the evening
 - Alcohol causes respiratory depression
- Avoid non-prescribed sleep medications
- Treat acid reflux
- Elevate head of bed



Medications that affect Sleep Apnea

- Drug which create respiratory suppression
 - Benzodiazepines
 - Narcotics
 - Alcohol
 - Antiemetics (phenergan)
 - Antidepressants
- Narcotics
 - Epidural
 - IV PCA
- Anesthesia may have a re-sedation effect 6-12 hours after recovery
 - Creates a risk for an adverse event
 - Requires careful assessment
 - Exacerbated by presence of excessive daytime sleepiness
 - Requires continuous monitoring of oxygenation and ventilation
- Circadian relationship
 - Increased effect after dusk
 - Affected by excessive sleepiness and accumulated sleep loss due to untreated sleep apnea

Standing Orders

Examples of orders routinely used:

1. Orders used in all patients diagnosed or at risk for Sleep Apnea
2. Orders used in all patients with IV PCA – Adult at risk for Sleep Apnea
3. Orders used in patients with IV PCA – adult without risk for SA
4. Colo-rectal orders for adults at risk for sleep apnea



AT RISK AND DIAGNOSED SLEEP APNEA ORDERS

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PROGRESS NOTES		DOCTOR'S ORDERS	
Date:	Time:	Date:	Time:
Suspect sleep apnea if one or more of the following:		If using PAP therapy at home then:	
1. Harsh or hoarse snoring		IN AMBULATORY SURGERY:	
2. Witnessed apneic events		1. Label chart with "At Risk for Sleep Apnea" sticker.	
3. Excessive daytime sleepiness		2. If PAP therapy is with patient, transport equipment with patient	
4. Prior sleep apnea surgery without confirmation of resolution		label on it to PACU.	
5. Initiate these orders if any one of the following is true:		3. If PAP therapy is not with patient, have family take measures to attempt acquire it.	
A. BMI >30 + HTN: BMI = _____		IN PACU:	
B. BMI > 35: BMI = _____		1. Ensure chart is labeled with "At Risk for Sleep Apnea" sticker.	
C. Witnessed apnea events		2. Use PAP therapy unit/mask belonging to patient if available.	
D. Sensitivity to narcotics or sedatives with obtundation		3. If PAP therapy not available, use Auto-PAP at a range of 4-20 cm H ₂ O	
E. History of difficult intubation		If suspected sleep apnea or noncompliant with PAP therapy at home:	
F. Hypoxia with O ₂ sat consistently < 90%		IN PACU:	
6. Patient undergoing a high risk procedure involving the following:		1. Ensure chart is labeled with "At Risk for Sleep Apnea" sticker	
A. Neck		2. Consider use of Auto-PAP with a range of 4-20 cm H ₂ O	
B. Thorax		3. Notify anesthesia and surgeon if Auto-PAP initiated	
C. Upper abdomen		4. Consider telemetry or critical care admission if needed.	
D. Multiple hour case or night time case		IN MED/SURG, OB/GYN, PRNU, TELEMETRY, CRITICAL CARE:	
7. Any of following current or past medical conditions:		All patients with diagnosed sleep apnea who have IV PCA or epidural narcotics should be admitted to telemetry or critical care or	
A. HTN		Medical-Surgical unit at SJE.	
B. Ischemic heart disease with or without MI		1. Label chart with "At Risk for Sleep Apnea" sticker.	
C. DVT / PE		2. If patient on PAP therapy in PACU, continue on floor.	
D. Peripheral vascular disease		3. Place on continuous hourly pulse oximetry & respiratory rate	
E. Stroke		4. HOB raised 20-30 degrees if tolerated unless contraindicated.	
F. Family history of sleep apnea		5. Instruct patient/ family/ visitors not to administer home meds to patient.	
8. Contraindications for PAP therapy include:		6. Use minimal dose of narcotic agents for pain relief/ reduction without sedation.	
A. Bullous lung disease		7. Use nonsedating antiemetics (ie. Anzemet or Zofran) instead of phenergan. Contact physician if orders are needed.	
B. Pneumothorax		8. Provide education for rationale of using minimal dosing of narcotics and non-sedating antiemetics.	
C. Symptomatic hypotension with volume depletion		9. Record q1h O ₂ saturations and respiratory rate.	
D. CSF leaks		10. If SpO ₂ sat falls < 92%, apply O ₂ @ 2L.	
E. Maxillo-mandibular advancement		11. Notify physician if SpO ₂ sat continues to fall < 92%. Notify respiratory therapy to apply Auto Pap at a range of 4-20 cm H ₂ O.	
F. Esophageal surgery		Notify Rapid Response Team.	
		12. Notify physician if SpO ₂ remains <92% and may increase oxygen to 4L/min via PAP.	
		13. [] Consult Sleep Specialist for sleep apnea evaluation	
		Physician Signature:	
		Date/Time:	



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PATIENT
IDENTIFICATION

AT RISK OR SLEEP APNEA ADULT IV PCA ORDERS

Date _____ Time _____

Allergies _____

Weight _____

DIAGNOSED SLEEP APNEA PATIENTS ADMIT TO TELEMETRY OR CRITICAL CARE OR 4 MEDICAL SURGICAL UNIT AT SJE

PCA Dosing At Risk and Sleep Apnea	☐ Morphine Standard	Acceptable Range Morphine	☐ Hydromorphone Standard	Acceptable Range Hydromorphone
Concentration	1 mg/ml	0.5 – 2 mg	0.2 mg/ml	0.1 – 0.4 mg
Loading Dose	2 mg		0.4 mg	
Repeat Loading Dose	Q30min x2, pain $\geq$ 5/10	0.5 – 1 mg	Q30min x2, pain $\geq$ 5/10	0.1 – 0.2 mg
PCA Dose	1 mg/dose		0.2 mg/dose	
Lockout Interval	10 minutes		10 minutes	
Lockout Dose q4h	20 mg q4h		4 mg q4h	
Pain Score $\geq$ 5/10 at 1 hr	↑ PCA Dose to 1.5 mg		↑ PCA Dose to 0.3 mg	
Pain Score $\geq$ 5/10 at 2 hr	↑ Dose to 2.3 mg		↑ Dose to 0.5 mg	
Pain Score $\geq$ 5/10 at 3 hr	Call MD		Call MD	

Supportive Medications:

1. Anti-emetic: Zofran 4 mg, IV q 4 hrs. PRN X2 doses or _____ -

2. Stool softener: Colace 100 mg, po daily prn or _____

Additional Orders:

1. ALL PATIENTS WITH PCA WILL HAVE CONTINUOUS PULSE OXIMETRY.

- Monitor vital signs, pain score, and level of consciousness q1h x 4 hours initially and after any dosing change, then monitor q4h until 4 hours after PCA is discontinued.

2. For pain score $\geq$ 5/10 and normal vital signs and level of consciousness:

- Increase PCA dose by 50% and reassess pain score in 1 hour.
- If pain score remains $\geq$ 5/10 after above changes, increase PCA dose by 50% and reassess pain score in 1 hour.
- If pain score remains $\geq$ 5/10 after above changes, call physician (consider Palliative Medicine Consult or Pain Management Consult)

3. If patient becomes deeply sedated, but easily aroused and/or respiratory rate $<$ 10 and/or systolic BP $<$ 90 mmHg:

- Stop PCA infusion (do not turn off machine) and **NOTIFY PHYSICIAN**
- Monitor vital signs, SpO₂, and level of consciousness q15 min until stabilized.
- Administer oxygen @ 2L/min via nasal cannula to maintain SpO₂ $\geq$ 92%.
 - If O2 sat falls $<$ 92% notify respiratory therapy to apply Auto-PAP at a range of 4-20 cm. H2O and notify physician.

4. If patient is not easily aroused and/or O2 sat remains below 92% and/or RR $<$ 8 and/or symptomatic hypotension:

- Stop PCA infusion (do not turn off machine) and **NOTIFY PHYSICIAN** and **rapid response team STAT**.
- Monitor vital signs, SpO₂, and level of consciousness q15 min until stabilized.
- Administer oxygen @ 2L/min via nasal cannula to maintain SpO₂ $\geq$ 92%. If SpO₂ remains $<$ 92% initiate Auto-PAP at a range of 4-20 cm. H2O. After PAP applied may increase oxygen to 10L/min to maintain O2 sat. $>$ 92%.
- Dilute 0.4 mg naloxone in 9 mL NS. Administer 1 mL IVP q3min, then q5-10min per Naloxone Protocol.

5. Instruction family members/visitors that only the patient is to push the PCA button.

Physician Signature: _____



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COLORECTAL SURGERY

POST-OP ORDERS

Dr Bruce M. Belin

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PROGRESS NOTES	DOCTOR'S ORDERS
	1. Admit to ICU or 3B telemetry & add to my computer list
	2. VS: q1h x 3, q2h x 4, q4h x 6, then q6h
	3. Labs: CBC, BMP on POD # 1,2, and 3
	4. NPO except for meds with sips of water
	5. I&Os q4h for 24h after surgery then q shift (incl PO,UOP,NG,stoma output, BM & other)
	6. Record bowel movements in I&Os
	7. Foley to Gravity
	8. Empty JP drains (if present) q shift
	9. NG (if present) to medium suction: a) Irrigate with 40 mL water q4h b) Record output q shift
	10. Place NG tube for unrelieved nausea
	11. If stoma, consult enterostomal therapy RN
	12. Scuds while in bed
	13. Incentive spirometer q1h while awake
	14. If patient has diabetes or blood glucose >150 mg/dl x 2, implement the Blood Glucose Control Protocol, if not an OPO admit
	15. Consult PT POD#1 and patient to go to PT dept on POD#1 if tolerates
	16. Patient out of bed and ambulating with nursing assistance POD#1 if tolerated
	17. Call if: temp>101; HR >120< 40; SBP <80>170; O₂sat < 90%
	UOP >1.5L or <200 mL per shift; emesis or other problems
	18. [] No rectal meds or temps
	Medications:
	19. IVFs: D5½ NS + 20 KCl @ 125 mL/h – sodium chloride flush 10 mL for IV access or after IV medications
	20. Antibiotics per SJHC Post-Operative Antibiotic Prophylaxis Orders – To be initiated immediately post-op in PACU.
	21. Benadryl 25 mg IV q 8 hours prn for itching or hs for insomnia
	22. Zofran 4 mg IV q6h prn nausea/vomiting
	23. Toradol 30 mg (20mg > age 65) IM 3 hours post-op and
	24. Toradol 30 mg (20mg > age 65) IM 6 hours post-op
	25. Valium 4 mg IV q4 hours prn for abdominal spasm
	26. Heparin 5000 units subq q 8h
	28. If pt is at risk for or diagnosed with sleep apnea, use sleep apnea and sleep apnea PCA orders
	27. If pt does NOT have an epidural or is at risk or diagnosed with sleep apnea, Morphine PCA: 0.5 mg/hr continuous and 2 mg IV q15min on demand;
	No lock out, After 24 h, stop continuous on PCA but keep 2 mg IV q15min on demand
	29. Lopressor 5 mg IV q6h – hold if HR < 60 or SBP < 120
	30. Darvocet N-100 1-2 tabs po q6h prn (pain scale < 5)
	31. Lortab 7.5/500 mg 1-2 tabs po q6h prn (pain scale ≥ 5)
	32. Tylenol 650mg PO q6h PRN pain or temp > 101°F
	DO NOT EXCEED 4 GM ACETAMINOPHEN PER DAY (TOTAL FROM ALL SOURCES)
	33. Protonix 40 mg IV daily
	34. [] Stress dose steroids:
	Physician Signature:
	Date/Time:



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Documentation Requirements

- o Respiratory – SpO2 and respiratory rate every hour or according to the orders
- o Neurology – alertness is critical to differentiating from sedation and sleepiness
 - o Does the patient need to be stimulated often
 - o Need to elevate head of bed
 - o Increased risk for falls, especially later in the night when sedation and sleepiness become more pronounced
 - o Increased risk in early morning hours especially during REM sleep
 - REM sleep periods of longer in duration in the early morning hours normally between 4:00 – 6:00 AM
- o Cardiac changes – arrhythmia, heart rate fluctuations
- o Oxinet Trending Strips – document in the graphics section of the chart

Impact on Care Continuum of Sleep Apnea

Sleep apnea affects a number of clinical services which requires the integration of a care team to effectively manage this sleep disorder:

- o Anesthesia – risk for respiratory depression due to anesthetics and medications
- o Neurology – risk for stroke
- o Cardiology – development of ischemic heart disease
- o Pulmonology – presence of pulmonary hypertension
- o Gastroenterology – acid reflux
- o Endocrinology – co-morbid diabetes
- o Internal Medicine – co-morbid hypertension
- o Psychiatry – depression from loss of sleep and reduced quality of life
- o Urology – erectile dysfunction
- o Risk Management – impact of adverse events
- o Administration – Support for equipment and staffing resources

The evidence suggests that there is a significant and underappreciated risk of serious injury from sedating agents, opioids, and other drugs in the postoperative period. These agents cause life-threatening respiratory depression in the patients at risk for sleep apnea. To protect these patients from an adverse event, monitoring of ventilation and oxygenation with audible alarms and frequent assessment of vital function is required. Treatment of sleep apnea with the use of positive air pressure is implemented in PACU to protect the patient from experiencing an unexpected event.

Sleep Apnea (SA) and Anesthesia

1. What is Sleep Apnea?

- Sleep apnea is a serious condition characterized by brief interruptions in breathing during sleep.
- Sleep apnea is caused by relaxed throat muscles, due to decreased muscle tone that sag and block the airway.
- Restful sleep patterns are interrupted resulting in excessive sleepiness and next-day fatigue.

2. What Happens When Someone has Sleep Apnea or is at Risk for Sleep Apnea?

- The blocking of the airway passage causes a person to snort, jerk awake, gasp for air and then fall back asleep. You do not know it is happening.
- Breathing pauses (apnea) may go along with loud snoring, but not everyone who snores has pauses in their breathing.
- Lower oxygen levels which occur with the blocked breathing causes a strain on the heart and lungs.
- The drugs used for anesthesia causes relaxation of the muscles of the throat and may need to be adjusted to protect you.
- Use of narcotic pain medicine will be balanced to prevent problems with breathing and excess sedation.
- Use of positive air pressure may be required if breathing problems occur after surgery.
- Admission to a special monitoring floor (telemetry) or critical care unit may be necessary after surgery for monitoring.

Normal Breathing



Airway is open
Air flows freely to lungs
Brain rests

3. Vital Signs to Monitor

The nurse will monitor your temperature, blood pressure, heartbeat, your breaths, and a probe on your finger or to measure the oxygen in your blood.

4. Do You have Any Symptoms of Sleep Apnea?

Daytime Symptoms:

- ☐ Excessive daytime sleepiness
- ☐ Fatigue
- ☐ Irritability

Nighttime Symptoms:

- ☐ Loud habitual snoring
- ☐ Pauses in breathing
- ☐ Gasping or choking during Sleep

Obstructive Sleep Apnea



Airway collapses
Airflow is blocked
Brain is kept on alert,
unable to effectively
rest or sleep

5. What are Consequences of Untreated Sleep Apnea?

Increased risk for:

- High blood pressure
- Heart disease
- Diabetes
- Daytime sleepiness
- Stroke
- Memory loss
- Decreased concentration
- Fatigue-related accidents

Identification, Diagnosis and Treatment of Sleep Apnea (SA)

Identification

The key indicators that suggest Sleep Apnea are:

- Excessive daytime sleepiness and fatigue
- Disruptive snoring or pauses in breathing (apnea)
- Gasping and choking during sleep
- Neck size greater than 17" in men and greater than 16" in women

Obstructive Sleep Apnea



Airway collapses
Airflow is blocked
Brain is kept on alert,
unable to effectively rest

Diagnosis

If you suspect that you have signs and symptoms indicating sleep apnea, evaluation by a doctor specializing in sleep disorders is recommended.

A sleep study can be done, which provides your doctor with information about how you breathe while sleeping, the seriousness of possible sleep apnea, and treatment options.

Treatment:

CPAP

The most common treatment is CPAP (Continuous Positive Airway Pressure). It works by placing a breathing mask over the nose at bedtime. A small machine delivers gentle, continuous pressurized air through the nose during sleep, keeping the airway open.

Results: Breathing becomes regular; snoring stops; restful sleep is restored; daytime fatigue is decreased; risk for high blood pressure, heart attack, stroke, and accidents is reduced.

CPAP Therapy



The airflow holds, or "splints," the airway open so air flows freely to the lungs.

Dental Devices

Dental devices can open the airway by moving the tongue forward out of the airway. Dentists, experienced with this treatment, can create these devices.

Surgery

Surgery is another method of treatment used to increase the size of the airway. The most common of these is removal of adenoids and tonsils, especially in children. Combined soft tissue and bone surgery, could include change in the jaw placement and may treat the causes for sleep apnea if CPAP treatment does not work.

Lifestyle Changes

Lifestyle changes often are effective in treating a mild case of sleep apnea. Some suggestions are:

- Sleep on your side since sleep apnea worsens when you sleep on your back
- Lose weight if you are overweight
- Stop smoking
- Use regular exercise
- Avoid alcohol in the evening
- Avoid non-prescribed sleeping medicines
- Treat acid reflux