

Sleep Deprivation



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Introduction!

Research presented by the Centers for Disease Control and Prevention (CDC) indicates that millions of Americans are suffering from sleep deprivation. Research presented by the CDC also indicates that the prevalence of sleep deprivation may be on the rise. As a result, health care professionals should be familiar with sleep deprivation. This course reviews sleep deprivation, as well as methods to address and manage sleep deprivation, to provide health care professionals with the necessary insight to best serve patients in need.

Section 1: Sleep Deprivation

Case Study 1!

A 38-year-old male patient presents to a health care facility with complaints regarding sleep. The patient reports that he has been struggling with sleep for the past three or four years. The patient explains that his issues with sleep began when he was laid off from work. The patient goes on to explain that he was "very stressed" when he was laid off from work and, "could not sleep through the night." The patient eventually found a new job - however, his issues with sleep continued. Upon questioning, the patient reports that he "often wakes up during the night and cannot fall back to sleep right away." The patient also reports he is often tired, exhausted, irritable, and moody throughout the day and has to consume "five to eight cups of coffee just to make it through the workday." The patient also reports that he has tried "sleep medication" in the past to help him sleep, but is not currently taking any medications. However, the patient does report he often drinks "four to six beers a night" to help him fall asleep. By the end of the exam, the patient begins to get anxious about his lack of sleep and how it is affecting his life. He is concerned about "paying bills" and that he is going to lose his current job. Finally, he tells the examining health care professional he wants help, and is willing to do "what it takes to get a good night sleep."

Case Study 2

A 28-year-old woman presents with complaints of frequent fatigue. Upon questioning, the patient reports that she has been experiencing, what she refers to as, "all-around fatigue for the past six months." The patient's physical exam is unremarkable - however, during the exam, the patient begins to tear up and asks if she can "smoke a cigarette." Upon further questioning, the patient discloses that she is having a "hard time sleeping" and that she is feeling "very down, all day, all the time." Upon

questioning, the patient reports that she has been having difficulty focusing, concentrating, and making decisions at work. The patient then goes on to say that she simply does not have the "energy, desire, or interest in doing" her job and that she has missed "many days of work" over the past aforementioned time period because she cannot sleep through the night. Most concerning, the patient confides that she feels like there is no end in sight regarding her lack of sleep and she wouldn't care if "something bad" happens to her.

Case Study 3

A 27-year-old female patient presents to a health care facility. The patient reports that she cannot sleep at night because she feels like she has "bugs crawling" on her. When asked to elaborate on the "bugs crawling" sensation, the patient reports that she goes to bed and after "several minutes" her legs begin to feel like they have "bugs crawling" on them, which keep her awake and make her feel anxious. The patient then goes on to explain that she typically gets out of bed after she feels the aforementioned sensation and often watches "YouTube" on her smartphone or tablet until she feels "tired again." The patient also reports that she is often drowsy and "sleepy" throughout the day, including when she is driving to and from work. Upon questioning, the patient reveals that she recently purchased a new bed, which is described by the patient as "kind of uncomfortable." The patient also reveals that her work schedule has recently changed. Further questioning reveals that the patient was on a variety of supplements for "several months," but stopped taking them approximately a week ago. The patient cannot remember the names of all the supplements she was taking. A patient exam reveals that the patient is overweight. During the patient exam, a health care professional observes the patient close her eyes and slouch forward. At the end of the exam, the patient asks the health care professional about the sensations she is experiencing at night and why she cannot sleep.

The three case studies presented above highlight patients that may be suffering from sleep deprivation. Sleep deprivation possesses the potential to negatively impact an individual's health, overall well-being, and quality of life - therefore, it is essential that health care professionals possess insight into sleep deprivation, as well as effectively identify those patients that may be suffering from sleep deprivation. Due to the importance of identifying patients that may be suffering from sleep deprivation, this section of the course will provide insight into sleep deprivation and how it may affect patients. The information found in this section was derived from materials provided by the Centers for Disease Control and Prevention (CDC), the American Academy of Sleep Medicine, and the World Health Organization (WHO)

(Centers for Disease Control and Prevention, 2020; American Academy of Sleep Medicine, 2020; World Health Organization; 2020).

What is sleep deprivation?

- Sleep deprivation may refer to a lack of sufficient sleep (i.e., an individual does not get enough sleep).
- Health care professionals should note that sleep deprivation may not be considered to be a specific disease; sleep deprivation typically results from other illnesses, conditions, disorders, and/or lifestyles.

Why is "enough" sleep important?

- Getting "enough" sleep is essential to overall health and well-being as well as an individual's quality of life.
- Getting "enough" sleep can be a key element of physical health (e.g., sleep can help restore damaged cells, boost the immune system, and maintain heart function).
- Getting "enough" sleep can also be a key element of mental health (e.g., sleep can help improve mood, memory, focus, concentration, and problem-solving skills).

What is "enough" sleep?

Sleep recommendations vary by age. Specific information regarding age-related sleep recommendations may be found below:

- **Individuals 0 - 3 months old** - individuals 0 - 3 months old should sleep between 4 - 17 hours per 24 hours.
- **Individuals 4 - 12 months old** - individuals 4 - 12 months old should sleep between 12 - 16 hours (including naps) per 24 hours.
- **Individuals 1 - 2 years old** - individuals 1 - 2 years old should sleep between 11 - 14 hours (including naps) per 24 hours.
- **Individuals 3 - 5 years old** - individuals 3 - 5 years old should sleep between 10 - 13 hours (including naps) per 24 hours.
- **Individuals 6 - 12 years old** - individuals 6 - 12 years old should sleep between 9 - 12 hours per 24 hours.
- **Individuals 13 - 18 years old** - individuals 13 - 18 years old should sleep between 8 - 10 hours per 24 hours.

- **Individuals 18 - 60 years old** - individuals 18 - 60 years old should sleep 7 or more hours per night.
- **Individuals 61 - 64 years old** - individuals 61 - 64 years old should sleep between 7 - 9 hours per 24 hours.
- **Individuals 65 years and older** - individuals 65 years and older should sleep between 7 - 8 hours per 24 hours.

What are the potential signs and symptoms of sleep deprivation?

The potential signs and symptoms of sleep deprivation include the following:

- Drowsiness
- Feeling tired or "sleepy" during the day (especially while performing quiet activities, like reading)
- Mood changes (e.g., depressed mood)
- Irritability
- Inability to concentrate
- Difficulty learning new concepts
- Impaired memory
- Forgetfulness
- Reduced physical strength
- Diminished ability to fight off infections
- Weight gain

What causes sleep deprivation?

Sleep deprivation may be caused by a variety of different factors. Information on specific factors that may lead to sleep deprivation can be found below.

- **Stress** - first and foremost, stress can be a major contributor to sleep deprivation. Stress can prevent individuals from falling asleep, sleeping through the night, and/or experiencing a restful sleep. Essentially, stress, whether from work, school, family, or friends, can cause sleep disruptions, which in turn, may lead to sleep deprivation over time.

- **Age** - another major contributor to sleep deprivation is age. Typically, individuals over the age of 65 have trouble sleeping due to the natural process of aging.
- **Circadian rhythm disturbances** - the term circadian rhythm may refer to the natural, internal process that regulates the sleep-wake cycle, which repeats every 24 hours. Consistent disturbances to the circadian rhythm may, eventually, lead to sleep deprivation. Health care professionals should note that disturbances to the circadian rhythm may result from travel, jet-lag, schedule changes, and over-night work.
- **Alcohol use** - many individuals believe alcohol can help them sleep. However, the truth of the matter is that alcohol can impede restful sleep. In essence, alcohol may help individuals fall asleep, but it often does not help individuals sleep, restfully, through the night (i.e., once the sedative effects of alcohol wear off, individuals typically wake from sleep). Consistent use of alcohol can eventually lead to sleep disruptions and, ultimately, to sleep deprivation.
- **Uncomfortable sleep environments** - one of the most obvious factors that may contribute to sleep deprivation is an uncomfortable sleep environment. Consistent sleep in an uncomfortable sleep environment (e.g., a room that is too hot or too cold) can cause sleep disruptions, which in turn may lead to sleep deprivation over time. Health care professionals should note that sleep-related accouterments (e.g., beds, pillows, and sheets) may be considered to be part of a sleep environment and may also contribute to sleep deprivation.
- **Medications** - a less than obvious factor that may contribute to sleep deprivation is the use of medications. Medications, such as beta-blockers, can affect sleep and may lead to sleep deprivation over time.
- **Supplements** - in addition to medications, the use of specific supplements may also lead to sleep deprivation.
- **Illicit drug use** - much like with medications, the use of illicit drugs, such as cocaine, can affect sleep and may lead to sleep deprivation over time.
- **Acute and chronic pain** - acute pain may refer to pain that typically lasts less than three to six months; pain that is directly related to soft tissue damage, which gradually resolves as the injured tissue heals. Chronic pain may refer to ongoing pain that typically lasts longer than six months. Pain, whether acute or chronic, can affect sleep and may lead to sleep deprivation over time.

- **Physical health conditions** - in addition to pain, other physical health conditions, such as cardiovascular disease and cancer, can affect sleep and may lead to sleep deprivation over time.
- **Mental disorders** - mental disorders, otherwise referred to as mental health conditions, have long been associated with sleep disruptions and sleep deprivation. Health care professionals should note that some of the most common mental health conditions associated with sleep deprivation include: clinical depression, clinical anxiety, and schizophrenia.
- **Developmental disorders** - much like with mental disorders, developmental disorders have long been associated with sleep disruptions and sleep deprivation. Health care professionals should note that some of the most common developmental disorders associated with sleep deprivation include autism spectrum disorder (ASD) and attention-deficit/hyperactivity disorder (ADHD) (ASD may refer to a complex developmental disorder that affects how an individual behaves, interacts with others, communicates, and learns; ADHD may refer to a type of disorder which is marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development).
- **Genetic disorders** - genetic disorders are also associated with sleep disruptions and sleep deprivation. Health care professionals should note that one of the most common developmental disorders associated with sleep deprivation is Fragile X syndrome (Fragile X syndrome may refer to a genetic disorder that affects development).
- **Dementia** - dementia may refer to a cluster of symptoms centered around an inability to remember, think clearly, and/or make decisions. Dementia can dramatically impact an individual's sleep patterns and can contribute to sleep deprivation. Dementia is typically associated with older adults (the term older adult may refer to an individual 65 years or older). Symptoms of dementia include: problems with memory, attention, communication, reasoning, judgment, and/or problem-solving. Signs of dementia include: getting lost in a familiar area, forgetting the names of close family and friends, and not being able to complete tasks independently. Health care professionals should note that dementia is not a normal part of aging. Health care professionals should also note that there are various types of dementia. Information on specific types of dementia can be found below:
 - **Fronto-temporal dementia** - frontotemporal dementia is a type of dementia which primarily affects the regions of the brain associated with planning, social behavior, and language perception. Fronto-temporal dementia is associated with

a younger age of onset when compared to other types of dementia. Health care professionals should note that the behavioral presentation of frontotemporal dementia may include: inappropriate swearing, impulsive decisions and purchases, repetitive actions, and changes in personality. Changes in eating habits and deficits in self-care may also be present in patient populations suffering from frontotemporal dementia. Health care professionals should also note that frontotemporal dementia may include progressive deterioration of language function (e.g., older adults suffering from frontotemporal dementia may exhibit difficulties with word usage and reading).

- **Lewy body dementia** - Lewy body dementia is a type of dementia characterized by the presence of Lewy bodies in the cerebral cortex and the brain stem (health care professionals should note that the cerebral cortex is a part of the brain responsible for thought processing, memory, perception, and movement; the brain stem is a part of the brain which is responsible for basic body functions and the coordination of movements). Lewy bodies can refer to proteins that may form in the brain. Individuals suffering from Lewy body dementia may experience memory loss, movement problems, balance problems, stiffness, trembling, changes in alertness, daytime sleepiness, confusion, and/or staring spells. Health care professionals should note that individuals suffering from Lewy body dementia may also experience trouble sleeping at night and/or visual hallucinations (e.g., seeing people and/or objects that are not actually there).
- **Vascular dementia** - vascular dementia may result from strokes and/or other issues that affect blood flow to the brain. Vascular dementia may also result from diabetes, high blood pressure, and high cholesterol. Health care professionals should note that vascular dementia can result from a blockage of blood vessels in the brain which yields the death of tissue, or infarction, in the affected region. The symptoms of vascular dementia can vary depending on the area and size of the brain impacted. That being said, symptoms of vascular dementia can include problems with memory, planning, making decisions, attention, focus, and concentration as well as confusion. Health care professionals should also note vascular dementia progresses in a step-wise fashion - meaning the symptoms of vascular dementia may get worse as an individual experiences strokes, mini-strokes, or other issues that affect blood flow to the brain (i.e., vascular dementia can be progressive in nature).
- **Mixed dementia** - mixed dementia may be present when an individual experiences more than one type of dementia at once. Mixed dementia can be prevalent in individuals aged 80 and older. Mixed dementia may be difficult to identify because the symptoms of one type of dementia may be more prominent

or may overlap with symptoms of another type of dementia. Health care professionals should note mixed dementia progression may be faster than with one kind of dementia.

- **Dementia associated with Parkinson's disease** - health care professionals should note that dementia may be associated with Parkinson's disease. Parkinson's disease may refer to a progressive disorder that affects individuals' movement.
- **Dementia associated with Alzheimer's disease** - Alzheimer's disease may refer to an irreversible, progressive brain disorder that slowly destroys individuals' memory, thinking skills, and the ability to carry out simple tasks. Health care professionals should note that Alzheimer's disease is the most common cause of dementia among older adults.
- **Sleep disorders** - finally, sleep disorders can lead to sleep deprivation. The term sleep disorder may refer to alterations in natural sleeping patterns that can negatively affect health.

What are the most common sleep disorders?

Some of the most common sleep disorders are: insomnia, narcolepsy, restless leg syndrome (RLS), and sleep apnea. Specific information regarding the aforementioned sleep disorders can be found below:

- **Insomnia** - insomnia may refer to a sleep disorder characterized by an inability to fall asleep and/or stay asleep. Insomnia may also be characterized by early morning awakening (i.e., an individual awakens early in the morning or several hours early and is unable to resume sleeping). Symptoms of insomnia include daytime fatigue, low energy, difficulty concentrating, mood disturbances, and decreased performance at work or at school. Health care professionals should note that insomnia can be acute or chronic. Acute insomnia may refer to a form of short-term insomnia that typically lasts for a few days or a few weeks. Acute insomnia may also be referred to as adjustment insomnia because it typically results from events that require a life-style adjustment (e.g., starting a new job, starting school, and/or initiating a new schedule). On the other hand, chronic insomnia may refer to a form of long-term insomnia that occurs at least three nights per week and lasts at least three months.
- **Narcolepsy** - narcolepsy may refer to a chronic sleep disorder characterized by excessive or overwhelming daytime sleepiness, sudden attacks of sleepiness, sleep paralysis, hallucinations, and cataplexy (cataplexy may refer to partial or total loss of muscle control, often triggered by a strong emotion). Essentially,

individuals with narcolepsy feel extremely sleepy during the day and may involuntarily fall asleep during normal activities. Health care professionals should note that narcolepsy associated cataplexy is caused by the loss of hypocretin. Hypocretin is a neuropeptide hormone produced in the hypothalamus that influences sleep patterns and energy expenditure.

- **Restless leg syndrome (RLS)** - restless leg syndrome (RLS) may refer to a sleep disorder characterized by an overwhelming urge to move the legs when they are at rest. Health care professionals should note that the overwhelming urge to move the legs, associated with RLS, may be different for each individual. In other words, the overwhelming urge to move the legs may be related to a different type of feeling. For example, the overwhelming urge to move the legs may be related to a bug crawling feeling on the legs or a sensation of liquid running through the legs. In essence, the RLS experience may be different for each patient. Health care professionals should also note that abnormalities in dopamine have been associated with RLS. Dopamine may refer to a neurotransmitter that is used to send messages between nerve cells.
- **Sleep apnea** - sleep apnea may refer to a sleep disorder characterized by interrupted breathing during sleep. Symptoms of sleep apnea include chronic snoring and daytime sleepiness. Factors that increase the risk of sleep apnea include: having a small upper airway, having a large tongue, tonsils or uvula, being overweight, having a recessed chin, small jaw or a large overbite, having a large neck, smoking, alcohol use, and age. Health care professionals should note that individuals with sleep apnea may use a continuous positive airway pressure (CPAP) device. A CPAP device may refer to a medical device that uses mild air pressure to keep an individual's breathing airways open.

How may individuals suffering from sleep deprivation present?

- Individuals potentially suffering from sleep deprivation may present in a variety of different states. They may appear tired, exhausted, sleepy, worn out, or even disheveled. Additionally, individuals suffering from sleep deprivation may appear as if they are having trouble concentrating, focusing, remembering important information, following a conversation, or staying awake. Also, individuals suffering from sleep deprivation may exhibit behaviors that may seem odd or inconsistent with other patient populations (e.g., closing their eyes while talking in a manner consistent with falling asleep). Furthermore, individuals potentially suffering from sleep deprivation may display body language indicating they are tired and/or exhausted (e.g., moving slowly, head tilting down or to one side, and/or slouching).

- In addition to their appearance, individuals suffering from sleep deprivation may use certain types of wording to describe or articulate their state. Examples of wording that may be used by individuals, potentially suffering from sleep deprivation, to describe or articulate their state may include:
 - I cannot sleep at night.
 - I cannot fall asleep at night.
 - I wake up multiple times per night.
 - I wake up at night and cannot fall back to sleep.
 - I always wake up too early and cannot fall back asleep.
 - I wake up at night and feel like I cannot breathe.
 - I am tired all the time.
 - I am tired all day.
 - I am exhausted all the time.
 - I am worn out.
 - I have to drink coffee all day just to stay awake.
 - I am so tired I cannot focus.
 - I am so tired I cannot work.
 - I am so tired I cannot go to school.
 - I often fall asleep when I am trying to watch TV or read a book.
 - I am irritable.
 - I am so tired I have become depressed.
 - My mood often changes because I feel so tired all the time.
 - I feel like I can fall asleep right now.
- Health care professionals should note the following: when attempting to distinguish specific wording regarding sleep deprivation, health care professionals should keep in mind that they may hear or encounter many different versions or variations of the previously highlighted language; additionally, health care professionals should focus

their attention on any patient's verbiage which may indicate symptoms of sleep deprivation.

What issues or concerns should health care professionals pay particular attention to when attempting to identify patients suffering from sleep deprivation?

- Due to the effects of sleep deprivation, individuals suffering from sleep deprivation may experience suicidal ideation. Suicidal ideation may refer to thoughts of suicide and/or thoughts of planning suicide. Health care professionals should be very aware that individuals suffering from sleep deprivation may be suicidal. Health care professionals should make every effort to identify the potential for suicide and prevent patient suicide, when applicable. Additional information regarding suicide and suicide prevention may be found in Figure 1.

FIGURE 1: INFORMATION REGARDING SUICIDE AND SUICIDE PREVENTION

- Suicide may refer to a death caused by self-directed injurious behavior with any intent to die as a result of the behavior.
- A suicide attempt may refer to a non-fatal self-directed and potentially injurious behavior with any intent to die as a result of the behavior. A suicide attempt may or may not result in injury.
- Suicide is one of the leading causes of death in the United States.
- Suicide rates vary by race/ethnicity, age, and other population characteristics. The population groups with some of the highest rates of suicide in the United States include non-Hispanic American Indian/Alaska Natives and non-Hispanic Whites.
- Research indicates that suicide, like other human behaviors, has no single determining cause. Suicide may occur in response to multiple biological, psychological, interpersonal, environmental, and societal influences that interact with one another, often, over time.
- Specific risk factors that may lead to suicide include the following:
 - Individual issues such as: a history of depression and other mental illnesses, hopelessness, substance abuse, certain health conditions, previous suicide attempt, violence victimization and perpetration, and genetic and biological determinants.

- Relationship issues such as high conflict or violent relationships, a sense of isolation and lack of social support, family/ loved one's history of suicide, financial stress, and work stress.
- Community issues such as inadequate community connectedness; barriers to health care (e.g., lack of access to providers and medications).
- Societal issues such as the availability of lethal means of suicide, unsafe media portrayals of suicide, stigma associated with help-seeking, and mental illness.
- Suicide is often connected to other forms of violence. Exposure to violence (e.g., child abuse and neglect, bullying, peer violence, dating violence, sexual violence, and intimate partner violence) is associated with an increased risk of depression, post-traumatic stress disorder (PTSD), anxiety, suicide, and suicide attempts.
- Women exposed to partner violence are nearly five times more likely to attempt suicide as women not exposed to partner violence.
- Suicide can be prevented. Suicide prevention is best achieved by a focus spread across the individual, relationship(s), family, community, and societal-levels and across all sectors, private and public.
- Suicide prevention strategies may include the following:
 - **Strengthening economic supports** - attempts to strengthen economic supports in order to prevent suicide can include measures to strengthen household financial security and housing.
 - **Strengthen access and delivery of suicide care** - attempts to strengthen access and delivery of suicide care can include measures to cover mental health conditions in health insurance policies, efforts to reduce provider shortages in underserved areas, and system changes that introduce safer suicide care.
 - **Create protective environments** - attempts to create protective environments can include: measures to reduce access to lethal means among persons at risk for suicide, the introduction of organizational policies and culture, and the introduction of community-based policies to reduce excessive alcohol use.
 - **Promote connectedness** - attempts to promote connectedness can include peer programs and community engagement activities.

- **Teach coping and problem-solving skills** - attempts to teach coping and problem-solving skills can include social-emotional learning programs and parenting skills and family relationship programs.
 - **Identify and support people at risk** - attempts to identify and support people at risk can include: gatekeeper training, crisis intervention, treatment for people at risk of suicide, and treatment to prevent re-attempts.
 - **Lessen harms and prevent future risk** - attempts to lessen harms and prevent future risk can include safe reporting and messaging about suicide.
- Health care professionals should note the following: health care professionals may participate in one or all of the aforementioned strategies to prevent suicide.

What professional skills and tools should health care professionals employ while engaging with individuals potentially suffering from sleep deprivation?

- **Observation/patient monitoring** - as previously alluded to, patient observation can be essential to identifying individuals suffering from sleep deprivation. Health care professionals should observe patients' signs and symptoms as well as patients' body language and overall appearance to help effectively identify an individual suffering from sleep deprivation.
- **Health care documentation** - health care documentation may refer to a digital or an analog record detailing the administration of health care to patients. If completed effectively, health care documentation can be used in daily practice by health care professionals to communicate vital patient information to other health care professionals in order to facilitate positive health care outcomes and to decrease the potential for negative health care outcomes, such as adverse events and patient mortalities. Effective health care documentation may be used as a method to review patient cases and to ensure all aspects of an individual patient's health care are noted and evaluated to maximize therapeutic outcomes. !!

In order for health care documentation to be considered effective, it must function as a viable form of communication, as well as a means to establish a detailed record of health care administration. There are many different forms of health care documentation - however, if health care professionals include specific characteristics in their documentation, they can ensure their documentation will be effective.

The first characteristics of effective documentation are objectivity and accuracy. Health care documentation should include objective information free of subjective judgment, bias, or opinion. Health care documentation should also be accurate - meaning it should include information that can be measured or verified by another individual.

Additional characteristics of effective health care documentation include clarity and completeness. Clarity, as it relates to health care documentation, may refer to a quality which enables multiple health care professionals to obtain meaning from recorded data and/or information relating to health care. Completeness, as it relates to health care documentation, may refer to a state where all of the necessary components and/or parts are present. Only when clarity and completeness are achieved can health care documentation be considered effective.

Finally, the information found within health care documentation should be readily accessible and available to all those who require it. Thus, health care professionals must include accurate times and dates of health care administration when completing their health care documentation to further its effectiveness. Health care professionals should note that completing effective health care documentation can help health care professionals foster effective communication and ensure patients receive the care they require.

- **Active listening** - active listening may refer to the process of gathering information with the intent to obtain meaning and achieve a common understanding. That being said, there are several steps health care professionals can take to ensure they are effectively engaging in active listening when administering health care to patients and/or engaging in communication.

The first step health care professionals can take towards active listening is to give individuals or parties their full attention when communicating. Often when individuals engage in conversation, one individual speaks while the other individual simply waits for his or her turn to talk. Words are being heard, however individuals are not focused on what is being said. Instead, they are often thinking about what they want to say next. The previous style of listening can be referred to as passive listening. Often when passive listening is employed, two people are engaged in conversation, however neither one of them is focused on what the other person is saying. There is little to no intent to obtain meaning when two individuals are engaged in passive listening. Therefore, the first step towards active listening should always be to focus and concentrate on what the other individual is saying. Making a concerted effort to focus on what another individual is saying, when engaged in a conversation, can increase the ability for both parties to reach a

common understanding. It can also help both individuals improve their recall of the conversation. If an individual is focused on what another individual is saying, he or she is more likely to remember what is said. Health care professionals should always make an effort to avoid passive listening when engaged in communication.

The next step towards active listening is to make eye contact. Eye contact can let individuals know they are being listened to. Eye contact can also foster trust and encourage individuals to open up and fully articulate what they want to say.

The third step to active listening is to provide individuals with the opportunity to say what they would like to express. Limiting interruptions when fellow health care professionals, patients, and/or other individuals are speaking and allowing for periods of silence can further open up the conversation to allow for a greater expression of ideas.

The next step to active listening is to respond to what is being said. From time to time during a communication exchange, health care professionals should respond to what other individuals are saying. Repeating what another individual says or paraphrasing individuals' words can reinforce that they are truly being heard and listened to, which can make them more likely to further engage in communication. After all, everyone likes to know they are being heard.

Making an effort to understand the emotions behind another individual's words can be another step towards active listening. For example, talking about one's health and overall well-being can be an emotional experience. It can open up the stress and horrors of past trauma and can leave patients feeling vulnerable. Being empathetic towards the difficult emotions behind the words can make patients feel at ease and allow them to continue to discuss their health-related needs and concerns.

Asking open-ended questions and clarifying what is said can also be steps to active listening. At times, health care professionals will need to ask their patients questions. Keeping questions open, as opposed to closed, can allow information to flow freely. Therefore, at times, it may be advantageous to avoid yes and no questions and focus on how, what, where, and why questions. Yes and no questions can limit the expression of ideas, while open-ended questions can expand the expression of ideas, which can be very helpful to health care professionals when they are trying to get their patients to open up about their symptoms (an example of an open-ended question is as follows: what type of symptoms are you experiencing?). In addition, health care professionals should not be afraid to clarify what is said during a healthcare-related conversation. Slowing down the conversation to clarify what is said can benefit both parties in the long run.

Lastly, to fully achieve active listening, health care professionals can provide words of encouragement. For example, talking about health care can be difficult for a patient. Using words of encouragement such as "you are being very brave" or "you have been courageous during this difficult situation" can go a long way to motivate patients to express themselves in regards to their individual health. Additionally, words of encouragement can bring a human aspect to the process of health care, which can help reinforce the idea to patients that they are being cared for by individuals dedicated to the improvement of their health and overall well-being.

What are the complications typically associated with sleep deprivation?

- Sleep deprivation can be detrimental to an individual's health and overall well-being. Furthermore, sleep deprivation is often associated with a variety of complications. Specific information regarding the most common complications typically associated with sleep deprivation may be found below.
- **Impaired function** - one of the first complications that may come to mind when considering sleep deprivation is impaired function. Essentially, sleep deprivation can impede an individual's ability to carry out daily tasks, work, and attend school. Additionally, sleep deprivation can impact an individual's ability to maintain personal relationships and engage in desired activities. Moreover, sleep deprivation can impact an individual's reaction time, and, thus, make the simple act of driving a safety hazard. Health care professionals should note that sleep deprivation may lead to "drowsy driving." The term drowsy driving may refer to the act of operating a motor vehicle while fatigued, exhausted, and/or struggling to stay awake.
- **Cognitive impairment** - another complication that may initially come to mind when considering sleep deprivation is cognitive impairment. Sleep deprivation can affect an individual's memory as well as an individual's ability to concentrate, focus, learn, and reason, all of which can impact cognitive functioning. Health care professionals should note the following information regarding cognitive impairment: cognitive impairment can range from mild to severe; mild impairment, may affect individuals' cognitive functions, however, they are still able to carry out daily activities; severe levels of cognitive impairment can lead to losing the ability to understand the meaning or importance of something and the ability to talk or write, resulting in the inability to carry out daily activities and live independently. Health care professionals should also note the following signs/symptoms of cognitive impairment: memory loss, frequently asking the same question, repeating the same story over and over, unable to recognize familiar people and places, trouble exercising judgment, such as knowing what to do in an emergency, mood changes,

vision problems, difficulty planning and carrying out tasks, such as following a recipe or keeping track of monthly bills.

- **Psychosis** - additionally, psychosis may come to mind when considering the complications associated with sleep deprivation. Psychosis may refer to a state characterized by a break or loss of contact with reality (i.e., disconnection from reality). When individuals experience psychosis they may develop thoughts and/or perceptions that make it difficult for them to recognize what is real and what is not real. As a result, individuals experiencing psychosis may behave abnormally and/or in a manner that may be unpredictable or inappropriate. With that said, health care professionals should note the following symptoms of psychosis: delusions (false beliefs), hallucinations (seeing or hearing things that others do not see or hear), incoherent speech, an inability to concentrate, suspiciousness, strong emotional responses, and a decline in self-care or personal hygiene.
- **Obesity** - one complication that may not come to mind when considering sleep deprivation is obesity. However, research does associate obesity with sleep deprivation. That being said, health care professionals should note the following information regarding obesity: obesity may refer to a condition characterized by abnormal or excessive fat accumulation that may impair health; an adult may be considered to be obese when his or her body mass index (BMI) is greater than or equal to 30 kg/m²; body mass index (BMI) may refer to a value derived from an individual's weight and height; obesity may be subdivided into the following categories: Class 1 (BMI of 30 kg/m² to < 35 kg/m²); Class 2 (BMI of 35 kg/m² to < 40 kg/m²); Class 3 (BMI of 40 kg/m² or higher; Class 3 obesity may be categorized as extreme or severe obesity); waist circumference should be used to assess abdominal fat content; waist circumference may refer to a measurement taken around an individual's abdomen at the level of the umbilicus, otherwise referred to as the belly button; measuring waist circumference can help screen patients for possible health risks that come with being overweight and obesity; if most of a patient's fat is around the waist rather than at the hips, then he or she may be at a higher risk for heart disease and type 2 diabetes; the aforementioned risk goes up with a waist size that is greater than 35 inches for women/greater than 40 inches for men.
- **Hypertension** - hypertension is often associated with sleep deprivation. Hypertension may refer to a condition in which the force of the blood against the artery walls is consistently too high; chronic high blood pressure. Health care professionals should note the following information regarding hypertension: hypertension is defined as blood pressure above 140/90 mmHg; hypertension may be considered to be severe if an individual's blood pressure is above 180/120 mmHg; hypertension often has no symptoms; the treatment and management of

hypertension typically centers around blood pressure monitoring, diet, exercise, and medications.

- **Cardiovascular disease** - cardiovascular disease (CVD) is also associated with sleep deprivation. Cardiovascular disease may refer to conditions that involve narrowed or blocked blood vessels, which can lead to a heart attack, angina, or stroke. Health care professionals should note the following information regarding cardiovascular disease: CVDs are a group of disorders of the heart and blood vessels and they include: coronary heart disease, cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis, and pulmonary embolism; heart attacks and strokes are usually acute events and are mainly caused by a blockage that prevents blood from flowing to the heart or brain; risk factors for CVDs include: unhealthy diet, physical inactivity, tobacco use, and harmful use of alcohol; often, there are no symptoms of the underlying disease of the blood vessels; a heart attack or stroke may be the first warning of underlying disease; symptoms of a heart attack include pain or discomfort in the centre of the chest and pain or discomfort in the arms, the left shoulder, elbows, jaw, or back; the treatment and management of CVDs typically center around monitoring, diet, exercise, and medications.
- **Diabetes** - diabetes, specifically type 2 diabetes, is often associated with sleep deprivation. Diabetes may refer to a chronic condition that affects how the body produces and/or responds to insulin, while type 2 diabetes, otherwise known as adult-onset diabetes, may refer to a chronic condition that affects the way the body processes and uses insulin. Health care professionals should note the following information regarding type 2 diabetes: type 2 diabetes typically develops when an individual's body becomes resistant to insulin or when an individual's pancreas is unable to produce enough insulin to meet the needs of the body; symptoms of type 2 diabetes include: thirst, frequent urination, hunger, fatigue, and blurred vision; type 2 diabetes is often diagnosed in adult individuals or individuals over the age of 18; individuals with type 2 diabetes may experience hyperglycemia; hyperglycemia may refer to high blood sugar and/or a condition characterized by high blood sugar; symptoms of hyperglycemia include: excess thirst, frequent urination, and blurred vision; the treatment and management of type 2 diabetes typically centers around blood sugar monitoring, diet, exercise, and medications.
- **Depression and anxiety** - as previously mentioned, depression and anxiety are often associated with sleep deprivation. A depressive disorder may refer to a mood disorder characterized by a persistent depressed mood and/or anhedonia, which ultimately causes significant interference in daily life (anhedonia may refer to a loss of interest in previously enjoyable activities). An anxiety disorder may refer to a

mental health disorder characterized by prolonged periods of persistent, excessive worry about a number of events or activities, which cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. In regards to an anxiety disorder, excessive worry may refer to worrying when there is no specific reason/threat present or in a manner that is disproportionate to the actual risk of an event, activity, and/or situation. Health care professionals should note the following symptoms of a depression disorder: depressed mood, anhedonia, appetite changes, weight changes, sleep difficulties, psychomotor agitation or retardation, fatigue or loss of energy, diminished ability to think or concentrate, feelings of worthlessness or excessive guilt, and suicidality. Health care professionals should also note the following symptoms of an anxiety disorder: excessive anxiety, excessive worry, restlessness, persistent feelings of being keyed up or on edge, easily fatigued, difficulty concentrating, mind feeling blank at times (mind going blank), irritability, and muscle tension.

- **Substance abuse** - substance abuse may refer to the harmful or hazardous use of psychoactive substances such as alcohol and illicit drugs. The relationship between substance abuse and sleep deprivation can be circular in nature. In other words, sleep deprivation can lead to substance abuse, which in turn can lead to further sleep deprivation, which in turn can lead to further substance abuse, which in turn can lead to further sleep deprivation, and so on. Unfortunately, individuals suffering from sleep deprivation and substance abuse get caught in a cycle that perpetuates both issues/conditions. With that said, health care professionals should note the following signs of alcohol and illicit drug use: slurred speech, an active tremor, shakiness, poor coordination, sweating, nausea, vomiting, aggression, agitation, compulsive behavior, craving, red eyes, dry mouth, drowsiness, involuntary eye movements, dilated pupils, nasal congestion, mouth sores, reduced consciousness, lack of pain sensation, intolerance to loud noise, dizziness, confusion, lack of awareness to surroundings, and needle marks.
- **Ineffective breastfeeding** - finally, sleep deprivation can impact breastfeeding. Sleep deprivation can affect hormones in a new mother's body, which in turn can alter the production of breast milk and, ultimately, lead to ineffective breastfeeding. Health care professionals should note the following: effective breastfeeding occurs when an infant receives human breast milk for ingestion; the American Academy of Pediatrics recommends exclusive breastfeeding for a period of about six months, followed by continued breastfeeding while introducing complementary foods until the child is 12 months old or older. Health care professionals should also note the following: to help promote effective breastfeeding, health care professionals can provide individuals with breastfeeding

support; breastfeeding support may refer to any effort made to assist, guide, and/or facilitate breastfeeding.

Section 1: Summary

Sleep deprivation may refer to a lack of sufficient sleep (i.e., an individual does not get enough sleep). The potential signs and symptoms of sleep deprivation include the following: drowsiness, feeling tired or "sleepy" during the day (especially while performing quiet activities, like reading), mood changes (e.g., depressed mood), irritability, an inability to concentrate, difficulty learning new concepts, impaired memory, forgetfulness, reduced physical strength, diminished ability to fight off infections, and weight gain. Sleep deprivation may be caused by a variety of different factors including stress, age, circadian rhythm disturbances, alcohol use, uncomfortable sleep environments, medications, illicit drug use, acute and chronic pain, physical health conditions, mental health disorders, developmental disorders, genetic disorders, dementia, and sleep disorders (e.g., insomnia, narcolepsy, RLS, and sleep apnea). The most common complications typically associated with sleep deprivation include the following: impaired function, cognitive impairment, psychosis, obesity, hypertension, cardiovascular disease, diabetes, depression and anxiety, substance abuse, and ineffective breastfeeding. Lastly, health care professionals should work to identify patients potentially suffering from sleep deprivation to ensure they receive the care they need.

Section 1: Key Concepts

- Getting "enough" sleep is essential to overall health and well-being as well as an individual's quality of life; getting "enough" sleep can be a key element of both physical and mental health.
- Sleep recommendations vary by age.
- The potential symptoms of sleep deprivation include: drowsiness, feeling tired or "sleepy" during the day (especially while performing quiet activities, like reading), mood changes (e.g., depressed mood), irritability, an inability to concentrate, difficulty learning new concepts, impaired memory, forgetfulness, reduced physical strength, diminished ability to fight off infections, and weight gain.
- Sleep deprivation may be caused by a variety of different factors including the following: stress, age, circadian rhythm disturbances, alcohol use, uncomfortable sleep environments, medications, illicit drug use, acute and chronic pain, physical health conditions, mental health disorders, developmental disorders, genetic disorders, dementia, and sleep disorders.

- Some of the most common sleep disorders include: insomnia, narcolepsy, restless leg syndrome (RLS), and sleep apnea.
- Individuals potentially suffering from sleep deprivation may present in a variety of different states.
- Due to the effects of sleep deprivation, individuals suffering from sleep deprivation may experience suicidal ideation; health care professionals should be very aware that individuals suffering from sleep deprivation may be suicidal; health care professionals should make every effort to identify the potential for suicide and prevent patient suicide, when applicable.
- The most common complications typically associated with sleep deprivation include the following: impaired function, cognitive impairment, psychosis, obesity, hypertension, cardiovascular disease, diabetes, depression and anxiety, substance abuse, and ineffective breastfeeding.

Section 1: Key Terms

Sleep deprivation - a lack of sufficient sleep

Circadian rhythm - the natural, internal process that regulates the sleep-wake cycle, which repeats every 24 hours

Acute pain - pain that typically lasts less than three to six months; pain that is directly related to soft tissue damage, which gradually resolves as the injured tissue heals

Chronic pain - ongoing pain that typically lasts longer than six months

Autism spectrum disorder (ASD) - a complex developmental disorder that affects how an individual behaves, interacts with others, communicates, and learns

Attention-deficit/hyperactivity disorder (ADHD) - a type of disorder which is marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development

Fragile X syndrome - a genetic disorder that affects the development

Dementia - a cluster of symptoms centered around an inability to remember, think clearly, and/or make decisions

Older adult - an individual 65 years or older

Fronto-temporal dementia - a type of dementia which primarily affects the regions of the brain associated with planning, social behavior, and language perception

Lewy body dementia - a type of dementia characterized by the presence of Lewy bodies in the cerebral cortex and the brain stem

Cerebral cortex - a part of the brain responsible for thought processing, memory, perception, and movement

Brain stem - a part of the brain which is responsible for basic body functions and the coordination of movements

Lewy bodies - proteins that may form in the brain

Vascular dementia - a type of dementia that may result from strokes and/or other issues that affect blood flow to the brain

Mixed dementia - more than one type of dementia at once

Parkinson's disease - a progressive disorder that affects individuals' movement

Alzheimer's disease - an irreversible, progressive brain disorder that slowly destroys individuals' memory, thinking skills, and ability to carry out simple tasks

Sleep disorder - alterations in natural sleeping patterns that can negatively affect health

Insomnia - a sleep disorder characterized by an inability to fall asleep and/or stay asleep

Acute insomnia - a form of short-term insomnia that typically lasts for a few days or a few weeks

Chronic insomnia - a form of long-term insomnia that occurs at least three nights per week and lasts at least three months

Narcolepsy - a chronic sleep disorder characterized by excessive or overwhelming daytime sleepiness, sudden attacks of sleepiness, sleep paralysis, hallucinations, and cataplexy

Cataplexy - partial or total loss of muscle control, often triggered by a strong emotion

Hypocretin - a neuropeptide hormone produced in the hypothalamus that influences sleep patterns and energy expenditure

Restless leg syndrome (RLS) - a sleep disorder characterized by an overwhelming urge to move the legs when they are at rest

Dopamine - a neurotransmitter that is used to send messages between nerve cells

Sleep apnea - a sleep disorder characterized by interrupted breathing during sleep

Continuous positive airway pressure (CPAP) device - a medical device that uses mild air pressure to keep an individual's breathing airways open

Suicidal ideation - thoughts of suicide and/or thoughts of planning suicide

Suicide - a death caused by self-directed injurious behavior with any intent to die as a result of the behavior

Suicide attempt - a non-fatal self-directed and potentially injurious behavior with any intent to die as a result of the behavior

Health care documentation - a digital or an analog record detailing the administration of health care to patients

Clarity (as it relates to health care documentation) - a quality which enables multiple health care professionals to obtain meaning from recorded data and/or information relating to health care

Completeness (as it relates to health care documentation) - a state where all of the necessary components and/or parts are present

Active listening - the process of gathering information with the intent to obtain meaning and achieve a common understanding

Drowsy driving - the act of operating a motor vehicle while fatigued, exhausted, and/or struggling to stay awake

Psychosis - a state characterized by a break or loss of contact with reality

Delusions - false beliefs

Hallucinations - seeing or hearing things that others do not see or hear

Obesity - a condition characterized by abnormal or excessive fat accumulation that may impair health

Body mass index (BMI) - a value derived from an individual's weight and height

Waist circumference - a measurement taken around an individual's abdomen at the level of the umbilicus, otherwise referred to as the belly button

Hypertension - a condition in which the force of the blood against the artery walls is consistently too high; chronic high blood pressure

Cardiovascular diseases - conditions that involve narrowed or blocked blood vessels, which can lead to a heart attack, angina, or stroke

Diabetes - a chronic condition that affects how the body produces and/or responds to insulin

Type 2 diabetes (otherwise known as adult-onset diabetes) - a chronic condition that affects the way the body processes and uses insulin

Hyperglycemia - high blood sugar and/or a condition characterized by high blood sugar

Depressive disorder - a mood disorder characterized by a persistent depressed mood and/or anhedonia, which ultimately causes significant interference in daily life

Anhedonia - a loss of interest in previously enjoyable activities

Anxiety disorder - a mental health disorder characterized by prolonged periods of persistent, excessive worry about a number of events or activities, which cause clinically significant distress or impairment in social, occupational, or other important areas of functioning

Excessive worry (in the context of an anxiety disorder) - worrying when there is no specific reason/threat present or in a manner that is disproportionate to the actual risk of an event, activity and/or situation

Substance abuse - the harmful or hazardous use of psychoactive substance such as alcohol and illicit drugs

Breastfeeding support - any effort made to assist, guide and/or facilitate breastfeeding

Section 1: Personal Reflection Question

How can health care professionals effectively identify individuals potentially suffering from sleep deprivation?

Section 2: Sleep Deprivation Prevention

Sleep deprivation can be detrimental to overall health and well-being, and it has been associated with the following complications: impaired function, cognitive impairment, psychosis, obesity, hypertension, cardiovascular disease, diabetes, depression and anxiety, substance abuse, and ineffective breastfeeding. Thus, health care professionals should work to prevent sleep deprivation in applicable patient populations. Health care professionals can work to prevent sleep deprivation by providing patients with counseling centered around sleep hygiene. The term sleep hygiene may refer to a set of practices that can help individuals' improve upon their ability to fall asleep and stay asleep; practices that can help individuals achieve an adequate session of sleep. With that in mind, this section of the course will review specific sleep hygiene recommendations. The information found in this section of the course was derived from materials provided by the CDC, the American Academy of Sleep Medicine, the WHO, and the United States Food and Drug Administration (FDA) (CDC, 2020; American Academy of Sleep Medicine, 2020; WHO; 2020; United States Food and Drug Administration; 2020).

Sleep Hygiene Recommendations

- **Establish a comfortable sleep environment** - this first recommendation may seem obvious, however it is essential to a restful night sleep. Those individuals working to prevent sleep deprivation should, first and foremost, establish a comfortable sleep environment. Individuals can establish a comfortable sleep environment by ensuring their room is not too hot or too cold and/or by acquiring what they consider to be a comfortable bed/bedding. Health care professionals should note that a comfortable sleep environment can reduce the potential for sleep disruptions, and, ultimately, sleep deprivation.
- **Limit the amount of light in a sleep environment** - this recommendation builds on the previous recommendation. Too much light, whether natural or not natural, in an individual's sleep environment can impact an individual's ability to fall asleep and stay asleep. Therefore, individuals working to prevent sleep deprivation should limit the amount of light in their sleep environment.
- **Limit stress** - this recommendation may also seem obvious, however it is essential to a restful night sleep. As previously mentioned, stress can be a major contributor to sleep deprivation. Essentially, stress can prevent individuals from falling asleep, sleeping through the night, and/or experiencing a restful session of sleep. Thus, individuals working to prevent sleep deprivation should limit stress. Health care

professionals should note the following methods to limit stress: exercise, yoga, and meditation.

- **Limit circadian rhythm disturbances** - as previously mentioned, the term circadian rhythm may refer to the natural, internal process that regulates the sleep-wake cycle, which repeats every 24 hours. Consistent disturbances to the circadian rhythm may, eventually, lead to sleep deprivation. Thus, individuals working to prevent sleep deprivation should limit circadian rhythm disturbances. Health care professionals should note the following methods to limit circadian rhythm disturbances: maintain a consistent schedule, avoid excessive traveling, and avoid consistently staying up all night.
- **Seek natural light at appropriate times** - individuals working to prevent sleep deprivation should seek natural light (i.e., light from the sun) at appropriate times throughout the day, such as the morning and afternoon. Health care professionals should note that natural light can help maintain a healthy sleep-wake cycle (the term sleep-wake cycle may refer to the natural 24-hour daily sleep pattern which consists of approximately 16 hours of daytime wakefulness and approximately 8 hours of night-time sleep).
- **Do not use alcohol as a sleep aid** - the term sleep aid may refer to any substance that is utilized to help individuals fall asleep and stay asleep. Simply put, alcohol is not an effective sleep aid. Therefore, individuals working to prevent sleep deprivation should not use alcohol as a sleep aid (i.e., consume alcohol to help them sleep). The reason being is that alcohol can actually impede restful sleep. Alcohol may help individuals fall asleep, but it often does not help individuals sleep, restfully, through the night (i.e., once the sedative effects of alcohol wear off, individuals typically wake from sleep). Health care professionals should note the following: consistent use of alcohol can eventually lead to sleep disruptions and, ultimately, to sleep deprivation.
- **Avoid illicit drug use** - this is another recommendation that may seem obvious, however, the simple truth is that substance abuse is associated with sleep deprivation. Thus, some patients may require counseling regarding illicit drug use and sleep deprivation. Health care professionals should note the following: the use of illicit drugs, such as cocaine, can affect sleep and may lead to sleep deprivation over time.
- **Maintain a healthy weight** - being overweight or obese can lead to physical health conditions that, often, impact sleep. Thus, individuals working to prevent sleep deprivation should work to maintain a healthy weight. Health care professionals should note that an individual's healthy or ideal weight is typically based on body

mass index (BMI). As previously mentioned, BMI may refer to a value derived from an individual's weight and height. Health care professionals should also note the information found below regarding BMI and weight.

- Health care professionals may use the following formula to calculate an individual's BMI: $BMI = \text{weight (kg)} / \text{height (m)}^2$; health care professionals may also use the following formula to calculate an individual's BMI: $BMI = \text{weight (lb)} / [\text{height (in)}]^2 \times 703$.
- Health care professionals should note that BMI does not measure body fat directly.
- Underweight - an individual may be considered to be underweight if his or her BMI is less than 18.5 kg/m².
- Normal weight - an individual may be considered to be at a normal weight if his or her BMI is between 18.5 - 24.9 kg/m².
- Overweight - an individual may be considered to be overweight if his or her BMI is between 25.0 - 29.9 kg/m².
- Obese - an individual may be considered to be obese if his or her BMI is greater than or equal to 30.0 kg/m².
- **Seek treatment for both physical and mental health conditions** - as previously mentioned, both physical and mental health conditions can lead to sleep deprivation. Therefore, it is essential for those individuals working to prevent sleep deprivation to seek treatment for their related physical and mental health conditions. Health care professionals should note the following: a physical and/or mental health condition may be the underlying cause of sleep deprivation, thus, health care professionals should work to effectively identify and treat any physical and/or mental health condition associated with sleep deprivation when working to help patients prevent sleep deprivation.
- **Seek treatment for sleep disorders** - to build on the previous recommendation, individuals working to prevent sleep deprivation should seek treatment for sleep disorders. Sleep disorders are a major contributor to sleep deprivation - thus, individuals and health care professionals should work to identify and treat sleep disorders, when applicable.
- **Seek treatment for acute and chronic pain** - both acute and chronic pain may lead to sleep deprivation. Thus, individuals and health care professionals should work to identify and treat acute and chronic pain. Health care professionals should note the

following: some patients' pain may be inadequately treated; patients who may be receiving inadequate pain treatment may require medication adjustments to adequately treat their pain and to, ultimately, prevent sleep deprivation.

- **Be aware of medications that can affect sleep** - some medications, such as beta-blockers, can affect sleep and may lead to sleep deprivation over time. Therefore, individuals should be aware of such medications. Health care professionals should note the following: taking medications that can affect sleep in the morning or early in the day can help limit or reduce their impact on sleep; health care professionals should review medications (e.g., consider the risks to sleep versus the benefits of a medication) that are dramatically impacting a patient's ability to fall asleep and stay asleep.
- **Be aware of supplements that can affect sleep** - much like with medications, some supplements can affect sleep. Therefore, individuals should be aware of such supplements. Health care professionals should review supplements (e.g., consider the risks to sleep versus the benefits of a supplement) that are dramatically impacting a patient's ability to fall asleep and stay asleep.
- **Consume foods that promote sleep** - some foods, through various processes, can actually promote sleep. Thus, individuals working to prevent sleep deprivation should consume foods that promote sleep in the evening. Health care professionals should note the following foods that may promote sleep: fish, whole grains, yogurt, almonds, cherries, and bananas.
- **Avoid large meals before bedtime** - even though some foods may promote sleep, large meals before bed should be avoided. Large meals, meals consisting of 800 calories or more, may lead to prolonged digestion, which in turn could impact sleep. Thus, individuals working to prevent sleep deprivation should avoid large meals before bedtime.
- **Avoid fried food before bedtime** - to build on the previous recommendation, individuals should avoid fried foods before bedtime. Fried foods can lead to digestion issues, which poses the potential to impact sleep.
- **Avoid excessive fluid intake before bedtime** - excessive fluid intake can lead to sleep disruptions, which may impact an individual's ability to fall asleep and stay asleep. Thus, individuals working to prevent sleep deprivation should avoid excessive fluid intake before bedtime.
- **Avoid excessive naps during the day** - excessive naps (i.e., naps lasting over 30 - 120 minutes) may help individuals rest during the day - however, they can impact an individual's ability to fall asleep and stay asleep. Thus, individuals working to

prevent sleep deprivation should avoid excessive naps. Health care professionals should note the following: some individuals may benefit from daytime naps; nap recommendations should be based on an individual's specific needs, requirements, and health status; health care professionals should take note of individuals who sleep for excessive periods of time during the day; excessive daytime sleepiness and/or sleeping may be a sign/symptom of an underlying health condition.

- **Avoid caffeine before bedtime** - caffeine is a stimulant. Stimulants can impact an individual's ability to fall asleep and stay asleep. Thus, caffeine should be avoided before bedtime or even late in the day, depending on when an individual plans on attempting to fall asleep.
- **Quit smoking** - nicotine, which may also be considered to be a stimulant, can impact sleep. Thus, individuals working to prevent sleep deprivation should consider quitting smoking. Health care professionals can help individuals quit smoking by aiding smoking cessation. Smoking cessation may refer to the process of discontinuing tobacco smoking. Specific information regarding smoking cessation may be found in Figure 2.

FIGURE 2: SMOKING CESSATION

- The key elements of smoking/tobacco cessation include the following: the 5 A's of smoking/tobacco cessation, behavioral interventions, access to support groups, and information regarding medications for smoking cessation.
- **The 5A's of smoking/tobacco cessation** - the 5A's of smoking/tobacco cessation include the following: Ask every individual/patient about tobacco use, Advise every tobacco user to quit, Assess the willingness of a tobacco user to quit smoking/make a quit attempt within 30 days, Assist a tobacco user with his or her plan to quit, Arrange a follow-up with the tobacco user to promote quitting the use of tobacco.
- **Behavioral interventions** - behavioral interventions for smoking/tobacco cessation include a variety of behavior treatment strategies such as cognitive-behavioral therapy. Cognitive-behavioral therapy may refer to a form of psychotherapy that focuses on helping individuals solve problems and create positive outcomes by changing unrealistically negative patterns of thought and behavior. In other words, cognitive behavioral therapy works to identify unrealistically negative thoughts and their relationship to negative behavior patterns and outcomes in order to develop constitutive ways of thinking that will ultimately lead to more positive behavior patterns and outcomes.

- **Access to support groups** - support groups may also be used as a therapeutic option for those individuals engaged in tobacco cessation programs. Support groups can be used to help individuals avoid isolation and make connections with other individuals to improve upon their tobacco cessation program experience as well as their health, overall well-being, and quality of life. Health care professionals should be aware that various types of support groups exist and that an individual may participate in one or more support groups at a time.
- **Medications for smoking cessation** - medications for smoking cessation include the following: nicotine gum, lozenges, patches, and nasal spray as well as bupropion (Zyban) and varenicline (Chantix). Information regarding medications for smoking cessation should be provided to patients, when applicable.
 - **Bupropion** - health care professionals should note the following information regarding bupropion: Wellbutrin, Wellbutrin SR, and Wellbutrin XL are not approved for smoking cessation treatment, but bupropion under the name Zyban is approved for this use; serious neuropsychiatric events, including but not limited to depression, suicidal ideation, suicide attempt, and completed suicide have been reported in patients taking bupropion for smoking cessation; some cases may have been complicated by the symptoms of nicotine withdrawal in patients who stopped smoking; depressed mood may be a symptom of nicotine withdrawal; depression, rarely including suicidal ideation, has been reported in smokers undergoing a smoking cessation attempt without medication - however, some of these symptoms have occurred in patients taking bupropion who continued to smoke; all patients being treated with bupropion for smoking cessation treatment should be observed for neuropsychiatric symptoms including: changes in behavior, hostility, agitation, depressed mood, and suicide-related events, including ideation, behavior, and attempted suicide.
 - **Varenicline** - health care professionals should note the following information regarding varenicline (Chantix): Chantix is indicated as an aid to smoking cessation treatment; serious neuropsychiatric events, including, but not limited to depression, suicidal ideation, suicide attempt, and completed suicide have been reported in patients taking Chantix; some reported cases may have been complicated by the symptoms of nicotine withdrawal in patients who stopped smoking; depressed mood may be a symptom of nicotine withdrawal; depression, rarely including suicidal ideation, has been reported in smokers undergoing a smoking cessation attempt without medication - however, some of these symptoms have occurred in patients taking Chantix who continued to smoke; all patients being treated with Chantix should be

observed for neuropsychiatric symptoms including: changes in behavior, hostility, agitation, depressed mood, and suicide-related events, including ideation, behavior, and attempted suicide.

- **Avoid the use of electronic devices before bedtime** - this recommendation may seem like an impossibility in the current cultural climate - however, individuals working to prevent sleep deprivation should avoid the use of electronic devices before bedtime. Electronic devices, such as tablets, smartphones, and laptops, emit short-wavelength, artificial blue light, which can affect the release of melatonin, and, ultimately, impact sleep. Melatonin may refer to a hormone that regulates the sleep-wake cycle. Health care professionals should note the following: individuals working to prevent sleep deprivation should stop using electronic devices, at least, 30 - 60 minutes before bedtime. Health care professionals should also note the following: health care professionals may consider recommending pre-bed activities that may replace the use of electronic devices such as reading a book and/or meditation.
- **Remove clocks and/or smartphones from sight when attempting to fall asleep and stay asleep** - clocks and/or smartphones too close to the bed or insight from the bed may lead to sleep-related anxiety (e.g., an individual may continuously check his or her clock or smartphone while attempting to fall asleep, leading to an anxious feeling related to the time and/or information visible on the smartphone). Thus, individuals working to prevent sleep deprivation should remove clocks and/or smartphones from sight when attempting to fall asleep and stay asleep.
- **Turn off smartphones before bedtime** - to go beyond the previous recommendation, it may be best for some individuals to simply turn off their smartphones before bed to avoid any related anxiety and/or agitation that may negatively impact sleep.
- **Avoid disruptions before bedtime** - to build on the previous two recommendations, individuals working to prevent sleep deprivation should avoid any disruptions that may lead to anxiety and/or agitation before bedtime. Health care professionals should note that disruptions may come from any or all of the following sources: email, smartphones, tablets, laptops, and/or social media channels (the term social media may refer to any electronically driven application that enables individuals to create and share content for the purposes of virtual communication).
- **Avoid "going to bed too early"** - going to bed too early (i.e., when an individual is not tired) can also lead to anxiety and/or agitation, and, thus, should be avoided.

- **Keep a consistent sleep schedule** - individuals working to prevent sleep deprivation should keep a consistent sleep schedule (i.e., go to sleep and wake up at approximately the same time every day, including weekends). Keeping a consistent sleep schedule can help individuals condition themselves to fall asleep and stay asleep.
- **Develop and maintain a relaxing bedtime routine** - along with keeping a consistent sleep schedule, individuals should develop and maintain a relaxing bedtime routine (e.g., listening to relaxing music before bed; taking a warm bath). Developing and maintaining a relaxing bedtime routine can also help individuals condition themselves to fall asleep and stay asleep. Further examples of relaxing bedtime routines may be found in Figure 3. Health care professionals should note that relaxing bedtime routines may be utilized by individuals of all ages.

FIGURE 3: EXAMPLES OF RELAXING BEDTIME ROUTINES

Example 1

1. Turn off all electronic devices (including smartphones and tablets) 60 minutes before desired bedtime
2. Read a book
3. Complete bedtime ablutions (e.g., teeth brushing, face washing, and/or body skincare)
4. Enter the bedroom (keep the light(s) dim, if possible)
5. Ensure the room is as dark as possible
6. Enter the bed

Example 2

1. Turn off all electronic devices (including smartphones and tablets) 60 minutes before desired bedtime
2. Meditate
3. Complete bedtime ablutions (e.g., teeth brushing, face washing, and/or body skincare)
4. Enter the bedroom (keep the light(s) dim, if possible)
5. Enter the bed

Example 3

1. Turn off all electronic devices (including smartphones and tablets) 60 minutes before desired bedtime
2. Have a light snack consisting of foods that promote sleep (e.g., cherries, almonds)
3. Write down thoughts from the day (e.g., memories, ideas, and/or personal reflections)
4. Complete bedtime ablutions (e.g., teeth brushing, face washing, and/or body skincare)
5. Enter the bedroom (keep the light(s) dim, if possible)
6. Enter the bed

Example 4

1. Complete bedtime ablutions (e.g., teeth brushing, face washing, and/or body skincare)
2. Find a quiet location and practice deep breathing exercises to promote progressive muscle relaxation
3. Enter the bedroom (keep the light(s) dim, if possible)
4. Enter the bed

Example 5

1. Complete bedtime ablutions (e.g., teeth brushing, face washing, and/or body skincare)
2. Find a quiet location and listen to relaxing music
3. Enter the bedroom (keep the light(s) dim, if possible)
4. Enter the bed

Example 6

1. Engage in light stretching
2. Take a hot shower or bath

3. Enter the bedroom (keep the light(s) dim, if possible)

4. Enter the bed

- **Reserve the bedroom and bed for sleep and/or sleep-related activities** - reserving the bedroom and bed for sleep and/or sleep-related activities (i.e., individuals should only use the bedroom/bed for sleep and/or sleep-related activities) can also help individuals condition themselves to fall asleep and stay asleep.
- **Stay committed** - last but not least, individuals working to prevent sleep deprivation should stay committed to lifestyle changes and/or modifications that can help them fall asleep and stay asleep.

Section 2: Summary

Health care professionals can work to prevent sleep deprivation by providing patients with counseling centered around sleep hygiene. Specific sleep hygiene recommendations may include the following: establish a comfortable sleep environment, limit the amount of light in a sleep environment, limit stress, limit circadian rhythm disturbances, seek natural light at appropriate times, do not use alcohol as a sleep aid, avoid illicit drug use, maintain a healthy weight, seek treatment for both physical and mental health conditions, seek treatment for sleep disorders, seek treatment for acute and chronic pain, be aware of medications that can affect sleep, be aware of supplements that can affect sleep, consume foods that promote sleep, avoid large meals before bedtime, avoid fried food before bedtime, avoid excessive fluid intake before bedtime, avoid excessive naps during the day, avoid caffeine before bedtime, quit smoking, avoid the use of electronic devices before bedtime, remove clocks and/or smartphones from sight when attempting to fall asleep and stay asleep, turn off smartphones before bedtime, avoid disruptions before bedtime, avoid "going to bed too early," keep a consistent sleep schedule, develop and maintain a relaxing bedtime routine, reserve the bedroom and bed for sleep and/or sleep-related activities, and stay committed. Health care professionals should note that the aforementioned recommendations can help individuals fall asleep and stay asleep.

Section 2: Key Concepts

- Health care professionals can work to prevent sleep deprivation by providing patients with counseling centered around sleep hygiene.
- Individuals working to prevent sleep deprivation should follow applicable sleep hygiene recommendations.

Section 2: Key Terms

Sleep hygiene - a set of practices that can help individuals improve upon their ability to fall asleep and stay asleep; practices that can help individuals achieve an adequate session of sleep

Sleep-wake cycle - the natural 24-hour daily sleep pattern which consists of approximately 16 hours of daytime wakefulness and approximately 8 hours of night-time sleep

Sleep aid - any substance that is utilized to help individuals fall asleep and stay asleep

Smoking cessation - the process of discontinuing tobacco smoking

Cognitive-behavioral therapy - a form of psychotherapy which focuses on helping individuals solve problems and create positive outcomes by changing unrealistically negative patterns of thought and behavior

Melatonin - a hormone that regulates the sleep-wake cycle

Social media - any electronically driven application that enables individuals to create and share content for the purposes of virtual communication

Section 2: Personal Reflection Question

How can health care professionals use sleep hygiene counseling and related recommendations to help prevent sleep deprivation?

Section 3: Sleep Deprivation Treatment

It is important for health care professionals to possess insight into sleep deprivation, as well as sleep hygiene, to best serve patients in need. With that in mind, health care professionals should also possess insight into sleep deprivation-related treatment options. Sleep deprivation-related treatment can come in many different forms and can include both non-pharmacological and pharmacological options. Health care professionals should note that, often, the non-pharmacological and pharmacological treatment options used to address and manage sleep deprivation focus on the underlying causes of sleep deprivation, such as sleep disorders. That said, the beginning of this section of the course will focus on some of the more common non-pharmacological treatment options for sleep deprivation. The information found in this section of the course was derived from materials provided by the CDC, the U.S.

Department of Health and Human Services, and the FDA (CDC, 2020; U.S. Department of Health and Human Services, 2015; FDA, 2020).

Non-Pharmacological Treatment Options for Sleep Deprivation

Nutrition

- Nutrition and diet may not be one of the first treatment options that may come to mind when considering sleep deprivation. However, as previously alluded to, nutrition and diet can be a major contributor to sleep and sleep deprivation. Thus, often, treatment for sleep deprivation begins with nutrition. Specific recommendations regarding nutrition may be found below.
- Follow a healthy eating pattern across the lifespan. All food and beverage choices matter. Choose a healthy eating pattern at an appropriate calorie level to help achieve and maintain a healthy body weight, support nutrient adequacy, and reduce the risk of chronic disease.
- Focus on variety, nutrient density, and amount. To meet nutrient needs within calorie limits, choose a variety of nutrient-dense foods across and within all food groups in recommended amounts.
- Limit calories from added sugars and saturated fats and reduce sodium intake. Consume an eating pattern low in added sugars, saturated fats, and sodium. Cut back on foods and beverages higher in these components to amounts that fit within healthy eating patterns.
- Shift to healthier food and beverage choices. Choose nutrient-dense foods and beverages across and within all food groups in place of less healthy choices. Consider cultural and personal preferences to make these shifts easier to accomplish and maintain.
- Support healthy eating patterns for all. Everyone has a role in helping to create and support healthy eating patterns in multiple settings nationwide, from home to school to work to communities.
- A healthy eating pattern includes:
 - A variety of vegetables from all of the subgroups - dark green, red and orange, legumes (beans and peas), and starchy.
 - Fruits, especially whole fruits.
 - Grains, at least half of which are whole grains.

- Fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages.
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans and peas), nuts, seeds, and soy products.
- Oils.
- A healthy eating pattern limits: saturated fats and trans fats, added sugars, and sodium.
- Consume less than 10 percent of calories per day from added sugars.
- Consume less than 10 percent of calories per day from saturated fats.
- Consume less than 2,300 milligrams (mg) per day of sodium.
- If alcohol is consumed, it should be consumed in moderation - up to one drink per day for women and up to two drinks per day for men.
- Vegetables are important sources of many nutrients, including dietary fiber, potassium, vitamin A, vitamin C, vitamin K, copper, magnesium, vitamin E, vitamin B6, folate, iron, manganese, thiamin, niacin, and choline.
- The recommended amount of vegetables in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2½ cup-equivalents of vegetables per day.
- Individuals should include a variety of vegetables from all five subgroups (e.g., dark green, red and orange, legumes, and starchy).
- Individuals may include all fresh, frozen, canned, and dried vegetable options in cooked or raw forms, including vegetable juices.
- Fruits are an important source of many nutrients, including dietary fiber, potassium, and vitamin C.
- The recommended amount of fruits in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2 cup-equivalents per day. One cup of 100% fruit juice counts as 1 cup of fruit.
- Whole grains are a source of nutrients, such as dietary fiber, iron, zinc, manganese, folate, magnesium, copper, thiamin, niacin, vitamin B6, phosphorus, selenium, riboflavin, and vitamin A.

- The recommended amount of grains in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 6 ounce-equivalents per day. At least half of the aforementioned amount should be whole grains.
- The dairy group contributes many nutrients, including calcium, phosphorus, vitamin A, vitamin D (in products fortified with vitamin D), riboflavin, vitamin B12, protein, potassium, zinc, choline, magnesium, and selenium.
- The recommended amounts of dairy in the Healthy U.S.-Style Pattern are based on age rather than calorie level.
- The recommended amounts of dairy for adults is 3 cup-equivalents per day.
- Protein foods are important sources of nutrients in addition to protein, including niacin, vitamin B12, vitamin B6, riboflavin, selenium, choline, phosphorus, zinc, copper, vitamin D, and vitamin E.
- Nutrients provided by various types of protein foods differ. Meats provide the most zinc, while poultry provides the most niacin. Meats, poultry, and seafood provide heme iron, which is more bioavailable than the non-heme iron found in plant sources. Seafood provides the most vitamin B12 and vitamin D, in addition to polyunsaturated omega-3 fatty acids, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA). Eggs provide the most choline, and nuts and seeds provide the most vitamin E. Soy products are a source of copper, manganese, and iron, as are legumes.
- The recommendation for protein foods in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 5½ ounce equivalents of protein foods per day.
- A specific recommendation for at least 8-ounce equivalents of seafood per week is also included for the 2,000-calorie level.
- Caffeine is not a nutrient; it is a dietary component that functions in the body as a stimulant.!
- Caffeine can be found in coffees, teas, and soda.
- Moderate coffee consumption (three to five 8-oz cups/day or providing up to 400 mg/day of caffeine) can be incorporated into healthy eating patterns.
- Individuals who do not consume caffeinated coffee or other caffeinated beverages should not be encouraged to incorporate them into their eating patterns.

Physical Activity

Physical activity can also play a role in sleep deprivation treatment (physical activity may refer to any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level; generally refers to the subset of physical activity that enhances health). Specific recommendations regarding physical activity may be found below.

• Physical activity recommendations for Individuals ages 6 - 17 years

- Children and adolescents should do 60 minutes (1 hour) or more of physical activity daily.
- Most of the 60 or more minutes a day should be either moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least three days a week.
- As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least three days of the week.
- As part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least three days of the week.
- It is important to encourage young people to participate in physical activities that are appropriate for their age, that are enjoyable, and that offer variety.

• Physical activity recommendations for individuals ages 18 - 64 years

- All adults should avoid inactivity. Some physical activity is better than none, and adults who participate in any amount of physical activity gain some health benefits.
- For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week.
- For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity, or 150 minutes a week of vigorous-intensity aerobic physical activity, or an

equivalent combination of moderate- and vigorous-intensity activity. Additional health benefits are gained by engaging in physical activity beyond this amount.

- Adults should also include muscle-strengthening activities that involve all major muscle groups on two or more days a week.

- **Physical activity recommendations for Individuals ages 65 years and older**

- Older adults should follow the adult guidelines. When older adults cannot meet the adult guidelines, they should be as physically active as their abilities and conditions will allow.
- Older adults should do exercises that maintain or improve balance if they are at risk of falling.
- Older adults should determine their level of effort for physical activity relative to their level of fitness.
- Older adults with chronic conditions should understand whether and how their conditions affect their ability to do regular physical activity safely.

Psychotherapy

- Psychotherapy, also known as talk therapy, may refer to the use of psychological techniques and/or psychotherapeutic approaches to help individuals overcome problems and develop healthier habits.
- Health care professionals should note that many different forms of psychotherapy may be used to treat patients suffering from sleep deprivation.

Cognitive Behavioral Therapy

- Cognitive behavioral therapy may refer to a form of psychotherapy that focuses on helping individuals solve problems and create positive outcomes by changing unrealistically negative patterns of thought and behavior.
- When applied to sleep deprivation, cognitive behavioral therapy can be used to help individuals avoid negative patterns of thought and behavior related to sleep (e.g., consistently staying up all night).

Stimulus Control Therapy

- Stimulus control therapy may refer to a form of behavioral therapy that uses instructions to address conditioned arousal.

- When applied to sleep deprivation, stimulus control therapy may be used to reduce the anxiety and/or conditioned arousal associated with sleep (e.g., stimulus control therapy can be used to help individuals establish the act of entering their bed as a cue for sleep).

Relaxation Therapy

- Relaxation therapy, in the context of sleep disorders/sleep deprivation, may refer to a form of therapy that focuses on reducing the physiologic, cognitive, and emotional arousal associated with sleep disorders/sleep deprivation.
- Examples of techniques that may be included in relaxation therapy include: breathing exercises, meditation, and body scanning. Body scanning may refer to a technique that utilizes the acts of focusing and deep breathing to promote progressive muscle relaxation.

Continuous Positive Airway Pressure (CPAP) Device

- As previously mentioned, a CPAP device may refer to a medical device that uses mild air pressure to keep an individual's breathing airways open.
- CPAP devices are typically used to address sleep deprivation associated with sleep apnea.

Pharmacological Treatment Options for Sleep Deprivation

As previously mentioned, pharmacological treatment options may be used as care for individuals suffering from sleep deprivation. That being the case, the rest of this section will focus on some of the most widely prescribed medications used to treat individuals suffering from sleep deprivation. The medications highlighted in this subsection will be presented in informational segments. The information found below was derived from materials provided by the FDA (FDA, 2020). Health care professionals should note that the pharmacological options used to address and manage sleep deprivation focus on the underlying causes of sleep deprivation, such as sleep disorders. Health care professionals should also note that the following medications may be used alone or in combination with other therapeutic options to treat individuals suffering from sleep deprivation.

Ambien

Medication notes - Ambien is indicated for the short-term treatment of insomnia characterized by difficulties with sleep initiation. Ambien has been shown to decrease sleep latency for up to 35 days in controlled clinical studies. The typical adult dose of

Ambien is 10 mg once daily immediately before bedtime. Health care professionals should note the following dosing information: downward dosage adjustment may be necessary when used with CNS depressants; Ambien should not be taken with or immediately after a meal. Potential side effects of Ambien may include: drowsiness, dizziness, and diarrhea.

Safety notes - contraindications associated with Ambien include a known hypersensitivity to zolpidem tartrate or to any of the inactive ingredients in the formulation. Warnings and precautions associated with Ambien include the following: severe anaphylactic and anaphylactoid reactions may be possible; abnormal thinking and behavioral changes may be possible. Additional warnings and precautions associated with Ambien include: reevaluate use if insomnia persists after 7 to 10 days; angioedema and anaphylaxis have been reported; do not rechallenge if such reactions occur; abnormal thinking, behavioral changes, and complex behaviors may include “sleep-driving” and hallucinations; immediately evaluate any new onset behavioral changes; worsening of depression or, suicidal thinking may occur; withdrawal symptoms may occur with rapid dose reduction or discontinuation; use can impair alertness and motor coordination; if used in combination with other CNS depressants, dose reductions may be needed due to addictive effects; do not use with alcohol.

Considerations for special patient populations - use a lower dose of Ambien in older adult patient populations due to the potential for impaired motor function, cognitive performance, and increased sensitivity. Use with caution and monitor closely when used in patient populations with hepatic impairment, mild to moderate COPD, impaired drug metabolism or hemodynamic responses, and mild to moderate sleep apnea.

Lunesta

Medication notes - Lunesta is indicated for the treatment of insomnia. Lunesta has been shown to decrease sleep latency and improve sleep maintenance. The recommended initial dose of Lunesta is 1 mg, immediately before bedtime, with at least 7 - 8 hours remaining before the planned time of awakening. Health care professionals should note the following dosing information: use the lowest dose of Lunesta effective for the patient; individuals may increase Lunesta dose if clinically indicated, to a maximum of 3 mg; do not take Lunesta with or immediately after a meal. Potential side effects of Lunesta may include unpleasant taste, headache, somnolence, respiratory infection, dizziness, dry mouth, rash, anxiety, hallucinations, and viral infections.

Safety notes - contraindications associated with Lunesta include a known hypersensitivity to eszopiclone. Warnings and precautions associated with Lunesta

include: impaired alertness and motor coordination, including the risk of morning impairment is possible; caution patients taking 3 mg doses against driving and against activities requiring complete mental alertness during the morning after use; reevaluate use if insomnia persists after 7 to 10 days; angioedema and anaphylaxis have been reported; do not rechallenge if such reactions occur; abnormal thinking, behavioral changes (e.g., hallucinations), complex behaviors (e.g., “sleep-driving”) are possible; prescribe the least number of tablets feasible to avoid intentional overdose; withdrawal symptoms may occur with rapid dose reduction or discontinuation.

Considerations for special patient populations - use a lower dose of Lunesta in older adult patient populations due to the potential for impaired motor function, cognitive performance, and increased sensitivity. Use with caution in patient populations with hepatic impairment, impaired respiratory function, impaired drug metabolism, and/or hemodynamic responses. Health care professionals should note the following: patients with severe hepatic impairment, or taking potent CYP3A4 inhibitors should not receive doses exceeding 2 mg; debilitated patients not receive doses exceeding 2 mg.

Rozerem

Medication notes - Rozerem is indicated for the treatment of insomnia characterized by difficulty with sleep onset. The recommended adult dose of Rozerem is 8 mg taken within 30 minutes of going to bed. Health care professionals should note the following dosing information: Rozerem should not be taken with or immediately after a high-fat meal; the total daily dose of Rozerem should not exceed 8 mg. Potential side effects of Rozerem may include: somnolence, dizziness, fatigue, nausea, and exacerbated insomnia.

Safety notes - contraindications associated with Rozerem include: history of angioedema while taking Rozerem; concurrent use of fluvoxamine. Warnings and precautions associated with Rozerem include: severe anaphylactic/anaphylactoid reactions may be possible; reevaluate use if insomnia persists after 7 to 10 days of treatment; abnormal thinking, behavioral changes, and complex behaviors are possible; “sleep-driving” and hallucinations are possible; immediately evaluate any new onset behavioral changes; worsening of depression or suicidal thinking may occur; potential impairment of activities requiring complete mental alertness such as operating machinery or driving a motor vehicle, after ingesting the drug; decreased testosterone and increased prolactin levels are possible.

Considerations for special patient populations - Rozerem is not recommended in patients with severe hepatic impairment. Nursing mothers should use Rozerem with caution.

Sonata

Medication notes - Sonata is a nonbenzodiazepine hypnotic from the pyrazolopyrimidine medication class. Sonata is indicated for the short-term treatment of insomnia. Sonata has been shown to decrease the time to sleep onset for up to 30 days in controlled clinical studies. The dose of Sonata should be individualized for each patient. The recommended dose of Sonata for most nonelderly adults is 10 mg. Health care professionals should note the following dosing information: for certain low weight individuals, 5 mg may be a sufficient dose; the risk of certain adverse events associated with the use of Sonata appears to be dose-dependent; the 20 mg dose of Sonata has been shown to be adequately tolerated and may be considered for the occasional patient who does not benefit from a trial of a lower dose; doses above 20 mg have not been adequately evaluated and are not recommended. Potential side effects of Sonata may include: getting out of bed while not being fully awake, abnormal thoughts and behavior, memory loss, anxiety, and severe allergic reactions.

Safety notes - contraindications associated with Sonata include hypersensitivity to zaleplon or any excipients in the formulation. Warnings and precautions associated with Sonata include the following: sleep disturbances may be the presenting manifestation of a physical and/or psychiatric disorder, symptomatic treatment of insomnia should be initiated only after a careful evaluation of the patient; failure of insomnia to remit after 7 to 10 days of treatment may indicate the presence of a primary psychiatric and/or medical illness that should be evaluated; worsening of insomnia or the emergence of new thinking or behavior abnormalities may be the consequence of an unrecognized psychiatric or physical disorder. Additional warnings and precautions associated with Sonata include: abnormal thinking and behavioral changes; complex behaviors such as “sleep-driving” (i.e., driving while not fully awake after ingestion of a sedative-hypnotic, with amnesia for the event) are possible; severe anaphylactic and anaphylactoid reactions are possible; withdrawal following a rapid dose decrease or abrupt discontinuation of the use.

Considerations for special patient populations - the dose of Sonata should be reduced to 5 mg in patients with mild to moderate hepatic impairment.

Restoril

Medication notes - Restoril is a benzodiazepine hypnotic agent. Restoril is indicated for the short-term treatment of insomnia (generally 7 to 10 days). The recommended typical adult dose of Restoril is 15 mg before bedtime. Health care professionals should note the following dosing information: 7.5 mg of Restoril may be sufficient for some patients; in transient insomnia, a 7.5 mg dose may be sufficient to improve

sleep latency. Potential side effects of Restoril may include: drowsiness, headache, fatigue, nervousness, lethargy, dizziness, nausea, hangover, anxiety, depression, dry mouth, diarrhea, abdominal discomfort, and weakness.

Safety notes - contraindications associated with Restoril include: Restoril is contraindicated in women who are or may become pregnant. Warnings and precautions associated with Restoril include the following: concomitant use of benzodiazepines and opioids may result in profound sedation, respiratory depression, coma, and death; reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are inadequate, limit dosages and durations to the minimum required; follow patients for signs and symptoms of respiratory depression and sedation. Additional warnings and precautions associated with Restoril include: Restoril should be administered with caution in severely depressed patients or those in whom there is any evidence of latent depression; if Restoril is to be combined with other drugs having known hypnotic properties or CNS-depressant effects, consideration should be given to potential additive effects; the possibility of a synergistic effect exists with the co-administration of Restoril and diphenhydramine; “sleep-driving” and other complex behaviors are possible.

Considerations for special patient populations - the risk of the development of oversedation, dizziness, confusion, and/or ataxia increases substantially with larger doses of benzodiazepines in older adults and debilitated patients, 7.5 mg of Restoril is recommended as the initial dosage for such patients. Restoril falls into Pregnancy Category X.

Ativan

Medication notes - patients suffering from a sleep disorder/sleep deprivation may be treated in some capacity with Ativan. Ativan belongs to a group of medications referred to as benzodiazepines. For optimal results, dose, frequency of administration, and duration of therapy should be individualized according to patient response. The potential side effects of Ativan may include central nervous system (CNS) effects and respiratory depression as well as fatigue, drowsiness, amnesia, memory impairment, confusion, disorientation, depression, unmasking of depression, disinhibition, euphoria, suicidal ideation/attempt, ataxia, asthenia, and extrapyramidal symptoms.

Safety notes - Ativan is contraindicated in patients with hypersensitivity to benzodiazepines or to any components of the formulation. Ativan is also contraindicated in patients with acute narrow-angle glaucoma. Warnings and precautions associated with Ativan include the following: concomitant use of benzodiazepines, including Ativan, and opioids may result in profound sedation,

respiratory depression, coma, and death. Because of these risks, reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are inadequate. The use of benzodiazepines, including Ativan, may lead to physical and psychological dependence. The risk of dependence increases with higher doses and longer-term use and is further increased in patients with a history of alcoholism or drug abuse or in patients with significant personality disorders.

Considerations for special patient populations - Ativan is not recommended for use in patients with a primary depressive disorder or psychosis. Ativan should be used with caution in patient populations with compromised respiratory function (e.g., COPD; sleep apnea syndrome); older adults or debilitated patients may be more susceptible to the sedative effects of Ativan.

Xanax

Medication notes - patients suffering from a sleep disorder/sleep deprivation may be treated in some capacity with Xanax. Xanax is a benzodiazepine. For optimal results, Xanax doses, frequency of administration, and duration of therapy should be individualized according to patient response. In such cases, dosages should be increased cautiously to avoid adverse effects. Potential side effects of Xanax may include: drowsiness, tiredness, dizziness, sleep problems, memory problems, poor balance or coordination, slurred speech, and trouble concentrating.

Safety notes - Xanax is contraindicated in patients with a known sensitivity to this drug or other benzodiazepines. Xanax is also contraindicated with the concurrent use of ketoconazole and/or itraconazole, since these medications significantly impair the oxidative metabolism mediated by cytochrome P450 3A (CYP3A). Warnings and precautions associated with Xanax include the following: concomitant use of benzodiazepines, including Xanax, and opioids may result in profound sedation, respiratory depression, coma, and death. Because of these risks, reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are inadequate.

Considerations for special patient populations - older adult patients may be more sensitive to the effects of benzodiazepines. Therefore, the smallest effective dose of Xanax should be used in older adult populations to preclude the development of ataxia and over sedation. Xanax falls into Pregnancy Category D.

Valium

Medication notes - patients suffering from a sleep disorder/sleep deprivation may be treated in some capacity with Valium. Valium is a benzodiazepine derivative. Valium

dosages should be individualized for maximum beneficial effect. Common side effects associated with Valium include: drowsiness, fatigue, muscle weakness, and ataxia.

Safety notes - Valium is contraindicated in patients with a known hypersensitivity to diazepam and in pediatric patients under 6 months of age. Valium is also contraindicated in patients with myasthenia gravis, severe respiratory insufficiency, severe hepatic insufficiency, sleep apnea syndrome, and acute narrow-angle glaucoma. Warnings associated with Valium include the following: concomitant use of benzodiazepines, including Valium, and opioids may result in profound sedation, respiratory depression, coma, and death. Because of the aforementioned risks, reserve concomitant prescribing of those drugs for use in patients for whom alternative treatment options are inadequate; follow patients for signs and symptoms of respiratory depression and sedation. Additionally, Valium is not recommended in the treatment of psychotic patients and should not be employed instead of appropriate treatment.

Considerations for special patient populations - in older adult patient populations, it is recommended that the dosage be limited to the smallest effective amount to preclude the development of ataxia or oversedation. Valium falls into Pregnancy Category D. Breastfeeding is not recommended in patients receiving Valium.

Requip

Medication notes - Requip is an orally administered non-ergoline dopamine agonist. Requip may be used to treat individuals suffering from RLS. Requip is indicated for the treatment of moderate-to-severe primary RLS. The recommended adult starting dosage of Requip for RLS is 0.25 mg once daily, 1 - 3 hours before bedtime. Health care professionals should note the following dosing information: after 2 days, the dosage can be increased to 0.5 mg once daily and to 1 mg once daily at the end of the first week of dosing; for RLS, the safety and effectiveness of Requip doses greater than 4 mg once daily have not been established. Potential side effects of Requip may include: nausea, somnolence, vomiting, dizziness, and fatigue.

Safety notes - Requip is contraindicated for patients known to have hypersensitivity to the product. Warnings and precautions associated with Requip include the following: falling asleep during activities of daily living; patients treated with Requip have reported falling asleep while engaged in activities of daily living, including the operation of motor vehicles, which sometimes resulted in accidents; many patients reported somnolence while on Requip, some perceived that they had no warning signs such as excessive drowsiness, and believed that they were alert immediately prior to an event; before initiating treatment with Requip, patients should be advised of the potential to develop drowsiness and specifically asked about factors that may

increase the risk with Requip such as concomitant sedating medications, the presence of sleep disorders (other than RLS), and concomitant medications that increase ropinirole plasma levels (e.g., ciprofloxacin); if a patient develops significant daytime sleepiness or episodes of falling asleep during activities that require active participation (e.g., conversations, eating), Requip should ordinarily be discontinued; if a decision is made to continue Requip, patients should be advised to not drive and to avoid other potentially dangerous activities; there is insufficient information to establish that dose reduction will eliminate episodes of falling asleep while engaged in activities of daily living.

Considerations for special patient populations - health care professionals should note the following: Requip falls into Pregnancy Category C; the safety and effectiveness of Requip in pediatric populations has not been established.

Mirapex

Medication notes - Mirapex is a non-ergot dopamine agonist. Mirapex may be used to treat individuals suffering from RLS. Mirapex tablets are indicated for the treatment of moderate-to-severe primary RLS. The recommended starting dose of Mirapex tablets is 0.125 mg taken once daily 2 - 3 hours before bedtime. Health care professionals should note the following dosing information: for patients requiring additional symptomatic relief, the dose may be increased every 4 - 7 days; there is no evidence that the 0.75 mg dose provides additional benefit beyond the 0.5 mg dose. Potential side effects of Mirapex may include: nausea, vomiting, dizziness, somnolence, and fatigue.

Safety notes - Mirapex tablets are contraindicated in patients who have demonstrated hypersensitivity to the drug or its ingredients. Warnings and precautions associated with Mirapex include the following: falling asleep during activities of daily living ; patients treated with Mirapex (pramipexole dihydrochloride) tablets have reported falling asleep while engaged in activities of daily living, including the operation of motor vehicles which sometimes resulted in accidents; patients reported they had no warning signs such as excessive drowsiness, and believed that they were alert immediately prior to the event; some of these events had been reported as late as one year after the initiation of treatment; somnolence is a common occurrence in patients receiving Mirapex tablets; before initiating treatment with Mirapex tablets, patients should be advised of the potential to develop drowsiness and specifically asked about factors that may increase the risk with Mirapex tablets such as concomitant sedating medications, the presence of sleep disorders, and concomitant medications that increase pramipexole plasma levels (e.g., cimetidine); if a patient develops significant daytime sleepiness or episodes of falling asleep during activities

that require active participation (e.g., conversations, eating), Mirapex tablets should ordinarily be discontinued; if a decision is made to continue Mirapex tablets, patients should be advised to not drive and to avoid other potentially dangerous activities.

Considerations for special patient populations - health care professionals should note the following: caution should be exercised when prescribing Mirapex tablets to patients with renal insufficiency; Mirapex falls into Pregnancy Category C.

Trazodone

Medication notes - Patients suffering from a sleep disorder/sleep deprivation may be treated in some capacity with trazodone. Trazodone is a selective serotonin reuptake inhibitor. The maximum dose of trazodone is 400 mg per day. Health care professionals should note that when trazodone is discontinued, gradual dose reduction is recommended. Potential side effects of trazodone may include: edema, blurred vision, syncope, drowsiness, fatigue, diarrhea, nasal congestion, and weight loss.

Safety notes - contraindications associated with trazodone include concomitant use of monoamine oxidase inhibitors (MAOIs), or use within 14 days of stopping MAOIs. Warnings and precautions associated with trazodone include the following: antidepressants increased the risk of suicidal thoughts and behaviors in pediatric and young adult patients; closely monitor for clinical worsening and emergence of suicidal thoughts and behaviors; trazodone is not approved for use in pediatric patients. Additional warnings and precautions associated with trazodone include: serotonin syndrome is possible; avoid use with drugs that also increase the QT interval and in patients with risk factors for prolonged QT interval; warn patients of risk and symptoms of hypotension; increased risk of bleeding is possible; concomitant use of aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs), other antiplatelet drugs, warfarin, and other anticoagulants may increase bleeding risk; priapism may be possible; screen for bipolar disorder and monitor for mania or hypomania; has potential to impair judgment, thinking, and motor skills; advise patients to use caution when operating machinery; avoid the use of antidepressants, including trazodone, in patients with untreated anatomically narrow angles.

Considerations for special patient populations - nursing mothers should use caution.

Mirtazapine

Medication notes - Patients suffering from a sleep disorder/sleep deprivation may be treated in some capacity with mirtazapine. Mirtazapine is considered to be an antidepressant. The recommended starting dose for mirtazapine is 15 mg/day, administered in a single dose, preferably in the evening prior to sleep. Potential side

effects of mirtazapine may include somnolence, dizziness, increased appetite, and weight gain.

Safety notes - contraindications associated with mirtazapine include a known hypersensitivity to mirtazapine or to any of the excipients. Warnings and precautions associated with mirtazapine include the following: antidepressants increased the risk compared to placebo of suicidal thinking and behavior (suicidality) in children, adolescents, and young adults in short-term studies of major depressive disorder (MDD) and other psychiatric disorders; anyone considering the use of mirtazapine tablets or any other antidepressant in a child, adolescent, or young adult must balance this risk with the clinical need; short-term studies did not show an increase in the risk of suicidality with antidepressants compared to placebo in adults beyond age 24; there was a reduction in risk with antidepressants compared to placebo in adults aged 65 and older; depression and certain other psychiatric disorders are themselves associated with increases in the risk of suicide; patients of all ages who are started on antidepressant therapy should be monitored appropriately and observed closely for clinical worsening, suicidality, or unusual changes in behavior; families and caregivers should be advised of the need for close observation and communication with the prescriber; mirtazapine is not approved for use in pediatric patients.

Considerations for special patient populations - caution is indicated in administering mirtazapine to older adult patients. Mirtazapine falls into Pregnancy Category C. Nursing mothers should use mirtazapine with caution.

Section 3: Summary

It is important for health care professionals to possess insight into sleep deprivation-related treatment options. Sleep deprivation-related treatment options may include: nutrition, physical activity, psychotherapy, cognitive behavioral therapy, stimulus control therapy, relaxation therapy, CPAP devices as well as the use of medications. Some of the most widely prescribed medications used in sleep deprivation-related treatment include the following: Ambien, Lunesta, Rozerem, Sonata, Restoril, Ativan, Xanax, Valium, Requip, Mirapex, trazodone, and mirtazapine. Possessing insight into the aforementioned treatment options can help health care professionals safely and effectively administer health care to patients suffering from sleep deprivation.

Section 3: Key Concepts

- It is vital for health care professionals to possess insight into sleep deprivation-related treatment options.

- Sleep deprivation-related treatment can come in many different forms and can include both non-pharmacological and pharmacological options.
- Health care professionals should note that, often, the non-pharmacological and pharmacological treatment options used to address and manage sleep deprivation focus on the underlying causes of sleep deprivation, such as sleep disorders.
- Non-pharmacological sleep deprivation-related treatment options may include: nutrition, physical activity, psychotherapy, cognitive behavioral therapy, stimulus control therapy, relaxation therapy, and CPAP devices.
- Pharmacological sleep deprivation-related treatment options may include the following medications: Ambien, Lunesta, Rozerem, Sonata, Restoril, Ativan, Xanax, Valium, Requip, Mirapex, trazodone, and mirtazapine.

Section 3: Key Terms

Physical activity - any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level

Psychotherapy (also known as talk therapy) - the use of psychological techniques and/or psychotherapeutic approaches to help individuals overcome problems and develop healthier habits

Cognitive-behavioral therapy - a form of psychotherapy that focuses on helping individuals solve problems and create positive outcomes by changing unrealistically negative patterns of thought and behavior

Stimulus control therapy - a form of behavioral therapy that uses instructions to address conditioned arousal

Relaxation therapy (in the context of sleep disorders/sleep deprivation) - a form of therapy that focuses on reducing the physiologic, cognitive, and emotional arousal associated with sleep disorders/sleep deprivation

Section 3: Personal Reflection Question

What therapeutic options may be used to treat patients suffering from sleep deprivation?

Section 4: Case Studies Revisited

The three case studies presented at the beginning of this course will be revisited in this section to further explore the concepts found in this course. Each case study will be presented below, followed by a case study review. The case study reviews include the types of questions health care professionals should ask themselves when considering sleep deprivation and how it relates to the administration of health care. Additionally, reflection questions will be posted, within each case study review, to encourage further internal debate and consideration regarding the presented case study and sleep deprivation. The information found within this section was derived from materials provided by the CDC, the American Academy of Sleep Medicine, the WHO, and the Joint Commission (CDC, 2020; American Academy of Sleep Medicine, 2020; WHO; 2020; Joint Commission, 2020).

Case Study 1

A 38-year-old male patient presents to a health care facility with complaints regarding sleep. The patient reports that he has been struggling with sleep for the past three or four years. The patient explains that his issues with sleep began when he was laid off from work. The patient goes on to explain that he was "very stressed" when he was laid off from work and, "could not sleep through the night." The patient eventually found a new job - however, his issues with sleep continued. Upon questioning, the patient reports that he "often wakes up during the night and cannot fall back to sleep right away." The patient also reports he is often tired, exhausted, irritable, and moody throughout the day and has to consume "five to eight cups of coffee just to make it through the workday." The patient also reports that he has tried "sleep medication" in the past to help him sleep, but is not currently taking any medications. However, the patient does report he often drinks "four to six beers a night" to help him fall asleep. By the end of the exam, the patient begins to get anxious about his lack of sleep and how it is affecting his life. He is concerned about "paying bills" and that he is going to lose his current job. Finally, he tells the examining health care professional he wants help, and is willing to do "what it takes to get a good night sleep."

Case Study 1 Review

What patient details may be relevant to the possible presence of sleep deprivation?

The following patient details may be relevant to the possible presence of sleep deprivation: the patient reports that he has been struggling with sleep for the past three or four years; the patient explains that his issues with sleep began when he was

laid off from work; the patient explains that he was "very stressed" when he was laid off from work and, "could not sleep through the night;" the patient's issues with sleep continued after he found a new job; the patient reports that he "often wakes up during the night and cannot fall back to sleep right away;" the patient reports he is often tired, exhausted, irritable, and moody throughout the day; the patient reports that he has to consume "five to eight cups of coffee just to make it through the workday;" the patient reports that he has tried "sleep medication" in the past to help him sleep, but is not currently taking any medications; the patient reports he often drinks "four to six beers a night" to help him fall asleep; by the end of the exam the patient begins to get anxious about his lack of sleep and how it is affecting his life; the patient is concerned about "paying bills" and that he is going to lose his current job; the patient tells the examining health care professional he wants help, and is willing to do "what it takes to get a good night sleep."

Are there any other patient details that may be relevant to the possible presence of sleep deprivation; if so, what are they?

How are each of the aforementioned patient details relevant to the possible presence of sleep deprivation?!

Each of the previously highlighted patient details may be potentially relevant to the possible presence of sleep deprivation. The potential relevance of each patient detail may be found below.

The patient reports that he has been struggling with sleep for the past three or four years - the previous patient detail is relevant because it provides insight into how long the patient has been struggling with sleep.

The patient explains that his issues with sleep began when he was laid off from work - the previous patient detail is relevant because it provides context for the patient's potential sleep deprivation.

The patient explains that he was "very stressed" when he was laid off from work, and "could not sleep through the night" - the aforementioned patient detail may be relevant because it points to specific factors that may be causing the potential sleep deprivation (e.g., stress and anxiety). Health care professionals should note that both stress and anxiety may lead to sleep deprivation.

The patient's issues with sleep continued after he found a new job - the aforementioned patient detail may be relevant because it points to a specific factor that may be contributing to the patient's potential sleep deprivation (e.g., ongoing stress/anxiety regarding employment).

The patient reports that he "often wakes up during the night and cannot fall back to sleep right away" - the aforementioned patient detail may be relevant because it points to the presence of a potential sleep disorder (e.g., insomnia). Health care professionals should note that sleep disorders, such as insomnia, may be contributing factors to sleep deprivation.

The patient reports he is often tired, exhausted, irritable, and moody throughout the day - the previous patient detail may be relevant because it indicates potential symptoms of sleep deprivation. Health care professionals should note the following potential symptoms of sleep deprivation: drowsiness, feeling tired or "sleepy" during the day (especially while performing quiet activities, like reading), mood changes (e.g., depressed mood), irritability, inability to concentrate, difficulty learning new concepts, impaired memory, forgetfulness, reduced physical strength, diminished ability to fight off infections, and weight gain.

The patient reports that he has to consume "five to eight cups of coffee just to make it through the workday" - the aforementioned patient detail is relevant because it may indicate the presence of sleep deprivation. Health care professionals should note that, often, individuals suffering from sleep deprivation report that they have to consume caffeinated products (e.g., coffee; energy drinks) to "function" or to "stay awake during the day."

The patient reports that he has tried "sleep medication" in the past to help him sleep, but is not currently taking any medications - the aforementioned patient detail may be relevant because it points to the presence of a potential sleep disorder. Health care professionals should note the following: health care professionals may want to consider conducting a medication reconciliation when a patient reports he or she is currently taking medications or has taken medications in the past; the term medication reconciliation may refer to the process of comparing the medications a patient is taking (and should be taking) with newly ordered medications. Health care professionals should also note the Joint Commission's national patient safety goal and related recommendations regarding medication reconciliations, which may be found below.

Medication Information Goal: Maintain and Communicate Accurate Patient Medication Information

The rationale behind the goal - there is evidence that medication discrepancies can affect patient outcomes. Medication reconciliations are intended to identify and resolve discrepancies. The comparison addresses duplications, omissions, interactions, and the need to continue current medications. The types of information that clinicians use to reconcile medications include (among others)

medication name, dose, frequency, route, and purpose. Organizations should identify the information that needs to be collected to reconcile current and newly ordered medications and to safely prescribe medications in the future.

Related recommendations - to achieve the medication information goal, health care professionals should adhere to the following recommendations.

- Obtain information on the medications the patient is currently taking when he or she is admitted to the hospital or is seen in an outpatient setting. This information is documented in a list or other format that is useful to those who manage medications (note: current medications include those taken at scheduled times and those taken on an as-needed basis; a good faith effort to obtain this information from the patient and/or other sources will be considered as meeting the intent of the goal).
- Define the types of medication information to be collected in non-24-hour settings and different patient circumstances; examples of non-24-hour settings include: the emergency department, primary care, outpatient radiology, ambulatory surgery, and diagnostic settings; examples of medication information that may be collected include: name, dose, route, frequency, and purpose.
- Compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital in order to identify and resolve discrepancies (note: discrepancies include omissions, duplications, contraindications, unclear information, and changes; a qualified individual, identified by the hospital, does the comparison).
- Provide the patient (or family as needed) with written information on the medications the patient should be taking when he or she is discharged from the hospital or at the end of an outpatient encounter (e.g., name, dose, route, frequency, purpose); when the only additional medications prescribed are for a short duration, the medication information the hospital provides may include only those medications.
- Explain the importance of managing medication information to the patient when he or she is discharged from the hospital or at the end of an outpatient encounter (note: examples include: instructing the patient to give a list to his or her primary care physician; to update the information when medications are discontinued, doses are changed, or new medications [including over-the-counter products] are added; carry medication information at all times in the event of emergency situations).

The patient reports he often drinks "four to six beers a night" to help him fall asleep - the aforementioned patient detail is relevant because it may point to the presence of potential substance abuse. Health care professionals should note that substance abuse is often associated with sleep deprivation. Health care professionals should also note the following signs of alcohol and illicit drug use: slurred speech, an active tremor, shakiness, poor coordination, sweating, nausea, vomiting, aggression, agitation, compulsive behavior, craving, red eyes, dry mouth, drowsiness, involuntary eye movements, dilated pupils, nasal congestion, mouth sores, reduced consciousness, lack of pain sensation, intolerance to loud noise, dizziness, confusion, lack of awareness to surroundings, and needle marks.

By the end of the exam, the patient begins to get anxious about his lack of sleep and how it is affecting his life - the previous patient detail is relevant because it may point to the presence of impaired function, which is often associated with sleep deprivation. The previous patient detail may also be relevant because it indicates the patient may be ready to accept sleep deprivation-related treatment.

The patient is concerned about "paying bills" and that he is going to lose his current job - the previous patient detail may be relevant because it provides further evidence that sleep deprivation is negatively affecting the patient's life. The previous patient detail may also be relevant because it supplies further evidence of specific factors that may cause the potential sleep deprivation (e.g., stress and anxiety).

The patient tells the examining health care professional he wants help, and is willing to do "what it takes to get a good night sleep" - the aforementioned patient detail is relevant because it may indicate that the patient is willing to commit to sleep deprivation-related treatment. Health care professionals should note that patient commitment is essential to the success of sleep deprivation prevention and treatment.

What other ways, if any, are the patient details relevant to the possible presence of sleep deprivation?

Is it possible the patient in the above case study is suffering from sleep deprivation?

Based on the information found in Case Study 1, it does appear possible that the patient may be suffering from sleep deprivation.

How can a health care professional potentially gather additional patient information to help confirm the possible presence of sleep deprivation?

How may a health care professional address the patient's sleep deprivation?

Health care professionals can address the patient's sleep deprivation by working to prevent/treat sleep deprivation. Health care professionals should note that there are a variety of strategies that may be used to prevent/treat the patient's sleep deprivation, including the ones found below.

- To prevent further sleep deprivation, health care professionals can provide the patient with sleep hygiene recommendations. Specific sleep hygiene recommendations that may be the most helpful for the patient in Case Study 1 include the following: establish a comfortable sleep environment; limit stress; do not use alcohol as a sleep aid; seek treatment for sleep disorders; avoid caffeine before bedtime; keep a consistent sleep schedule.
- Treatment options for the patient in Case Study 1 may include the following: nutrition, physical activity, relaxation therapy, and medications.

Are there any other prevention/treatment options that may be used to address the patient's sleep deprivation; if so, what are they?

Case Study 2

A 28-year-old woman presents with complaints of frequent fatigue. Upon questioning, the patient reports that she has been experiencing, what she refers to as, "all-around fatigue for the past six months." The patient's physical exam is unremarkable - however, during the exam, the patient begins to tear up and asks if she can "smoke a cigarette." Upon further questioning, the patient discloses that she is having a "hard time sleeping" and that she is feeling "very down, all day, all the time." Upon questioning, the patient reports that she has been having difficulty focusing, concentrating, and making decisions at work. The patient then goes on to say that she simply does not have the "energy, desire, or interest in doing" her job and that she has missed "many days of work" over the past aforementioned time period because she cannot sleep through the night. Most concerning, the patient confides that she feels like there is no end in sight regarding her lack of sleep and she wouldn't care if "something bad" happens to her.

Case Study 2 Review

What patient details may be relevant to the possible presence of sleep deprivation?

The following patient details may be relevant to the possible presence of sleep deprivation: the patient reports frequent fatigue; the patient reports that she has been experiencing, what she refers to as, "all around fatigue for the past six months;" during the patient's exam, the patient begins to tear up; the patient asks if she can

"smoke a cigarette;" the patient discloses that she is having a "hard time sleeping" and that she is feeling "very down, all day, all the time;" the patient reports that she has been having difficulty focusing, concentrating, and making decisions at work; the patient reports that she simply does not have the "energy, desire or interest in doing" her job; the patient reports that she has missed "many days of work" over the past aforementioned time period because she cannot sleep though the night; the patient confides that she feels like there is no end in sight regarding her lack of sleep and she wouldn't care if "something bad" happens to her.

Are there any other patient details that may be relevant to the possible presence of sleep deprivation; if so, what are they?

How are each of the aforementioned patient details relevant to the possible presence of sleep deprivation?

Each of the previously highlighted patient details may be potentially relevant to the possible presence of sleep deprivation. The potential relevance of each patient detail may be found below.

The patient reports frequent fatigue - the previous patient detail is relevant because it may represent a potential sign/symptom of sleep deprivation.

The patient reports that she has been experiencing, what she refers to as, "all-around fatigue for the past six months" - the previous patient detail may be relevant because it provides insight into how long the patient has been struggling with sleep.

During the patient's exam, the patient begins to tear up - the previous patient detail is relevant because it may be a sign of depression. Health care professionals should note that depression is often associated with sleep deprivation.

The patient asks if she can "smoke a cigarette" - the previous patient detail is relevant because it may be an indication that the patient is a smoker. Health care professionals should note the following: nicotine can impact sleep; individuals working to prevent sleep deprivation should consider quitting smoking; health care professionals can help individuals quit smoking by aiding smoking cessation.

The patient discloses that she is having a "hard time sleeping" and that she is feeling "very down, all day, all the time" - the previous patient details are relevant because they may point to the potential presence of both sleep deprivation and depression.

The patient reports that she has been having difficulty focusing, concentrating, and making decisions at work - the previous patient detail is relevant because it may indicate potential signs/symptoms of sleep deprivation. The previous patient detail is

also relevant because it may point to impaired function and possible cognitive impairment, both of which are often associated with sleep deprivation. Health care professionals should note the following information regarding cognitive impairment: sleep deprivation can affect an individual's memory, as well as an individual's ability to concentrate, focus, learn, and reason, all of which can impact cognitive functioning; cognitive impairment can range from mild to severe; mild impairment may affect individuals' cognitive functions - however, they are still able to carry out daily activities; severe levels of impairment can lead to losing the ability to understand the meaning or importance of something and the ability to talk or write, resulting in the inability to carry out daily activities and live independently; signs of cognitive impairment include: memory loss, frequently asking the same question, repeating the same story over and over, unable to recognize familiar people and places, trouble exercising judgment, such as knowing what to do in an emergency, mood changes, vision problems, difficulty planning and carrying out tasks, such as following a recipe or keeping track of monthly bills.

The patient reports that she simply does not have the "energy, desire, or interest in doing" her job - the previous patient detail is relevant because it may indicate a potential sign of sleep deprivation. The previous patient detail may also be relevant because it indicates the possible presence of depression.

The patient reports that she has missed "many days of work" over the past aforementioned time period because she cannot sleep through the night - the aforementioned patient detail is relevant because it may point to the presence of a potential sleep disorder. The previous patient detail is also relevant because it may point to impaired function, which is often associated with sleep deprivation.

The patient confides that she feels like there is no end in sight regarding her lack of sleep and she wouldn't care if "something bad" happens to her - the aforementioned patient detail is relevant and significant because it may indicate the presence of suicidal ideation. Health care professionals should note that patients suffering from sleep deprivation may be suicidal. Health care professionals should make every effort to identify the potential for suicide and prevent patient suicide, when applicable. Health care professionals should also be familiar with the Joint Commission's national patient safety goal and related recommendations regarding patients that may be suicidal. The Joint Commission's national patient safety goal and related recommendations regarding patients that may be suicidal can be found below.

Safety Risk Goal: The Health Care Organization Identifies Safety Risks Inherent in its Patient Population

The rationale behind the goal - the suicide of a patient while in a staffed, round-the-clock care setting is a frequently reported type of sentinel event (the term sentinel event may refer to an unanticipated event in a health care setting that results in death or serious physical or psychological injury to a patient(s), not related to the natural course of the patient's illness). Identification of individuals at risk for suicide while under the care of or following discharge from a health care organization is an important step in protecting these at-risk individuals.

Related recommendations - to help achieve this goal, health care professionals and health care organizations should adhere to the following recommendations.

- Identify patients at risk for suicide.
- Conduct a risk assessment that identifies specific patient characteristics and environmental features that may increase or decrease the risk for suicide.
- Address the patient's immediate safety needs and the most appropriate setting for treatment.
- When a patient at risk for suicide leaves the care of the hospital, provide suicide prevention information (such as a crisis hotline) to the patient and his or her family.

What other ways, if any, are the patient details relevant to the possible presence of sleep deprivation?

Is it possible the patient in the above case study is suffering from sleep deprivation?

Based on the information found in Case Study 2, it does appear possible that the patient may be suffering from sleep deprivation.

How can a health care professional potentially gather additional patient information to help confirm the possible presence of sleep deprivation?

How may a health care professional address the patient's sleep deprivation?

Health care professionals can address the patient's sleep deprivation by working to prevent/treat sleep deprivation. Health care professionals should note that there are a variety of strategies that may be used to prevent/treat the patient's sleep deprivation, including the ones found below.

- To prevent further sleep deprivation, health care professionals can provide the patient with sleep hygiene recommendations. Specific sleep hygiene

recommendations that may be the most helpful for the patient in Case Study 2 include the following: establish a comfortable sleep environment; seek treatment for both physical and mental health conditions; seek treatment for sleep disorders; quit smoking; avoid disruptions before bedtime; develop and maintain a relaxing bedtime routine; stay committed.

- Treatment options for the patient in Case Study 2 may include the following: nutrition, physical activity, psychotherapy, cognitive behavioral therapy, relaxation therapy, and medications. Health care professionals should note the patient may also benefit from smoking cessation.

Are there any other prevention/treatment options that may be used to address the patient's sleep deprivation; if so, what are they?

Case Study 3

A 27-year-old female patient presents to a health care facility. The patient reports that she cannot sleep at night because she feels like she has "bugs crawling" on her. When asked to elaborate on the "bugs crawling" sensation, the patient reports that she goes to bed and after "several minutes" her legs begin to feel like they have "bugs crawling" on them, which keep her awake and make her feel anxious. The patient then goes on to explain that she typically gets out of bed after she feels the aforementioned sensation and often watches "YouTube" on her smartphone or tablet until she feels "tired again." The patient also reports that she is often drowsy and "sleepy" throughout the day, including when she is driving to and from work. Upon questioning the patient reveals that she recently purchased a new bed, which is described by the patient as "kind of uncomfortable." The patient also reveals that her work schedule has recently changed. Further questioning reveals that the patient was on a variety of supplements for "several months," but stopped taking them approximately a week ago. The patient cannot remember the names of all the supplements she was taking. A patient exam reveals that the patient is overweight. During the patient exam, a health care professional observes the patient close her eyes and slouch forward. At the end of the exam, the patient asks the health care professional about the sensations she is experiencing at night and why she cannot sleep.

Case Study 3 Review

What patient details may be relevant to the possible presence of sleep deprivation?

The following patient details may be relevant to the possible presence of sleep deprivation: the patient reports that she cannot sleep at night because she feels like she has "bugs crawling" on her; the patient reports that she goes to bed and after "several minutes" her legs begin to feel like they have "bugs crawling" on them, which keep her awake and make her feel anxious; the patient then goes on to explain that she typically gets out of bed after she feels the aforementioned sensation and often watches "YouTube" on her smartphone or tablet until she feels "tired again;" the patient also reports that she is often drowsy and "sleepy" throughout the day, including when she is driving to and from work; the patient reveals that she recently purchased a new bed, which is described by the patient as "kind of uncomfortable;" the patient also reveals that her work schedule has recently changed; the patient was on a variety of supplements for "several months," but stopped taking them approximately a week ago; the patient is overweight; during the patient exam, a health care professional observes the patient close her eyes and slouch forward; at the end of the exam, the patient asks the health care professional about the sensations she is experiencing at night and why she cannot sleep.

Are there any other patient details that may be relevant to the possible presence of sleep deprivation; if so, what are they?

How are each of the aforementioned patient details relevant to the possible presence of sleep deprivation?

Each of the previously highlighted patient details may be potentially relevant to the possible presence of sleep deprivation. The potential relevance of each patient detail may be found below.

The patient reports that she cannot sleep at night because she feels like she has "bugs crawling" on her - the previous patient detail may be relevant because it points to the possible presence of sleep deprivation as well as a sleep disorder (e.g., RLS). Health care professionals should note the following information regarding RLS: restless leg syndrome (RLS) may refer to a sleep disorder characterized by an overwhelming urge to move the legs when they are at rest; the overwhelming urge to move the legs, associated with RLS, may be different for each individual; in other words, the overwhelming urge to move the legs may be related to a different type of feeling; for example, the overwhelming urge to move the legs may be related to a feeling of bugs crawling on the legs or a sensation of liquid running through the legs.

The patient reports that she goes to bed and after "several minutes" her legs begin to feel like they have "bugs crawling" on them, which keep her awake and make her feel anxious - the previous patient detail may be relevant because it supports the presence of RLS.

The patient then goes on to explain that she typically gets out of bed after she feels the aforementioned sensation and often watches "YouTube" on her smartphone or tablet until she feels "tired again" - the previous patient detail may be relevant because it supports the presence of sleep deprivation as well as RLS. The previous patient detail may also be relevant because it points to an activity/factor that may be contributing to the patient's potential sleep deprivation (e.g., the use of electronic devices before bedtime). Health care professionals should note the related sleep hygiene recommendation found below.

- Avoid the use of electronic devices before bedtime - this recommendation may seem like an impossibility in the current cultural climate - however, individuals working to prevent sleep deprivation should avoid the use of electronic devices before bedtime. Electronic devices, such as tablets, smartphones, and laptops, emit short-wavelength, artificial blue light, which can affect the release of melatonin, and, ultimately, impact sleep. Melatonin refers to a hormone that regulates the sleep-wake cycle. Health care professionals should note the following: individuals working to prevent sleep deprivation should stop using electronic devices at least 30 - 60 minutes before bedtime. Health care professionals should also note the following: health care professionals may consider recommending pre-bed activities that may replace the use of electronic devices such as reading a book and/or meditation.

The patient also reports that she is often drowsy and "sleepy" throughout the day, including when she is driving to and from work - the previous patient detail may be relevant because it may represent potential signs/symptoms of sleep deprivation. The previous patient detail may also be relevant because it indicates that the patient may be drowsy driving. Health care professionals should note that the term drowsy driving may refer to the act of operating a motor vehicle while fatigued, exhausted, and/or struggling to stay awake. Health care professionals should also note that drowsy driving is a safety hazard.

The patient reveals that she recently purchased a new bed, which is described by the patient as "kind of uncomfortable" - the aforementioned patient detail may be relevant because it points to a specific factor that may be contributing to the patient's potential sleep deprivation (e.g., an uncomfortable sleep environment). Health care professionals should note the following information regarding an uncomfortable sleep environment: one of the most obvious factors that may contribute to sleep deprivation is an uncomfortable sleep environment; consistent sleep in an uncomfortable sleep environment (e.g., a room that is too hot or too cold) can cause sleep disruptions, which in turn may lead to sleep deprivation over time;

sleep-related accouterments (e.g., beds, pillows, and sheets) may be considered to be part of a sleep environment and may also contribute to sleep deprivation.

The patient also reveals that her work schedule has recently changed - the aforementioned patient detail may be relevant because it points to another factor that may be contributing to the patient's potential sleep deprivation (e.g., a new work schedule).

The patient was on a variety of supplements for "several months," but stopped taking them approximately a week ago - the aforementioned patient detail may be relevant because it points to another factor that may be contributing to the patient's potential sleep deprivation (e.g., supplements). Health care professionals should note the following: the use of specific supplements may also lead to sleep deprivation.

A patient exam reveals that the patient is overweight - the aforementioned patient detail may be relevant because weight gain and obesity are often associated with sleep deprivation.

During the patient exam, a health care professional observes the patient close her eyes and slouch forward - the aforementioned patient detail may be relevant because it points to the presence of sleep deprivation. Health care professionals should note the following: individuals potentially suffering from sleep deprivation may present in a variety of different states; they may appear tired, exhausted, sleepy, worn out, or even disheveled; additionally, individuals suffering from sleep deprivation may appear as if they are having trouble concentrating, focusing, remembering important information, following a conversation, or staying awake; individuals suffering from sleep deprivation may exhibit behaviors that may seem odd or inconsistent with other patient populations (e.g., closing their eyes while talking in a manner consistent with falling asleep); individuals potentially suffering from sleep deprivation may display body language indicating they are tired and/or exhausted (e.g., moving slowly, head tilting down or to one side, and/or slouching). Health care professionals should also note the following: patient observation can be essential to identifying individuals suffering from sleep deprivation; health care professionals should observe patients' signs and symptoms as well as patients' body language and overall appearance to help effectively identify an individual suffering from sleep deprivation; information regarding sleep deprivations should be effectively documented; in order for health care documentation to be considered effective, it must function as a viable form of communication, as well as a means to establish a detailed record of health care administration.

At the end of the exam, the patient asks health care professionals about the sensations she is experiencing at night and why she cannot sleep - the aforementioned

patient detail is relevant because it may indicate that the patient is interested in learning about her current health status. Health care professionals should note the following: health care professionals should address any questions and/or concerns patients may have regarding their health and/or health care.

What other ways, if any, are the patient details relevant to the possible presence of sleep deprivation?

Is it possible the patient in the above case study is suffering from sleep deprivation?

Based on the information found in Case Study 3, it does appear possible that the patient may be suffering from sleep deprivation.

How can a health care professional potentially gather additional patient information to help confirm the possible presence of sleep deprivation?

How may a health care professional address the patient's sleep deprivation?

Health care professionals can address the patient's sleep deprivation by working to prevent/treat sleep deprivation. Health care professionals should note that there are a variety of strategies that may be used to prevent/treat the patient's sleep deprivation, including the ones found below.

- To prevent further sleep deprivation, health care professionals can provide the patient with sleep hygiene recommendations. Specific sleep hygiene recommendations that may be the most helpful for the patient in Case Study 3 include the following: establish a comfortable sleep environment; limit the amount of light in a sleep environment; limit circadian rhythm disturbances; seek treatment for sleep disorders; be aware of supplements that can affect sleep; avoid large meals before bedtime; avoid fried food before bedtime; maintain a healthy weight; avoid the use of electronic devices before bedtime; remove clocks and/or smartphones from sight when attempting to fall asleep and stay asleep; turn off smartphones before bedtime; keep a consistent sleep schedule; develop and maintain a relaxing bedtime routine; stay committed.
- Treatment options for the patient in Case Study 3 may include the following: nutrition, physical activity, relaxation therapy, and medications. Health care professionals should note the patient may benefit from medications indicated for the treatment of RLS.

Are there any other prevention/treatment options that may be used to address the patient's sleep deprivation; if so, what are they?

Section 4: Summary

Health care professionals should work to identify those individuals who may be suffering from sleep deprivation. When attempting to identify individuals suffering from sleep deprivation, health care professionals should differentiate patient details that may be relevant to the possible presence of sleep deprivation, observe patients and patient symptoms, ask relevant questions, work to recognize the presence of conditions/complications typically associated with sleep deprivation, effectively document patient information, and address any questions and/or concerns patients may have. Health care professionals should note that, often, one of the main goals of identifying individuals suffering from sleep deprivation is to facilitate the administration of safe and effective health care.

Section 4: Key Concepts

- Health care professionals should work to identify those individuals who may be suffering from sleep deprivation.
- When attempting to identify individuals suffering from sleep deprivation, health care professionals should differentiate patient details that may be relevant to the possible presence of sleep deprivation, observe patients and patient symptoms, ask relevant questions, work to recognize the presence of conditions/complications typically associated with sleep deprivation, effectively document patient information, and address any questions and/or concerns patients may have.
- One of the main goals of identifying individuals suffering from sleep deprivation is to facilitate the administration of safe and effective health care.

Section 4: Key Terms

Medication reconciliation - the process of comparing the medications a patient is taking (and should be taking) with newly ordered medications

Sentinel event - an unanticipated event in a health care setting that results in death or serious physical or psychological injury to a patient(s), not related to the natural course of the patient's illness

Section 4: Personal Reflection Question

Why is it important for health care professionals to recognize relevant patient details when attempting to identify individuals potentially suffering from sleep deprivation?

Conclusion

Sleep deprivation may refer to a lack of sufficient sleep. The potential symptoms of sleep deprivation include: drowsiness, feeling tired or "sleepy" during the day (especially while performing quiet activities, like reading), mood changes (e.g., depressed mood), irritability, an inability to concentrate, difficulty learning new concepts, impaired memory, forgetfulness, reduced physical strength, diminished ability to fight off infections, and weight gain.

Sleep deprivation can be detrimental to overall health and well-being, and it has been associated with the following complications: impaired function, cognitive impairment, psychosis, obesity, hypertension, cardiovascular disease, diabetes, depression and anxiety, substance abuse, and ineffective breastfeeding. Thus, health care professionals should work to prevent and treat sleep deprivation in applicable patient populations. Health care professionals can work to prevent sleep deprivation by providing patients with counseling centered around sleep hygiene.

In addition to prevention, it is also important for health care professionals to possess insight into sleep deprivation-related treatment options. Sleep deprivation-related treatment may include both non-pharmacological and pharmacological options. Health care professionals should note that, often, the non-pharmacological and pharmacological treatment options used to address and manage sleep deprivation focus on the underlying causes of sleep deprivation, such as sleep disorders. Non-pharmacological sleep deprivation-related treatment options may include: nutrition, physical activity, psychotherapy, cognitive behavioral therapy, stimulus control therapy, relaxation therapy, and CPAP devices. Pharmacological sleep deprivation-related treatment options may include the following medications: Ambien, Lunesta, Rozerem, Sonata, Restoril, Ativan, Xanax, Valium, Requip, Mirapex, trazodone, and mirtazapine.

Finally, health care professionals should work to identify those individuals who may be suffering from sleep deprivation in order to facilitate the administration of safe and effective health care.

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