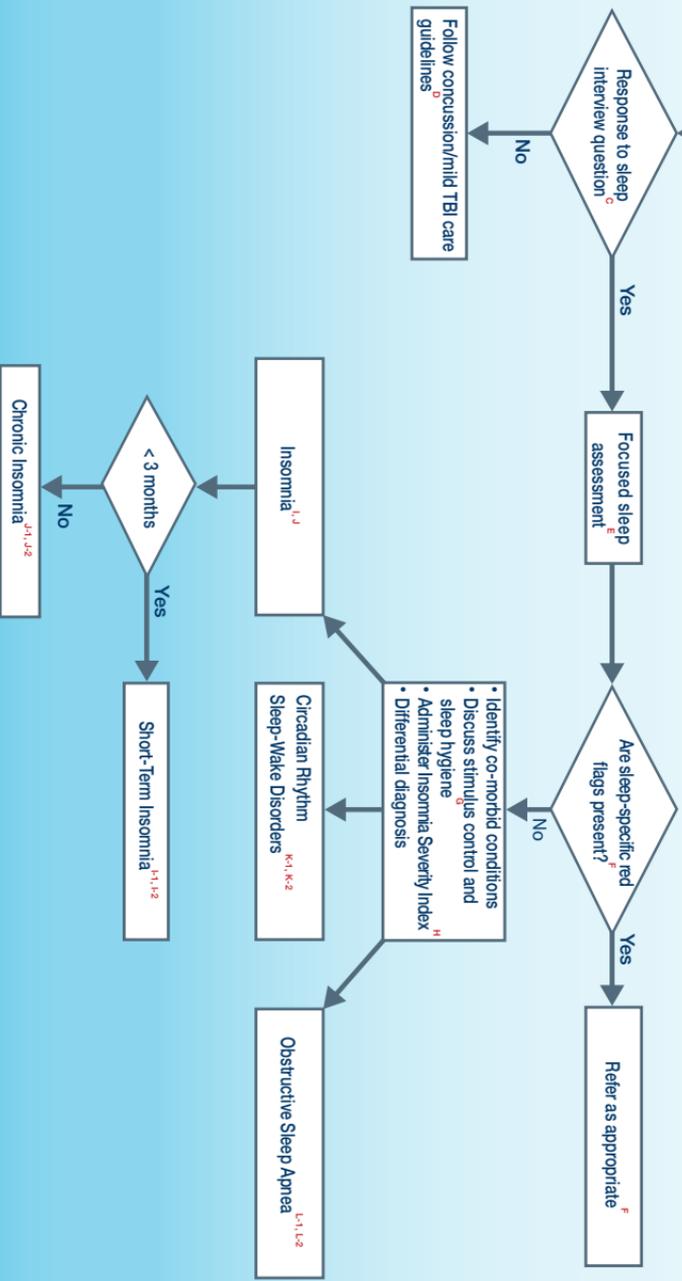


- Patient presents to primary care provider^a with symptoms after a concussion/mTBI^b
- Ask sleep interview question^c



References

A. Physical, Cognitive or Behavioral Complaints

Physical	<ul style="list-style-type: none">• Headache• Fatigue• Sensitivity to light and noise• Drowsiness• Dizziness	<ul style="list-style-type: none">• Nausea and vomiting• Vision problems• Balance problems• Transient neurological abnormalities
Cognitive	<ul style="list-style-type: none">• Problems with memory	<ul style="list-style-type: none">• Difficulty concentrating
Behavioral	<ul style="list-style-type: none">• Difficulty controlling emotions• Irritability	<ul style="list-style-type: none">• Anxiety• Depression

B. Sleep Complaints

<ul style="list-style-type: none">• Difficulty initiating sleep	<ul style="list-style-type: none">• Excessive daytime sleepiness
<ul style="list-style-type: none">• Difficulty maintaining sleep	<ul style="list-style-type: none">• Unusual events during sleep such as nightmares, abnormal behaviors, sensations or movements

Psychological health conditions (PTSD, generalized anxiety disorder, major depressive disorder, adjustment disorders, substance abuse disorders, nightmare disorder) whether diagnosed or not, may cause or significantly contribute to a sleep disturbance.

C. Interview Question

<ul style="list-style-type: none">• Are you experiencing frequent difficulty falling or staying asleep, excessive daytime sleepiness or unusual events during sleep?

D. Concussion/mTBI Care Guidelines

VA/DoD Clinical Practice Guideline for the Management of Concussion/mTBI:

www.healthquality.va.gov/guidelines/Rehab/mtbi/

Army Concussion Management in the Garrison Setting:

email: info@dvbic.org

Concussion Management in Deployed Settings:

dvbic.dcoe.mil

E. Focused Sleep Assessment

Area of Assessment	Examples
Symptoms	Difficulty initiating and/or maintaining sleep, non-restorative sleep, nightmares, snoring, awakening with gasping and choking, fatigue, tiredness or drowsiness during the daytime
Consequences	Cognitive impairment, mood disturbances, irritability, decrease in functional ability, role interference (family, social, academic, occupational)
Predisposing factors	Pre-concussion sleep pattern, prior history of a sleep disturbance, excessive weight, increasing neck circumference, narrow upper airway, older age, genetic factors, mood disturbances, anxiety or preoccupation concerning sleep quality, medications, other co-morbid behavioral health or medical conditions
Precipitating factors	Concussion, deployment, acute stress
Perpetuating behavioral factors	Napping, excessive caffeine/stimulant use, irregular sleep schedule Watching TV, reading, working on a computer, or playing video games while in bed
Perpetuating environmental factors	Light, noise, travel and time zone changes
Perpetuating psychosocial factors	Familial stress, inadequate social support system, financial stress, safety concerns or other worries
Perpetuating occupational factors	Shift work, standing watch, duty schedule incompatible with preferred sleep schedule, work stressors
Perpetuating physical factors	Pain, discomfort, tinnitus
Perpetuating lifestyle factors	Alcohol use, diet, smoking, limited physical activity, family and community obligations

F. Sleep Red Flags and Appropriate Referral

- Subjective complaints of significant sleepiness by patients in occupations in which somnolence would jeopardize the safety of themselves or others require a priority referral to a sleep medicine specialist.
- Patients with concussion-associated behavioral/emotional symptoms and severe sleep disturbance should be assessed for danger to themselves or others and immediately referred to the Emergency Department or Psychiatry if suicidal risk or other similar concerns are present.

G. First-Line Non-Pharmacological Treatment

Stimulus Control	Sleep Hygiene
Remove TV, radio, smartphone, electronic tablet, computer and other electronic devices from bedroom	Avoid caffeine/stimulant intake within six hours of bedtime
Relax before bedtime; avoid going to bed worried or angry; use the bedroom only for sleep and intimacy	Engage in exercise daily during the morning or afternoon; avoid exercise close to bedtime
Go to bed only when tired and sleepy	Avoid alcohol and nicotine use, large/heavy meals and excessive fluid close to bedtime
If unable to fall asleep within 15-20 minutes, get up, go to another room with the lights dim and do something relaxing while avoiding electronic use (TV, computers, phone); return to bed when sleepy -Repeat above, as needed throughout the night, even after awakenings	Promote a sleep friendly environment, minimize noise and light, maintain a cool but comfortable temperature
	Get up at the same time every morning (regardless of the amount of sleep obtained), even on the weekends; avoid daytime naps
	Get exposure to natural light every morning
Patient education information on stimulus control and sleep hygiene can be found on the Healthy Sleep sheet at dvbic.dcoe.mil	

H. Insomnia Severity Index (ISI)

https://www.myhealth.va.gov/mhv-portal-web/anonymous.portal?_nfpb=true&_pageLabel=healthyLiving&contentPage=healthy_living/sleep_insomnia_index.htm

Scoring: A total combined score of greater than or equal to 10 is consistent with insomnia.

- Useful to assess symptom severity and monitor response to treatment.

I-1. Short-Term Insomnia

Diagnosis of Short-Term Insomnia Disorder	
Short-term insomnia disorder: ICD-9-CM: 307.41 (ICD-10-CM: F51-02)	
<ul style="list-style-type: none">Sleep disturbance and associated daytime symptoms are present several days per week and for less than three months	
Criteria A-D must be met for short-term insomnia.*	
A. The patient reports one or more of the following:	
<ul style="list-style-type: none">Difficulty initiating sleepDifficulty maintaining sleepWaking up earlier than desiredResistance to going to bed on appropriate scheduleDifficulty sleeping without parent or caregiver intervention	
B. The patient reports one or more of the following related to the nighttime sleep difficulty:	
<ul style="list-style-type: none">Fatigue/malaiseAttention, concentration, or memory impairmentImpaired social, family, vocational, or academic performanceMood disturbance/irritabilityDaytime sleepinessBehavioral problems (e.g., hyperactivity, impulsivity, aggression)Reduced motivation/energy/initiativeProneness for errors/accidentsConcerns about or dissatisfaction with sleep	
C. The reported sleep/wake complaints cannot be explained purely by inadequate opportunity (i.e., enough time is allotted for sleep) or inadequate circumstances (i.e., the environment is safe, dark, quiet and comfortable) for sleep	
D. The sleep/wake difficulty is not better explained by another sleep disorder	
Short-Term Insomnia Considerations:	
<ul style="list-style-type: none">Patients with significant concerns about their symptoms warrant clinical attention regardless of symptom frequency	
<ul style="list-style-type: none">Many conditions such as grief, acute pain, or other acute stress are quite often associated with poor sleep. When such conditions are the sole cause of the sleep difficulty, a separate insomnia diagnosis may not apply	
<ul style="list-style-type: none">Insomnia Severity Index (ISI) ≥ 10	
<ul style="list-style-type: none">Two-week sleep diary	

*American Academy of Sleep Medicine. (2014). International classification of sleep disorders, (3rd ed.). Darien, IL: American Academy of Sleep Medicine

I-2. Short-Term Insomnia

Treatments for Short-Term Insomnia in the Primary Care Setting	
<ul style="list-style-type: none"> • First-line non-pharmacologic 	<ul style="list-style-type: none"> • Pharmacologic
<ul style="list-style-type: none"> - Reassure 	<ul style="list-style-type: none"> - Low-dose, short-duration non-benzodiazepine sedative-hypnotic drugs (zaleplon, zolpidem, eszopiclone, and zopiclone) – follow new dosing guidelines <ul style="list-style-type: none"> - e.g., zolpidem 5mg qhs for 2 weeks, may repeat once for no more than 30 days total
<ul style="list-style-type: none"> - Educate 	
<ul style="list-style-type: none"> - Implement stimulus control + sleep hygiene 	<ul style="list-style-type: none"> - If co-morbid depression, pain, headache, consider low dose antidepressant (amitriptyline or trazodone)
<ul style="list-style-type: none"> - Follow weekly until resolution 	<ul style="list-style-type: none"> - If co-morbid PTSD/nightmares (prazosin)
Applications & Assistive Technologies	
<ul style="list-style-type: none"> • Incorporate National Center for Telehealth and Technology smartphone apps (CBT-i Coach) and interactive websites (e.g., afterdeployment.t2.health.mil) to educate about the relationship between sleep and concussion recovery and provide self-management tools as an adjunct to treatment 	
Referral	
Evaluation and treatment of co-morbid condition with appropriate specialty	
Sleep Medicine: <ul style="list-style-type: none"> • Non-response or inadequate response to primary care treatment (e.g., patient remains symptomatic or a decrease in ISI score < 8 points after four weeks) 	
Other: <ul style="list-style-type: none"> • Consider acupuncture as adjunct to first-line treatment based on patient preference for complementary and alternative therapy modalities 	

J-1. Chronic Insomnia

Diagnosis of Chronic Insomnia Disorder

Chronic insomnia disorder: ICD-9-CM: 307.42 (ICD-10-CM: F51.01)

- Sleep disturbance and associated daytime symptoms that occur at least three times per week **and** have been present for at least three months

Criteria A-D must be met for chronic insomnia.*

A. The patient reports one or more of the following:

- Difficulty initiating sleep
- Difficulty maintaining sleep
- Waking up earlier than desired
- Resistance to going to bed on appropriate schedule
- Difficulty sleeping without parent or caregiver intervention

B. The patient reports one or more of the following related to the nighttime sleep difficulty:

- Fatigue/malaise
- Attention, concentration, or memory impairment
- Impaired social, family, vocational, or academic performance
- Mood disturbance/irritability
- Daytime sleepiness
- Behavioral problems (e.g., hyperactivity, impulsivity, aggression)
- Reduced motivation/energy/initiative
- Proneness for errors/accidents
- Concerns about or dissatisfaction with sleep

C. The reported sleep/wake complaints cannot be explained purely by inadequate opportunity (i.e., enough time is allotted for sleep) or inadequate circumstances (i.e., the environment is safe, dark, quiet and comfortable) for sleep

D. The sleep/wake difficulty is not better explained by another sleep disorder

Chronic Insomnia Considerations:

- Recurrent episodes of sleep/wake difficulties lasting several weeks at a time over several years does not meet the specified three-month duration criterion for any single such episode, however such patients may be assigned a diagnosis of chronic insomnia related to the prolonged re-occurring sleep difficulties
- Regular use of sedative-hypnotic medications may result in good sleep leading to the patient not meeting the outlined diagnostic criteria for an insomnia disorder. However, without medications these patients may meet the diagnostic criteria and maintain the diagnosis of chronic insomnia
- Co-morbid conditions such as chronic pain disorders and others may cause sleep/wake complaints. If sleep/wake complaints cannot be attributed to the co-morbid condition, the diagnosis and treatment of insomnia should be considered
- Insomnia Severity Index (ISI) ≥ 10
- Two-week sleep diary

*American Academy of Sleep Medicine. (2014). International classification of sleep disorders, (3rd ed.). Darien, IL: American Academy of Sleep Medicine

J-2. Chronic Insomnia

Treatments for Chronic Insomnia in the Primary Care Setting	
<ul style="list-style-type: none"> • First-line non-pharmacologic 	<ul style="list-style-type: none"> • Pharmacologic
<ul style="list-style-type: none"> – Implement stimulus control + sleep hygiene 	<ul style="list-style-type: none"> – Only if patient has not attained relief with CBT-I by a specialty provider
<ul style="list-style-type: none"> – Provide progressive muscle relaxation training (Information is available on the Healthy Sleep patient education sheet at dvbic.dcoe.mil) 	<ul style="list-style-type: none"> – Low-dose, short-duration non-benzodiazepine sedative-hypnotic drugs (zapelon, zolpidem, eszopiclone, and zopiclone) – follow new dosing guidelines, e.g., zolpidem 5mg qhs for 2 weeks, may repeat once for no more than 30 days total – Consider a melatonin receptor agonist (ramelteon) as an alternative
<ul style="list-style-type: none"> • After first-line non-pharmacologic treatment, refer for Cognitive Behavioral Therapy for Insomnia (CBT-I) 	<ul style="list-style-type: none"> – If co-morbid depression, pain, headache, consider low dose antidepressant (amitriptyline or trazodone)
	<ul style="list-style-type: none"> – If co-morbid PTSD/nightmares (prazosin)
Applications & Assistive Technologies	
<ul style="list-style-type: none"> • Incorporate National Center for Telehealth and Technology smartphone apps (CBT-i Coach) and interactive websites (e.g., afterdeployment.t2.health.mil) to educate about the relationship between sleep and concussion recovery and provide self-management tools as an adjunct to treatment 	
Referral	
Evaluation and treatment of co-morbid condition with appropriate specialty	
Sleep Medicine:	
<ul style="list-style-type: none"> • Non-response or inadequate response to primary care treatment (e.g., patient remains symptomatic or a decrease in ISI score < 8 points after four weeks treatment with primary care stimulus control and sleep hygiene) 	
Other:	
<ul style="list-style-type: none"> • Sleep interventions/sleep specialty trained occupational therapist or behavioral health provider - CBT-I • Consider acupuncture as adjunct to CBT-I based on patient preference for complementary and alternative therapy modalities 	

K-1. Circadian Rhythm Sleep-Wake Disorders (CRSWD)

Diagnosis of Circadian Rhythm Sleep-Wake Disorders (CRSWD)
Circadian Rhythm Sleep Wake Disorders (CRSWD): Unspecified ICD-9-CM: 327.30 (ICD-10-CM: G47.20) <ul style="list-style-type: none">Subtypes of CRSWD have specific criteria that can be determined through Sleep Medicine evaluation and actigraphy
General criteria A-C must be met*
A. Chronic or recurrent pattern of sleep-wake rhythm disruption primarily due to alteration of the endogenous circadian timing system or misalignment between the endogenous circadian rhythm and the sleep-wake schedule desired or required by an individual's physical environment or social/work schedules
B. The circadian rhythm disruption leads to insomnia symptoms, excessive sleepiness, or both
C. The sleep and wake disturbances cause clinically significant distress or impairment in mental, physical, social, occupational, educational, or other important areas of functioning
CRSWD Presentation
<ul style="list-style-type: none">Difficulty initiating sleepDifficulty maintaining sleepExcessive sleepiness
CRSWD Considerations
<ul style="list-style-type: none">It is important to differentiate between poor sleep hygiene and intentional maintenance of irregular sleep schedules and CRSWDPresentation symptoms may lead to poor health outcomes, decreased functional ability in social, occupational and educational roles as well as safety concernsDiscordance between physiological sleep preference and environmentally imposed sleep-wake scheduleExternal issues-shift work, standing watch, jet lag, time zone changesQuality of sleep on preferred sleep scheduleDaytime impairmentsNeurologic exam and OSA screening exam if indicated by historyMorningness-Eveningness Questionnaire (MEQ): http://www.chem.unt.edu/~./djytaylor/extra/meq.pdfTwo-week sleep diary

*American Academy of Sleep Medicine. (2014). International classification of sleep disorders, (3rd ed.). Darien, IL: American Academy of Sleep Medicine

K-2. Circadian Rhythm Sleep-Wake Disorder (CRSWD)

Treatments for CRSWD in the Primary Care Setting	
Non-Pharmacologic	<p>First-line treatment:</p> <ul style="list-style-type: none">• Assist patient in identifying and scheduling optimal sleep-wake schedule; adjust patient activity schedule (as feasible) to meet preferred sleep-wake cycle; encourage patient adherence to good sleep hygiene practices; and get exposure to natural light every morning <p>Follow-up care following specialty treatment:</p> <ul style="list-style-type: none">• Stimulus control and sleep hygiene for residual insomnia complaints, reinforcement of protocols recommended by specialty care for light exposure/restriction and use of equipment such as blackout shades• Liaison with command to adjust duty schedule for consistency of sleep-wake schedule if possible
Pharmacologic	<p>Treatment for Delayed Sleep-Wake Phase Disorder (DSWPD) only, while awaiting specialty care appointment:</p> <ul style="list-style-type: none">• Melatonin 0.5-5 mg dose; prescribed 5-6 hours before the time that the patient would usually go to sleep
Applications and Assistive Technologies	<ul style="list-style-type: none">• Short wavelength light (blue) therapy
Referral	
Sleep Medicine	<ul style="list-style-type: none">• All patients with possible CRSWD for definitive diagnostic workup• Actigraphy, chronotherapy, short wavelength light (blue) therapy

L-1. Obstructive Sleep Apnea (OSA)

Diagnosis of Obstructive Sleep Apnea (OSA)	
ICD-9-CM: 327.23	(ICD-10-CM: G47.33)
Diagnostic Criteria: (A and B) or C satisfy the criteria for diagnosis*	
A. The presence of one or more of the following:	
<ul style="list-style-type: none">• The patient complains of sleepiness, non-restorative sleep, fatigue, or insomnia symptoms• The patient wakes with breath holding, gasping, or choking.• The bed partner or other observer reports habitual snoring, breathing interruptions, or both during the patient's sleep• The patient has been diagnosed with hypertension, a mood disorder, cognitive dysfunction, coronary artery disease, stroke, congestive heart failure, atrial fibrillation, or type 2 diabetes mellitus	
B. Polysomnography (PSG) or out-of-center sleep testing (OCST) reports:	
<ul style="list-style-type: none">• Five or more predominantly obstructive respiratory events (obstructive and mixed apneas, hypopneas, or respiratory effort related arousals [RERAs]) per hour of sleep during a PSG or per hour of monitoring (OCST)	
C. PSG or OCST demonstrates:	
<ul style="list-style-type: none">• Fifteen or more predominantly obstructive respiratory events (apneas, hypopneas, or RERAs) per hour of sleep during a PSG or per hour of monitoring (OCST)	
OSA Presentation	
<ul style="list-style-type: none">• Excessive sleepiness• Repetitive episodes of complete (apnea) or partial (hypopnea) upper airway obstruction• Witnessed pauses in breathing and gasping or choking• Physical exam:<ul style="list-style-type: none">– including an assessment of obesity (as indicated by neck circumference > 17" for males, > 16" for females and body mass index > 25)– airflow obstruction– cardiovascular risk factors– blood pressure– retrognathia (overbite, recessed chin, small jaw)	
Additional Considerations	
<ul style="list-style-type: none">• Patients with OSA may have a normal examination and BMI within normal limits. PSG, a formal sleep study conducted in a sleep lab, is the gold standard for a confirmatory diagnosis of OSA and assessment of OSA severity• Other causes of excessive sleepiness such as narcolepsy, idiopathic hypersomnia, and insufficient sleep may present in a similar manner. These other conditions are usually identified on the basis of history and PSG	
Lab/Studies	
<ul style="list-style-type: none">• Polysomnography for definitive diagnosis	
Self- Report Measures	
<ul style="list-style-type: none">• Epworth Sleepiness Scale, STOP-BANG questionnaire or Berlin questionnaire*	

*Reference for diagnostic criteria and links to all questionnaires on the following page

L-2. Obstructive Sleep Apnea (OSA)

Links to OSA Self-Report Measures	
• Epworth Sleepiness Scale:	http://epworthsleepinessscale.com/epworth-sleepiness-scale.pdf
• STOP-BANG questionnaire:	https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/media/STOP%20BANG%20Questionnaire.pdf
• Berlin questionnaire:	http://img.medscape.com/article/771/425/berlin_questionnaire.pdf
Treatments for OSA in the Primary Care Setting	
Non-Pharmacologic	<ul style="list-style-type: none"> • Body position therapy • Oral appliances • Positive Airway Pressure therapies (CPAP, APAP, BiPAP)
Pharmacologic	• No role for pharmacology as stand-alone treatment
Combination	• If compliant with positive airway pressure (PAP) therapies, consider use of modafinil or armodafinil as adjunctive therapy for residual hypersomnia
Applications and Assistive Technologies	• None
Referral	
Urgent Referral	• Patients with concussion associated behavioral or emotional symptoms and a severe sleep disturbance should be assessed for danger to themselves or others and immediately referred to the emergency department or psychiatry if suicidal risk or other similar concerns are present
Referral to Sleep Medicine	<ul style="list-style-type: none"> • Subjective complaints of significant sleepiness by patients in occupations in which somnolence would jeopardize the safety of themselves or others require a priority referral to a sleep medicine specialist Initial management of patients suspected with OSA • Polysomnography • New, persistent, recurrent or worsening signs/symptoms after initiation of treatment or non-efficacy of treatment • Oropharyngeal surgery
Referral to Behavioral Health	• Behavioral or psychological interventions to facilitate PAP compliance, smoking cessation, weight reduction or alcohol reduction

*American Academy of Sleep Medicine. (2014). International classification of sleep disorders, (3rd ed.). Darien, IL: American Academy of Sleep Medicine

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