

# Cognitive Behavioral Therapy for Insomnia in Veterans

## Therapist Manual



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# Preface

The Department of Veterans Affairs (VA) is working to nationally disseminate Cognitive Behavioral Therapy for insomnia, CBT-I, as part of a major initiative to implement more than 15 evidence-based psychotherapies for various mental and behavioral health conditions throughout the Veterans Health Administration (Karlin & Cross, 2014). As a key component of these dissemination efforts, VA has developed national staff training programs in CBT-I and other evidence-based psychotherapies. The overall goal of the VA CBT-I Training Program is to provide competency-based training to VA mental health clinicians that includes experientially-based workshop training followed by ongoing consultation with an expert in CBT-I. The focus of the VA CBT-I Training Program is on the theory and application of CBT-I using the protocol described in this manual, adapted specifically for Veterans. Program evaluation results associated with the CBT-I, and other VA evidence-based psychotherapy training programs, have shown that training and implementation of these therapies have led to significant increases in therapist competencies and generally large overall improvements among patients (e.g., Eftekhari, Ruzek, Crowley, Rosen, Greenbaum, & Karlin, 2013; Karlin, Brown, Trockel, Cunnig, Zeiss, & Taylor, 2012; Karlin, Trockel, Taylor, Gimeno, & Manber, 2013; Trockel, Karlin, Taylor, & Manber, 2014; Walser, Karlin, Trockel, Mazina, & Taylor, 2013).

This manual is designed to serve as a training resource for therapists completing the VA CBT-I Training Program as well as for others, inside and outside of VHA, who are interested in further developing their CBT-I skills. The manual and therapy protocol are intended for mental health providers who do not necessarily have specific background or specialization in sleep medicine. This protocol places emphasis on case conceptualization, as in other CBT protocols being implemented in VHA (e.g., Wenzel, Brown, & Karlin, 2011). The conceptualization guides the direction of this individualized therapy as it takes place within the context of a collaborative and supportive therapeutic relationship.

The hope is that this manual is useful to both seasoned and new CBT-I therapists working with Veterans. Included in the Appendix of this manual are therapy forms and other helpful tools for implementing CBT-I. The writers of this manual wish readers the best in their pursuits to help Veterans improve sleep and, consequently, improve overall quality of life.

# Introduction

*Cognitive-Behavioral Therapy for Insomnia (CBT-I)* is a multi-component treatment that addresses patients' cognitions and behaviors that interfere with sleep. Lack of knowledge of the biological and psychological underpinnings of the sleep process prompts many patients to hold beliefs and engage in behaviors that, despite their face validity, negatively impact their sleep. Thus, an important component of CBT-I is education regarding the biological and psychological processes that regulate sleep. Patients who understand how sleep regulation relates to their unique experiences are better prepared to understand why their therapist recommends certain changes to their habitual sleep-related behaviors and cognitions, and are more likely to adhere to and benefit from treatment.

## Rationale for CBT-I

Arthur Spielman's conceptual model of primary insomnia (Spielman, Caruso, & Glovinsky, 1987), depicted in Figure 1, identifies *predisposing factors*, *precipitating events*, and *perpetuating mechanisms* that contribute to the development and maintenance of chronic insomnia. According to this model, some individuals may be particularly vulnerable – *predisposed* – to sleep problems by virtue of having a “highly sensitive” or “malfunctioning” biological sleep system or a hyperactive arousal system that interferes with sleep. In individuals with a *predisposition* for insomnia disruptive circumstances, such as stressful life events, often *precipitate* sleep difficulties. In individuals who are not predisposed to insomnia, stress-induced sleep problems are usually transient and resolve when the original distress subsides. However, according to this model, some people become overly focused on their sleep problems. This focus tends to *perpetuate* their sleep difficulties because it can produce heightened anxiety about sleep and the development of maladaptive strategies and practices that, although intended to improve sleep, actually worsen it.

Maladaptive strategies include *avoidance behaviors* during waking hours. Avoidance behaviors may include cancelling planned activities, either because of feeling too tired or due to fear that such activities will interfere with sleep, spending excessive time in bed and developing rigid sleep-related rituals. These behaviors are manifestations of increased *sleep effort*. Simply stated, the individual is *trying too hard* to sleep. In response to poor sleep, people also develop *sleep-interfering cognitions*, such as overestimating and worrying about the negative consequences of poor sleep and approaching bedtime with fear of failure.

Behavioral and cognitive responses to sleep problems, and some of the practices people adopt for coping with them, create a vicious cycle by prolonging or exacerbating the very problems they are trying to solve. The cognitive-behavioral approach to insomnia aims to alter behaviors that sustain or add to sleep problems and correct cognitions that drive these behaviors.

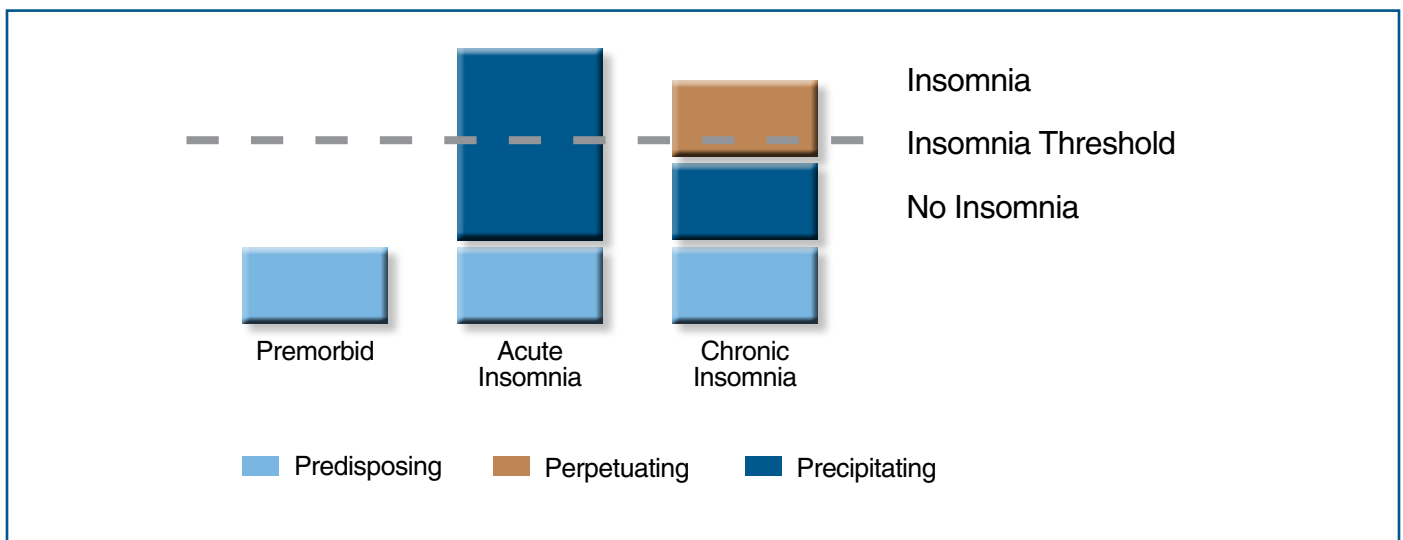


Figure 1. Spielman's Model of Insomnia

The *behavioral components* of CBT-I include two well-developed and empirically supported treatments, *Stimulus Control* (Bootzin, Epstein, & Wood, 1991) and *Sleep Restriction Therapy* (Spielman, Saskin, & Thorpy, 1987). Stimulus Control (SC) works through the extinction of a *Conditioned Arousal* found in most insomnia cases. Conditioned Arousal emerges when patients' beds and bedrooms have become associated with wakefulness and an inability to let go, relax and fall asleep. Sleep Restriction Therapy (SRT) works by initially reducing the amount of time the individual spends in bed in order to build up pressure for sleep. In most cases, increased pressure for sleep leads to the reduction of unwanted wakefulness at the beginning, middle or end of the night. When unwanted wakefulness is sufficiently decreased, the amount of time spent in bed is gradually increased until optimal sleep is attained.

The *cognitive component* of CBT-I is based on the theory that a person's beliefs and the manner in which he thinks about, perceives, interprets, or assigns judgment to particular situations in his life affects his emotional experiences. Two people can be faced with similar situations, but because they think about those situations in different ways, they have very different reactions to them. For example, on the morning following a night of poor sleep Jack may be thinking, "If I do not get 8 hours of sleep, my day is ruined," while Jill may be thinking, "I have functioned on 6 hours of sleep before and did OK." As a result, Jack is likely to experience greater anxiety about his sleep than Jill. Figure 2 depicts the interplay between behaviors and cognitions and sleep-related anxiety.

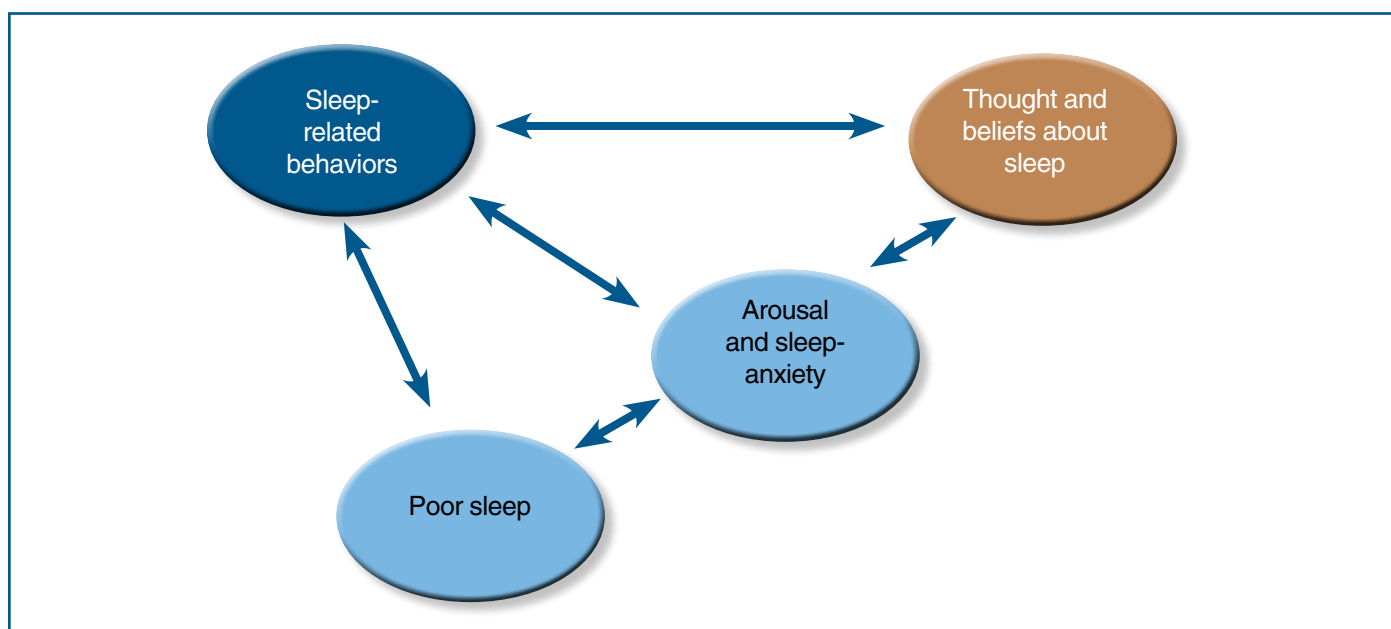


Figure 2. Behaviors, Cognitions Arousal, and Poor Sleep

A third component of CBT-I aims to reduce *physiological hyperarousal*, defined as high activity in the sympathetic nervous system, and *cognitive hyperarousal*. Training in relaxation techniques, implementing a *scheduled worry time*, creating a time to unwind before sleep, and employing cognitive therapy strategies address physiological and cognitive hyperarousal (see Chapter 3, Sections B and D).

### Evidence for Efficacy of CBT-I

CBT-I is an empirically validated brief psychotherapy, with effects that endure long after treatment is discontinued (Edinger, Wohlgemuth, Radtke, Marsh, & Quillian, 2001; Morin, Colecchi, Stone, & Sood, 1999; Sivertsen, Omvik, Pallesen, Bjorvatn, Havik, Kvale, Nielsen, & Nordhus, 2006). The weight of evidence supporting CBT-I led to its recognition as a first-line treatment for insomnia by the National Institutes of Health Consensus Statement ("National Institutes of Health State of the Science Conference statement on Manifestations and Management of Chronic Insomnia in Adults, June 13-15, 2005," 2005) and the British Association of Psychopharmacology (Wilson, Nutt, Alford, Argyropoulos, Baldwin, Bateson, Britton, Crowe, Dijk, Espie, Gringras, Hajak, Idzikowski, Krystal, Nash, Selsick, Sharpley, & Wade). Most of the research on the efficacy of CBT-I has been conducted on samples of patients with primary insomnia, in the absence of comorbidities. This is unfortunate

because sleep problems are very common among patients with psychiatric comorbidities and they often do not resolve with general psychotherapy (Kopta, Howard, Lowry, & Beutler, 1994). Researchers have therefore begun turning their attention to the efficacy of CBT-I among patients with comorbidities. Emerging data suggest that CBT-I is, indeed, effective among patients with psychiatric and medical comorbidities common among Veterans. This literature has been summarized by Smith, Huang and Manber (Smith, Huang, & Manber, 2005).

## Safety

CBT-I is a safe treatment, overall. However, some aspects of treatment may need to be avoided or cautiously applied when treating patients who have unstable medical, sleep or psychiatric illnesses, particularly those associated with high levels of daytime *sleepiness*. In addition, note that it may be difficult to implement CBT-I in certain institutional settings, such as drug or alcohol rehabilitation programs, where patients do not have much control over their sleep-wake schedules and sleep environment.

## Dosing and Modality

As mentioned above, CBT-I is generally a brief therapy. Edinger and colleagues (Edinger, Wohlgemuth, Radtke, Coffman, & Carney, 2007) have concluded that four sessions are optimal for patients with primary insomnia. Behavioral sleep medicine clinicians, however, generally agree that patients who present with comorbid conditions and those who have been taking hypnotic medications for a long time may require additional sessions. At the time of this writing there have been no dose-response studies of CBT-I in non-primary insomnia. The training described here adopts a six-session model, with the understanding that some patients will improve sooner and some may require longer follow-up.

Both individual and group CBT-I are effective. The focus of the protocol described in this manual is on the application of CBT-I as an *individual*-psychotherapy. CBT-I is more difficult to conduct in groups because the therapist needs to conceptualize and individualize the treatment for each member of the group. Delivering CBT-I in groups requires adequate experience with individual CBT-I and additional training in group application.

## Outline of this Manual

This is unlike treatment manuals used in research that are required to be highly structured and often scripted. The aim of this manual is to provide the principles and skills that will help meet the challenges of treating Veterans who often require a flexible approach that still maintains high fidelity to the established CBT-I model that has been shown to be effective. Each chapter in this manual builds on knowledge gained in previous chapters. The first chapter of this manual presents education about sleep stages, sleep regulation, the impact of substances, exercise, and aging on sleep, and information about common comorbid sleep disorders. Chapter 2 provides a detailed outline for assessing a Veteran's sleep problem and for case conceptualization. A comprehensive sleep assessment is the focus of the first CBT-I session. This will provide the information needed for treatment planning. The assessment and the case conceptualization are anchored in knowledge about the structure of sleep and its regulation (see Chapter 1 Section A). This is the reason for presenting basic sleep information before the assessment material. Chapter 3 describes each treatment component, including examples of scripts for presenting the intervention, tips for dealing with adherence issues, and suggestions for situations when alterations to the components should be made. Chapter 4 includes guidelines for the practical implementation of CBT-I components and general recommendations for sequencing the components in a six-session protocol to facilitate tailoring of treatment to the unique needs of each patient. The final chapter includes information pertinent to the application of CBT-I to patients with comorbidities commonly found among Veterans. Chapter 5 focuses on the unique implementation and adherence issues for Veterans with depression, PTSD, chronic pain, and consumers of hypnotic medications.

In providing CBT-I, it is important that the therapy remains focused on the patient's insomnia. Discussion of issues that are not relevant to the insomnia therapy is discouraged. However, because insomnia complaints may emerge in the context of treating another condition, Chapter 4 addresses how to integrate CBT-I into ongoing treatments of other conditions. It is important that clinicians are proficient in providing focused CBT-I treatment before integrating the therapy into ongoing treatments of other conditions.

For simplicity the masculine pronoun is used throughout this manual. This is merely a stylistic decision. CBT-I has just as much utility, and is as effective, for females as it is for males. This is important to note given the fact that an increasing number of Veterans are female and that in the population-at-large the prevalence of insomnia is twice as high in women as in men.

This manual is designed to be a complete resource to clinicians delivering CBT-I to Veterans. An Appendix and references are provided including: (a) assessment measures incorporated into the protocol, (b) patient handouts and worksheets, (c) therapist tools for conducting assessment, monitoring progress, and planning and delivering treatment, (d) sleep education illustrative materials, and (e) case vignettes.

## Complementary Training Materials

Readers interested in additional information related to CBT-I may refer to the following recommended resources, the authors of which participated in developing this training manual:

1. Carney, C. & Manber, R. (2009). *Quiet Your Mind & Get to Sleep: Solutions for Insomnia in Those with Depression, Anxiety, or Chronic Pain*. New Harbinger Publications.
2. Edginer, J. & Carney, C. (2008). *“Overcoming Insomnia: A Cognitive-Behavioral Therapy Approach Therapist Guide.”* Oxford University Press. This book includes additional information about sleep and sleep disorders.

## Further Reading

Readers interested in additional information related to cognitive therapy techniques may refer to the recommended resources below:

1. Beck, J. & Beck, A. (2011). *Cognitive Therapy: Basics and Beyond (2nd Edition)*. Guilford Press.
2. Wenzel, A. E., Brown, G. K., and Karlin, B. E., (2011). *Cognitive Behavioral Therapy for Depression in Veterans and Military Servicemembers: Therapist Manual*. U.S. Departments of Veterans Affairs.

## Cases

The following five descriptions of fictitious cases are referred to throughout this manual to illustrate clinical techniques, case conceptualization and adherence issues. Sleep diaries for each case appear in Appendix A.

### Chris

Chris is a 45-year-old married African-American male who served in Operation Desert Storm. He was in the military for 8 years. While deployed in the Middle East he managed transport of food and medical supplies to units throughout the region. He notes that during deployment he was working “crazy shifts” resulting in irregular sleep whereby his nights and days were sometimes reversed. He has not slept well since he was discharged.

He now goes to bed between 10 and 11 p.m., when his wife goes to bed, but he seldom is able to fall asleep before 1 a.m. He would like to get up and start his day at 7 a.m., but he usually gets up between 7:30 and 7:45 a.m. on weekdays and 9 a.m. on weekends. He also awakens two or three times during the night and has trouble falling back asleep. Chris believes his poor sleep affects his work performance and he is “sick of it.” His goal is to sleep better so that he can be at work on time, and be more engaged with his family, and more productive at work.

### Mike

Mike is a 68-year-old retired Air Force mechanic. He was stationed in South Vietnam during the Vietnam War but was never engaged in combat. He had some sleep difficulty “off and on” after his discharge. Mike takes pramipexole for restless legs syndrome and ibuprofen as needed for arthritis. He does not want to take an antidepressant medication because he would like to “stay off medications”. He says his wife is concerned about his poor sleep and does not want him to drive. She drives him to all of his appointments. Mike goes to bed with his wife between 7:30 and 8 p.m. He has no problem falling asleep but wakes up three to four times a night for 20 to 40 minutes each time. His last awakening is around 4 a.m., but he stays in bed until 4:30 a.m. He reports that when he is up at night he is worrying about his wife, recently diagnosed with cancer; his grandson, soon to be deployed; his poor sleep; and how tired he will be the next day. He often dozes in the afternoon and evening when he watches TV. He would like to stay asleep through the night, “like everyone else.”

## Carlos

Carlos is a 37-year-old Hispanic male who served in the Army. He was deployed to Iraq as part of the Gulf War. He did not suffer any injuries during deployment. He began having difficulty sleeping as a teenager. At that time he began having trouble falling asleep at night. In the mornings he had considerable difficulty waking up to get to school and was frequently late. On the weekends he tended to stay up late at night and sleep in late during the day. He has continued to have sleep problems since then. During his time in the Army, he had a tough time with the early wake-up time. Carlos has tried several sleeping medications in the past, but they were not effective.

## Donna

Donna is a 33-year-old Caucasian female who served 2 years as an Army nurse. She was referred for insomnia treatment by her provider at the Women's Clinic. Donna currently works as a telephone dispatcher in a shipping company. She has been married to her husband for 8 years and does not have children. Donna reports having insomnia "her whole life." Her insomnia worsened after she was discharged, following a "nervous breakdown". An overnight sleep study ruled out sleep apnea. She was prescribed zolpidem for her insomnia, which she took for one night but "slept worse." As a result, she is not interested in taking any sleep medications.

She spends the evenings in her bedroom. Donna gets into bed between 8 and 9 p.m. and watches TV until she falls asleep, usually around 10 or 11 p.m. She gets up at 6 a.m. on workdays and tries to sleep in later on weekends. She has trouble falling asleep and wakes up early in the morning. She reports being fatigued during the day and believes her insomnia impacts her work and home life. She is also worried about the health consequences of poor sleep. Her goals are to sleep more and feel better during the day.

## Pete

Pete is a 28-year-old African American male who served in the Army and deployed two times as part of Operation Iraqi Freedom from 2002 to 2006. During his second deployment, he served in a route clearance platoon and spent much of his time clearing fields of IEDs. Approximately 10 months into his second tour, an uncontrolled explosion by an IED killed his close friend, severely maimed another friend, and threw him across the field, knocking him unconscious. Pete said that his sleep has been poor ever since the explosion.

Pete goes to bed between 1 and 2 a.m. and gets out of bed between 7 and 10 a.m. He has trouble falling asleep and awakens repeatedly throughout the night and during the early morning, often from nightmares. When he awakens during the night, he gets up to check the doors and windows and then has considerable difficulty getting back to sleep. His goal is to sleep better so he can "cope with life better."

## Rosa

Rosa is a 28-year-old Hispanic female Veteran of the Iraq War who was referred for CBT-I by her therapist because of trouble falling and staying asleep. Rosa was recently discharged from the military and is living with her parents because she cannot afford to live on her own. She has been socially isolated since being home and spends a lot of time in her room during the day and evening to stay out of her parents' way. She is in therapy for depression and takes 20 mg escitalopram each morning.

Rosa reports going to bed between 9 and 10 p.m. It takes her 2-to-3 hours to fall asleep and she is up 2-to-3 times in the middle of the night, for a total of 1-to-2.5 hours. She is in bed, on average 11 hours, and sleeps, on average 7 hours. She reports ruminating at night about feeling she is a burden to her parents, her limited resources, and the recent breakup from her boyfriend. She stated, "she just wants to sleep well like she used to."

# Chapter 1:

## Sleep Education and Overview of Insomnia

This chapter covers basic information about the sleep process (Section A), substances and medications that impact sleep (Section B), the impact of exercise and diet on sleep (Section C), sleep and aging (Section D), comorbid sleep disorders most relevant to the treatment of insomnia in Veterans (Section E), and an overview of insomnia (Section F). Recommendations about substances, exercise, diet, and naps are commonly referred to as sleep hygiene practices. However, this term is not used in this manual. Instead, the scientific rationale for each of these recommendations is explained, and considered integral to sleep education. Some of the text below can be used as a script to educate patients about sleep regulation and the impact of substances, exercise and diet on sleep. These scripts are not intended to be used verbatim. In fact, it is better to tailor explanations to each patient.

### A. Basic Information about Sleep

Based on clinical experience, it is anticipated that much of the material included in this section will be new to some readers, and to most insomnia patients. This material provides the scientific foundation for CBT-I. Understanding this foundation will likely enhance patients' expectations for improvement, their adherence to treatment guidelines, and their trust in the therapist. An exacerbation of sleep problems is often due to limited understanding of the sleep process. This section covers the following: (a) Why We Sleep, (b) Sleep Stages, and (c) Sleep Regulation. Elements can be selected from this information to: (a) assist in providing rationale for the behavioral components of the treatment, (b) help dispel myths and erroneous beliefs that may have a negative impact on sleep-related behavior, and (c) answer patients' questions about their sleep and their treatment. These sections are written in simple non-technical language, to permit borrowing from this text when explaining basic information about sleep to the patient. Additionally, examples are provided to illustrate how education about sleep can be tailored to the patient. Chapter 3 presents examples of scripts for providing a CBT-I treatment rationale that incorporates much of the information below.

**A1. Why we sleep.** Sleep, like oxygen, food and water, is one of our basic daily needs. Sleep scientists have yet to agree on the fundamental biological purpose of sleep. Some sleep experts believe that during sleep the human body restores and repairs cells and tissues that are damaged or destroyed while we are awake. Other experts think that sleep is necessary to maintain a constant body temperature. Still, others believe that sleep is essential to the maintenance of normal human metabolism. Regardless of these different opinions, sleep experts generally agree that to function best we all require consistent, good quality sleep. What is the right amount of sleep? The answer varies from person to person. Moreover, the sleep need of each person may vary depending upon life circumstances.

**A2. Sleep stages.** Although science still has much to learn about the biological purpose of sleep, a great deal is already known about the human sleep process. Many research studies have shown that sleep is an active process made-up-of two distinct states (Rapid Eye Movement, or *REM sleep*, and *non-REM sleep*). Non-REM sleep, occupies about 75 to 80% of the night's sleep of a "typical" young, healthy adult. The rest of the night's sleep is REM sleep. Non-REM sleep consists of several stages, marked by their special brain-body activity patterns.

Brain activity patterns can be studied objectively using polysomnography (PSG), which involves attachment of electrodes to an individual's scalp and face. The electrodes record brain signals throughout the night. The component of PSG that identifies brain wave activity is the electroencephalograph (EEG). A brief consideration of the stages of sleep and how they are distributed across the night will increase therapists' understanding of the normal sleep process. It will also help therapists when conducting a sleep assessment because some unusual sleep behaviors are best understood in the context of the sleep stage from which they are likely to emerge.

Non-REM sleep consists of three distinct sleep stages, N1, N2 and N3, that differ in their characteristic brain-wave activity patterns, as well as in people's perception of the depth of their sleep, and in how much effort it takes to wake a person up from a given sleep stage. People experience stage N1 sleep as very light sleep, and by itself, not particularly refreshing. In fact, when awakened from N1 sleep, many individuals do not think they have been asleep. Nonetheless, stage N1 appears to be an essential part of normal sleep, and seems to work as a "path", or bridge, from wakefulness to the deeper more satisfying sleep stages.



In young adults not suffering from insomnia it occupies about 5% of the night's sleep. People with insomnia and older adults, however, spend more of their night's sleep in stage N1. Stage N2 is a deeper stage of sleep than N1, as evidenced by the fact that it is harder to wake a person from this stage than from N1 sleep. Also, research shows that most good sleepers, if awakened after spending several minutes in stage N2 sleep, report that they have been asleep. Stage N2 occupies about 40 to 55% of the night's sleep in a young adult. Stage N3 is also called slow-wave sleep, or delta sleep, because the brain activity during this stage is characterized by slow distinctive waves called Delta waves. Slow-wave sleep is perceived to be the deepest sleep; it takes more stimulation to wake a person from this type of sleep than it does from any other sleep stage. This stage occupies about 10 to 20% of night's sleep of young, healthy adults. It is thought to be the sleep stage associated with the body's restorative or rebuilding processes. Indeed, people tend to have more stage N3 sleep on nights following prolonged wakefulness.

### Clinical Essence:

- Some wakefulness is normal.
- The progression from stages N1 to N2 to N3 is characterized by increased sleep depth. Greater sleep depth means higher arousal threshold and greater likelihood of being aware of being asleep if awakened.
- The amount of slow-wave sleep (N3) increases following sleep deprivation.

REM sleep is when most dreaming occurs. During REM sleep bursts of rapid eye movements can be observed. These eye movements are usually associated with dreaming. In addition, heart and breathing rates become less regular and there is increased blood flow to the brain. Interestingly, brain wave activities during REM sleep are very similar to those seen during wakefulness, as displayed in the last row of Figure 3. However, during REM sleep the body's skeletal muscles are in a state of relative paralysis. This paralysis prevents the individual from "acting out" the dreams that occur during this stage of sleep. To summarize, sleep is divided into *two general states*: Non-REM and REM sleep. Non-REM sleep is divided into *three stages* going from the lightest, stage N1, to the deepest, stage N3.

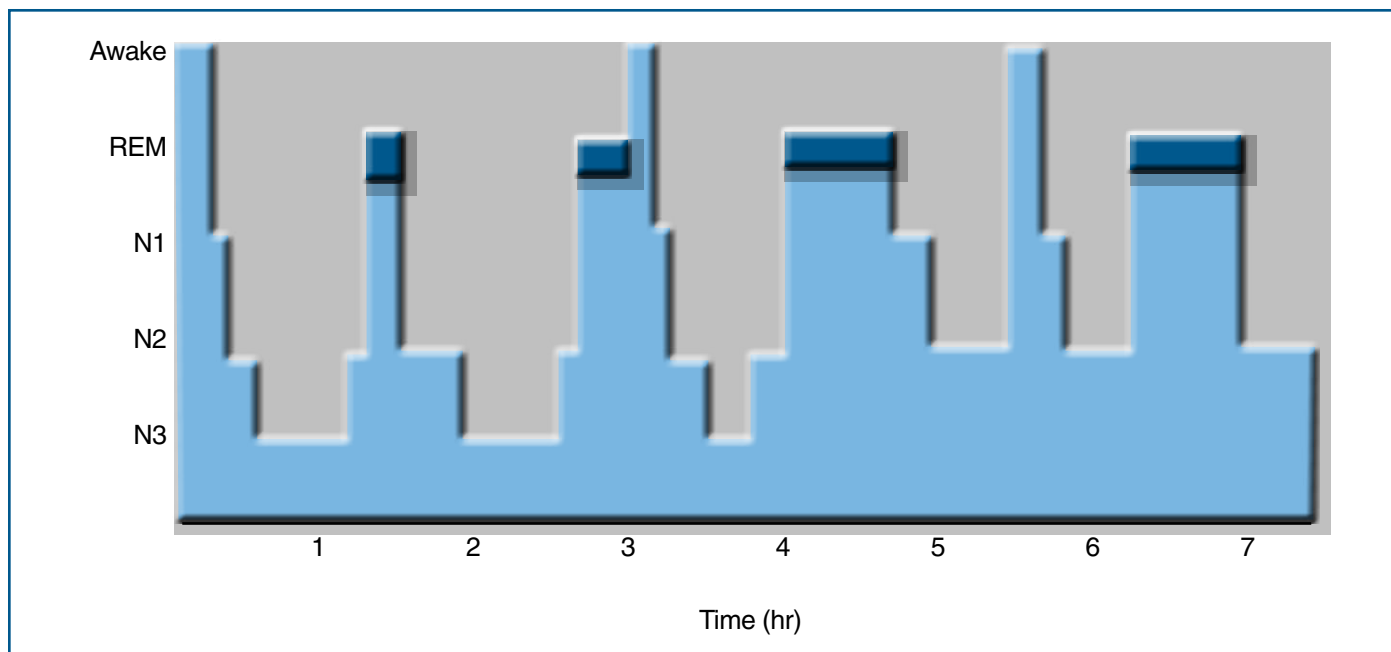


Figure 3. Distribution of Sleep Stages Across the Night: Healthy Young Adult

During a typical night of sleep, the Non-REM and REM stages of sleep occur in consistent and predictable cycles. When good sleepers go to sleep at night they usually experience a period of relaxed wakefulness. The length of this period varies from one person to the next, but it is typically less than 30 minutes. As shown in Figure 3, once asleep, the sleeper passes through a brief period of stage N1 sleep followed by a longer period of stage N2 sleep. About 30 to 45 minutes into the night stage N3

(slow-wave or delta sleep) emerges, and lasts from a few minutes to an hour depending, among other things, upon the individual's age. It may be followed by a brief return of stage N2. About 70 to 90 minutes into the night the first REM sleep occurs (REM sleep is represented by the thick black bars in Figure 3). Usually this first REM period is relatively short and is followed by a return of stage N2 sleep.

The time from sleep onset to the end of the first REM period constitutes the first *sleep cycle*. During the second sleep cycle some stage N3 sleep may return, but generally for a shorter time than during the first sleep cycle. About 3 hours into the night, a second, longer REM period occurs and concludes the second sleep cycle. For the rest of the night, REM sleep alternates with Non-REM sleep (primarily stage N2) in roughly 90-minute cycles. As can be seen in Figure 3, most deep sleep (N3) occurs early in the sleep period. Because most people sleep at least 3 hours, when most stage N3 occurs, they are rarely deprived of this deep sleep stage.

A closer look at Figure 3 shows that some wakefulness is a normal part of the night's sleep even in good sleepers. These awakenings become more frequent closer to an individual's morning waketime. A few brief awakenings do not need to be a cause for concern. There are also other interesting trends: First, most deep sleep (stage N3) occurs during the first half of the night. The second half of the night is composed of somewhat lighter sleep. This explains why most people are more easily awakened in the later part of the nocturnal sleep period. This also means that even when sleeping poorly, the sleeper is unlikely to be totally deprived of the deepest, most restorative stage of sleep. When sleep is disturbed by periods of wakefulness the onset of stage N3 may be delayed. Secondly, REM (dreaming) periods become longer toward the morning rising time. This is why a person is more likely to awaken from a dream during the second half of the night. As the night progresses dreams may become more complex and vivid, explaining why *nightmares* are more common during the last third of the sleep period.

### Veteran Alert:

Veterans with PTSD may have dreams emerge during Non-REM sleep

### Clinical Essence:

- Most REM sleep occurs during the second half of the night
- Most dreaming occurs during REM sleep

**A3. Sleep regulation.** The text below explains the regulation of sleep. An example script follows. The Figure in Appendix B may be used to illustrate sleep regulation. However, the content and level of detail needs to be tailored to the patient's presentation and comprehension level.

There are two basic processes that regulate sleep and wakefulness. One process involves the normal accumulation of sleep debt as the day goes on (the more time that passes after an individual wakes up for the day the greater the sleep debt). This process is called the "*sleep drive*." The other process involves a person's internal biological clock. It is called the "*circadian process*." Each is briefly explained below.

The sleep drive: An individual's sleep drive is lowest in the morning when upon waking up, and gradually increases as the day progresses. The sleep drive is believed to be fueled by adenosine, a byproduct of energy expenditure. During sleep, the sleep drive gradually weakens as a person's energy reserve is being "recharged." For the same reason, napping (actually sleeping) also reduces sleep drive by recharging the energy reserve. Longer naps reduce the sleep drive more than shorter ones. Napping close to bedtime (even briefly dozing off while watching TV) weakens a person's sleep drive just when it is most needed. Stated simply, the longer the time that has elapsed since an individual has last slept, the stronger the sleep drive becomes, and the easier it will be to fall asleep. In some ways the sleep drive is similar to hunger, and napping to snacking. Appetite may be ruined by snacking close to meal-time.

The circadian process: People, like most animals, have powerful internal clocks that affect their behavior and bodily functioning, including digestion, body temperature, and sleep-wake pattern. Many of these “clocks” work across roughly 24-hour periods. In fact, the word “circadian,” as in circadian processes or circadian rhythms, has its roots in the Latin words, “circa,” meaning “around”, and “diem” or “dies”, meaning a “day”. A person’s internal body temperature has a consistent up and down pattern across each 24-hour day. An example of this is shown in Figure 4. Most peoples’ internal temperature will reach its lowest point around 3 or 4 a.m., will rise through the morning and early afternoon, and will hit its highest point around 9 or 10 p.m. Then, their temperature will begin to fall until it hits its low point in the early morning hours, after which it starts rising once again. Individuals tend to fall asleep when the core body temperature is falling and wake up in the morning about one to three hours after the core body temperature starts rising.

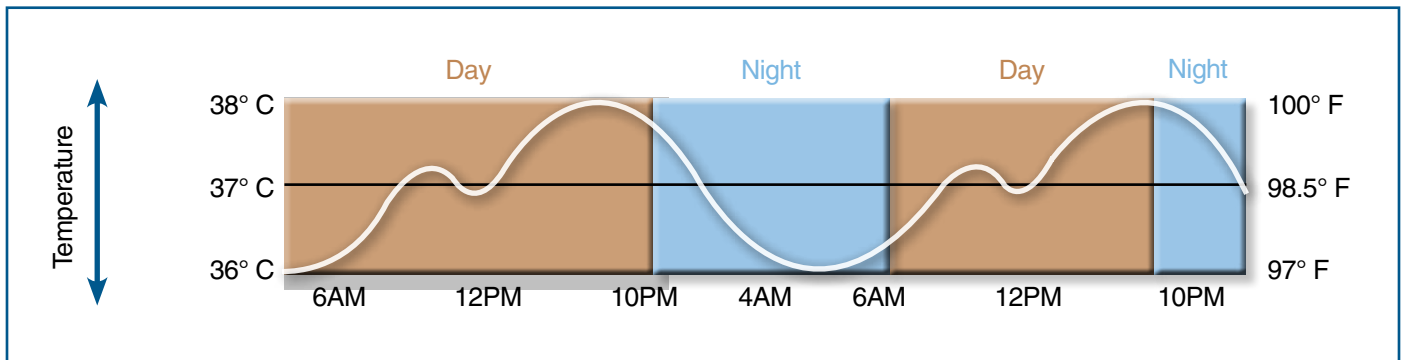


Figure 4. Sleep and Wake and the Daily Temperature Pattern

*How the two processes work together:* People sleep best when their sleep drive is strong and bedtimes and wake times are in sync with their internal, biological clock that regulates sleep and wakefulness. One way to understand how the human biological clock regulates sleep is to realize that this clock operates by sending alerting (waking) signals that differ in strength across the 24-hour day, and that these alerting signals oppose the sleep drive. Think of the temperature as an indication of how strong the alerting signal is. That is, higher temperature indicates a higher alerting signal and lower temperature indicates a weaker alerting signal. Under normal conditions, if there are no sleep problems, the alerting signals increase from morning wake up time until the evening when alerting signals start decreasing. In other words, as the sleep drive increases it promotes sleepiness and, in parallel, the alerting signals from a person’s internal clock increase so that the person does not fall asleep during the day when needing to be alert to carry out our daily activities.

The ideal time to fall asleep is when a person’s alerting signal starts to decrease in the evening and the sleep drive is high. In other words, at a time when the balance between sleep promoting and alertness-promoting drives is tipped in favor of sleep. Then after falling asleep, a person’s sleep drive weakens, and at the same time the alerting signal continues to decrease. This is a good, because the net effect of the sleep promoting and opposing factors continues to be in favor of sleep so that the individual is able to stay asleep. Then, sometime in the early hours of the night, the alerting signals from the internal clock start to increase again. About one to three hours after that, the person naturally wakes up for the day.

*A regular wake time keeps the biological clock healthy (robust):* Keeping a very irregular sleep-wake schedule can interfere with a person’s ability to sleep well because it weakens the signals from the circadian clock. Irregular sleep schedules subject people’s bodies to a frequent “jet lag”- like experience, during which they try to sleep out of sync with their biology. It is particularly important for people to keep regular wake and out of bed times in order to keep their biological clocks healthy. Regular wake and out of bed times mean the clock is getting light signals at the same time every day. This is important because the clock uses light signals to reset itself daily. Therefore, regular wake and out of bed times, and hence regular exposure to natural light, help keep the clock “ticking” with a strong and regular beat, which supports good sleep.

*When the biological clock is out of sync:* Some people go to bed or wake up at times that are out of sync with their internal clocks. In some cases, this is because a person's biological clock is out of sync with society's typical daily schedule. People who describe themselves as "night owls" may have a delayed circadian clock relative to most other people. These individuals have an *eveningness tendency*. In such cases the alerting signal starts decreasing later than it does for most people. If night people or "night persons" go to bed when most other people do, they are trying to sleep when their alerting signal is still too strong; therefore, they have difficulty falling asleep. If they wait, and go to bed later, they fall asleep much faster because their clock's alerting signals are already weakening. "Night people" often have difficulty waking up in the morning. This happens because when they try to wake up during the "normal" societal times their biological clocks are not yet providing strong enough alerting signals. There are also individuals whose clocks run early. These individuals have a *morningness tendency*. They typically describe themselves as "definitely a morning person".

The Morningness-Eveningness Questionnaire (Smith, Reilly, & Midkiff, 1989) is a validated self-report measure that assesses to what extent a person is a "morning" versus a "night" person. (There are laboratory procedures used in research to assess an individual's internal circadian clock, but these procedures are not practical outside research settings.) Because questionnaires are subject to reporting biases, it is important to clinically assess a patient's circadian tendency during the clinical interview (See Chapter 2 Section A2). Note that Figure 4 describes core body temperature rhythm of a person whose clock is aligned with the societal clock. If using Figure 4 to explain the circadian sleep clock to patients whose clocks might be out of sync with society's, it is best to change the time on Figure 4 to times that approximate the individual patient's experience. When explaining the regulation of sleep to Veterans with morningness or eveningness tendency it is important to explain how misalignment between the circadian clock and habitual bed and wake times interferes with sleep.

### Veteran Alert:

Veterans' responses to the circadian preference questionnaire might be impacted by exposure to unusual sleep-wake schedules during deployment. To unravel their innate circadian tendency it is particularly important to follow-up with additional questions during the intake interview. These questions should explore historical schedule preferences under conditions in which the Veteran has had the freedom to choose their own sleep schedule.

### Clinical Essence:

**Key Points to convey about the sleep drive:** The sleep drive builds up during wake hours and decreases with sleep. The stronger the sleep drive at bedtime the greater the likelihood of sleep.

- The sleep drive is weakened by napping and dozing.
- Napping or dozing close to bedtime are detrimental for sleep at night.

**Key Points to convey about the biological clock:** The biological clock works opposite the sleep drive so that people are able to stay awake during the day.

- Irregular wake and rise times weaken the signal from the biological clock.
- There is a strong genetic component to the biological clock.
- Sleep is best when the sleep opportunity window matches the innate circadian tendency.

The example script below demonstrates how the therapist explains sleep regulation to Chris, a 45 year old married African-American male Veteran who has difficulty falling asleep before 1 a.m. (See additional description on page 8). Because Chris has slight eveningness tendency, the therapist spends time explaining the role of the biological clock in the regulation of his sleep, thus providing a biological explanation for Chris' reported difficulty falling asleep.

### Explaining the two process model to Chris

Therapist: Before we begin talking about treatment recommendations for you, let's start with talking about how sleep works.  
Does that sound ok?  
Chris: Or doesn't work in my case...okay. Go ahead.

Therapist: Let's first talk about how sleep is regulated. There are really two processes that regulate sleep. One process is what we call sleep drive, and it's similar to hunger in the way it works. From the time you wake up, it starts increasing across the day. Your drive to "want to sleep" increases, so that, ideally, your "hunger" for sleep is very high around your bedtime because it's been awhile since you slept. Then, when you sleep at night this drive decreases just like your hunger does after you eat. Does that make sense?

Chris: [Nods]

Therapist: There is a second process that interacts with this sleep drive, but is independent of it. If we just had sleep drive increasing throughout the day, it wouldn't be very helpful. We would wake up, accumulate a little bit of sleep drive, then doze off, and that would continue all day long. The piece that counters the sleep drive and keeps us awake and productive during the day is called the circadian alerting signal. This alerting signal is generated by an internal clock in our body that completes a cycle in one day or 24 hours, which is why it's called circadian. Really, this alerting signal typically starts increasing in the early morning, about one to three hours before we wake up, and continues to get stronger throughout the day. So it helps us to stay awake during the daytime, when it's light outside, fighting against our growing sleep drive. This has been important for survival purposes. We can stay awake when we need to, and...

Chris: [interrupts, smiles] Or for work purposes...

Therapist: [nods in agreement] and, yes, for current day purposes too. At nighttime, these alerting signals quiet down, and then we're left with this high hunger for sleep. When we sleep, we build our energy reserve and defuse this appetite for sleep so that it's gone by morning. Does this make sense? Stop me if you have questions. Okay?

Chris: [patient nods] Uh hmm.

Therapist: We actually have a lot of internal biological clocks that are timed with this 24 hour cycle. One is our body temperature, for example. So let's look at this picture. Here you see the sleep drive is high and the alerting signal is low. This is when your sleepiness is felt and sleep is likely to occur naturally. There actually are two times of the day when you might feel sleepy.

Chris: I can see that [pointing to paper] after lunch. When I'm at work, I really would like a nap some days.

Therapist: Yes that's a really good point. I was going to bring that up, but you beat me to it. There's a little bit of a dip in our alerting signal and our body temperature in the early afternoon. At that time our sleep drive is quite high, because it's been a while since we woke up, so it's a natural time for a nap. The same is true at night. We're physiologically ready for sleep when those alerting signals start to come down. This is when our body temperature is going down as well.

Based on what you told me last time we met, you're actually a little more of a night owl. This means that your alerting signals might start to quiet down a little later than what is shown in this picture here, and what most people experience. When do you think this happens for you?

Chris: Probably 1 a.m. I hardly ever feel sleepy before that.

Therapist: Sounds like it. Being a night owl also means that your alerting signals do not start to kick in until a little later in the morning than most people, which is why it is so difficult for you to get up.

Chris: This is me alright. I never knew that. It makes sense.

Therapist: So it can feel like jet lag. Your body's telling you to be alert, but yet the clock is telling you it's time to sleep.

Chris: Or the other way around... Right now, I feel jet-lagged almost every morning.

Therapist: It's similar to when you were in the military, when you were doing the different shifts -- your body was in a different place in terms of sleep than the external clock.

Chris: That's true.

Therapist: This is something for us to think about as we discuss treatment recommendations.

## B. Substances and Medications that Impact Sleep

Several substances and medications can have an impact on sleep. Suggestions for modifying the amounts and timing of using these substances are part of "sleep hygiene" – a component of CBT-I that most clinicians are at least somewhat familiar. Nonetheless, the scientific bases for these recommendations are provided here because it is believed it will make the recommendations more compelling to the patient. Explanations and recommendations are, of course, tailored to a patient's presentation. Obviously, there is no reason to explain the effects of alcohol or nicotine to someone who does not drink alcohol or smoke (or chew) tobacco.

**B1. Alcoholic beverages.** In individuals with no history of alcohol abuse or dependence, alcohol use has mixed effects on sleep. Alcoholic beverages tend to be relaxing and induce drowsiness. However, later in the night, as alcohol is metabolized, it leads to restless and disturbed sleep. The result is a far less refreshing sleep. Therefore, drinking alcohol close to bedtime is discouraged. For most people with no history of alcoholism, one glass of wine or beer with dinner scheduled at least 3 to 4 hours before bedtime is not likely to have a negative impact on sleep because its effects will diminish by bedtime. For some very sensitive individuals elimination of alcohol in the evening altogether may be advisable.

**B2. Caffeine.** Caffeine is a relatively long-acting stimulant with effects that may last for several hours after consumption. People differ greatly in the rate at which caffeine affects them, and therefore in the length of time during which it might impact their sleep. On average, 4 to 5 hours after a person consumes a modest amount of caffeine, about half the amount continues to actively stimulate the brain. This stimulating activity may last even longer after higher levels of caffeine intake and in individuals who are particularly sensitive to its effects, including older adults. Therefore caffeinated beverages should be limited to the equivalent of no more than three, 8 oz. cups daily and avoiding consumption after lunch.

Caffeine has a longer half-life when consumed in conjunction with oral contraceptives, hormone replacement therapy, and selective serotonin reuptake inhibitors (SSRIs). Caffeine has a shorter half-life when consumed in conjunction with nicotine. (Half-life is the period of time it takes for a substance undergoing decay to decrease by half.) Caffeine is found in coffee, non-herbal tea, chocolate, many soft-drinks and energy drinks. It is the most commonly-used stimulant. It binds to the adenosine receptors, the fuel of the sleep drive, and hence interferes with sleep. The Center for Science in the Public Interest has created a chart that provides the caffeine equivalent found in common sources (Center for Science in the Public Interest, 2012).

### Veteran Alert:

Some Veterans consume caffeinated beverages at night despite knowledge about its deleterious effects on sleep. In such cases cognitive therapy techniques, particularly cost benefit analysis, can be used to facilitate reduction of caffeine consumption.

**B3. Nicotine.** Cravings for nicotine can occur during the middle of night because it has a short half-life of approximately 2 hours and therefore leaves the body fairly quickly. As the body breaks down nicotine, the smoker, or tobacco chewer, experiences withdrawal symptoms, such as agitation and tension. This leads to the consumption of more nicotine in order to reduce these symptoms. In other words, each dose of nicotine relaxes the tension and agitation that were produced by withdrawal from the previous nicotine consumption. This means that rather than relaxing tension from everyday stresses, a cigarette only treats the tension and agitation that resulted from withdrawal from the previous cigarette or chew. Therefore, smokers should be advised to avoid smoking at least 2 hours before bedtime.

There are many good health reasons to quit smoking, but smoking cessation is not an easy process and remains outside the scope of this manual. It should, however, be pointed out that during nicotine withdrawal an individual is likely to experience increased sleeplessness for several weeks. This information can help set realistic expectations.

### Clinical Essence:

- **Alcohol** facilitates sleep onset, but later in the night, elimination of alcohol from the bloodstream causes nocturnal awakenings.
- **Caffeine** is a relatively long-acting stimulant, with an average half-life of 4.5 hours.
- **Nicotine** is a short-acting stimulant. Each dose of nicotine relaxes the tension and agitation that were produced by withdrawal from the previous nicotine consumption.

**B4. Medications.** Certain medications and commonly-used substances may disrupt sleep. These include some asthma medications (e.g., theophylline), some decongestants, allergy and cold medicines, some steroids (e.g., prednisone), beta blockers (medicines used to treat heart conditions), medications for ADHD (e.g., Adderall), and some antidepressants (e.g., Wellbutrin). The patient's physician needs to be consulted about the feasibility of limiting intake of these medications close to bedtime.

*Hypnotics* have a place in the management of insomnia but are often misused. For instance, in the initial stages of insomnia treatment, hypnotic prescription on an as needed basis (PRN) is common and adequate. However, in later stages, for example when a hypnotic that has been prescribed PRN is consumed nightly (only after failing to sleep without it), it is better to take it regularly at bedtime. Continued chronic PRN use leads to psychological dependence on the hypnotic medication; that is, taking a sleeping pill has become a “rescue” behavior. Chronic use of hypnotics often leads to tolerance, which means that dose escalation is needed in order to maintain the benefits.

The half-life of hypnotic medications varies by medication type and patient’s sensitivities. The half-life of a sleep medication is an important consideration because it determines how much of the night the medication exerts sedation. Short-acting medications may not be helpful for disturbed sleep that occurs late in the sleep period; for example for early morning awakening. Long-acting medications and, in sensitive persons even shorter-acting medications, often produce carryover effects in the morning that can persist into the day.

*Sedating medications, other than hypnotics*, are also used for the purpose of inducing sleep. Most common in this class are trazodone and doxepin, two antidepressant medications that are sedating. Daytime sleepiness is present in 23% of patients using trazodone, compared with 8% for placebo, and tolerance may develop (Walsh, Erman, Erwin, Jamieson, Mahowald, Regestein, Scharf, Tigel, Vogel, & Ware, 1998). Low doses (3 to 6 mg) of doxepin have recently been approved by the FDA for the treatment of insomnia.

### Clinical Essence:

Use of medication for sleep does not preclude CBT-I. However, some adaptation may be needed to promote safety. These are discussed in the relevant sections below.

## C. Exercise and Diet

The aspect of exercise and diet most relevant to sleep is their timing.

Exercise too close to bedtime may have a negative impact on sleep. This is most likely associated with the fact that exercise is activating. Exercise raises an individual’s core body temperature and therefore may interfere with the daily drop in temperature before bedtime that supports sleep (as discussed earlier, see Figure 4). For these reasons exercise should be avoided about 4 hours before bedtime. Gentle stretching exercises before bedtime are OK, and may in fact be relaxing, and supportive of sleep. Evening slow-paced walks are also OK.

A heavy meal close to bedtime may lead to indigestion and sometimes reflux during the night, both of which may cause arousal. The process of falling asleep slows down the digestive system. Going to bed before food is fully digested is a poor sleep practice. For these reasons, eating a heavy meal should be avoided about 4 hours before bedtime. Because feeling hungry may also interfere with sleep, a light snack is OK. Eating in the middle of the night is also not a good idea because it sends alerting signals to the brain and can prolong time awake.

### Clinical Essence:

- **Vigorous exercise** should be avoided about 4 hours before bedtime. Gentle stretching exercises before bedtime are OK and may, in fact, be relaxing and supportive of sleep.
- **A heavy meal** should be avoided about 4 hours before bedtime.
- **Eating in the middle of the night** should be discouraged.

## D. Sleep and Aging

Compared with young adults, older individuals, like Mike, whose case was described earlier (page 8), tend to wake more often during the night or wake too early in the morning without having enough sleep to feel rested (see Figure 5). As many as

50% of older individuals complain about sleep problems, including disturbed or “light” sleep, frequent awakenings, and early morning awakenings (Vitiello, 2006). Indeed, the percentage of deepest sleep stage, N3, relative to total sleep time declines with age.

Sleep in older age is also impacted by a number of medical conditions that emerge later in life. For example, the incidence of prostate enlargement, diabetes, and *obstructive sleep apnea (OSA)* increases with age. *Nocturia* (the need to get up in the night to urinate), a feature common to these three conditions, can lead to problems maintaining sleep. OSA also disrupts sleep directly. Pain syndromes, such as fibromyalgia, osteoarthritis, rheumatoid arthritis, as well as the symptoms and treatments for other diseases associated with older age may disrupt sleep. Finally, *dementia* is associated with sleep-wake disruptions. In severe cases sleep-wake patterns may become markedly dysregulated. In addition to health issues, losses associated with bereavement, change in family roles, retirement, and illness are frequent contributors to insomnia among older adults.

Older age may be associated with a weaker signal from the circadian clock that is due, in part, to insufficient light reaching the brain’s clock. Insufficient light signal to the brain may be related to a decrease in time spent outdoors or age-related changes in light receptors in the eye. Because light exposure is an important regulator of the circadian clock, age-associated reduction in light exposure results in a weaker signal from the circadian clock. In addition, some older adults go to bed and wake up earlier than when they were younger, a shift that is influenced by both biology and lifestyle.

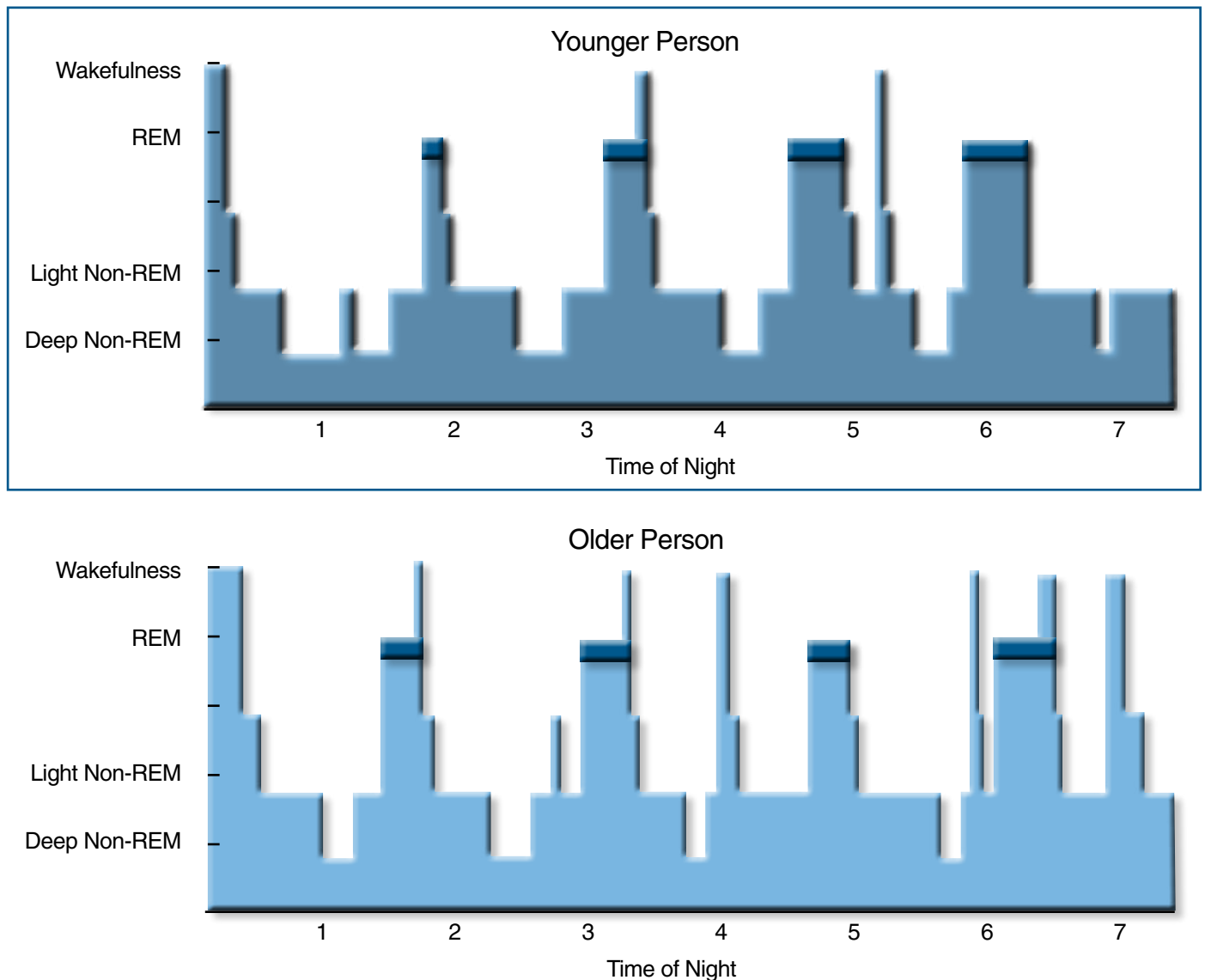


Figure 5. Sleep Across the Night for Younger Versus Older Adults



### Clinical Essence:

- Sleep in older age tends to be fragmented and may be impacted by medical and other sleep disorders.
- Age-related weakening of signals from the circadian clock may cause sleep disruptions. This weakening is due to changes in light receptors in the eye and reduction in light exposure.

## E. Sleep Disorders

This section describes a few common sleep disorders that may co-exist with and contribute to insomnia. These include *obstructive sleep apnea (OSA)*, *restless legs syndrome (RLS)*, *periodic limb movement disorder (PLMD)* and *circadian rhythm disorders*. These disorders are considered medical conditions. Patients with these disorders should be referred to the appropriate sleep medicine specialist for treatment. However, with a few exceptions (see Chapter 3 Section A2.5), the presence of OSA and PLMD does not preclude treating the patient with CBT-I, unless these conditions are associated with severe daytime sleepiness.

**OSA** is a sleep disorder characterized by the presence of full (*apnea*) or partial (*hypopnea*) obstructions of the airways leading to complete or partial cessation of breathing, followed by a decrease in oxygen saturation of the blood and arousal from sleep. Prominent nocturnal symptoms of OSA are loud snoring, snorting, and gasping for air. Unless they wake gasping for air, or they are told about these symptoms by a bedpartner, patients may not be aware they are experiencing them. Prominent daytime symptoms of OSA are feeling un-refreshed in the morning and sleepy during the day. Other daytime symptoms of OSA include a morning headache that resolves shortly after rising and waking with a dry mouth. Common risks for OSA are obesity, older age, male sex, and abnormal facial morphology. The sex difference in prevalence of OSA decreases post menopause. Diagnosis of OSA requires an overnight sleep study. OSA severity is measured by the *apnea-hypopnea index (AHI)*, which is the average number of apneas and hypopneas (combined) per hour of sleep. The standard treatment of OSA is the use of a continuous positive airway pressure (CPAP) machine that delivers a stream of compressed air via a hose to a nose mask, nasal pillow, or full-face mask that facilitates breathing during sleep. Other treatments for OSA include surgery, dental devices, and position therapy. Position therapy involves the use of physical barriers to prevent patients from lying in a supine (lying on the back) sleeping position. It is used only when breathing events occur primarily when the patient is supine. Breathing events fragment sleep by causing arousals, which, in the absence of insomnia, tend to be brief. When apnea and insomnia coexist both conditions need to be treated independently, but providers need to be cognizant of the effects of the two disorders and their treatments on each other. Insomnia complicates adherence to CPAP therapy. Conversely, the daytime sleepiness and un-refreshing sleep often associated with OSA need to be considered when applying CBT-I. This will be discussed in later chapters.

### Clinical Essence:

**Obstructive sleep apnea is not a contraindication for CBT-I**, except when daytime sleepiness is excessive; that is unintentional sleep or dozing occurs across multiple contexts and may pose safety concerns.

**Prominent symptoms of OSA** are loud snoring, snorting, and gasping for air, feeling un-refreshed in the morning, and experiencing sleepiness during the day.

**RLS** is diagnosed when patients complain of an urge to move their limbs, most commonly their lower legs. Usually, but not always, RLS is associated with disagreeable leg sensations of burning, itching, tingling, or other muscle discomfort. These symptoms provoke an urge to move and tend to improve with activity, such as walking around. Patients often have difficulty describing these sensations. The symptoms start or worsen when at rest and tend to be worse in the evening or at night, especially when lying down. Severe RLS interferes with sleep onset both at the beginning of the night and following middle of the night awakenings. The diagnosis of RLS does not require an overnight sleep study. It is based on clinical symptoms. The treatment of RLS is medical, and most commonly includes prescription of dopaminergic drugs that, unfortunately, can be activating and disrupt sleep. Sometimes, for example among pregnant women, iron (ferritin) supplementation is used to treat RLS. Below is an excerpt from a sleep intake session with Mike, a 68 year old Veteran with previously diagnosed RLS, described on page 8. The therapist assesses current symptoms of RLS.

Therapist: Mike, do you ever notice, when you are sitting still for a period of time, or when you are getting into bed at night, or if you wake up during the night, that you get a creepy crawling feeling in your legs? ... a sort of under your skin deep inside your legs sensation almost like bugs under your skin?

Mike: Yes I used to. I now take pramipexole and it's almost gone.

Therapist: I see. I am not talking about cramping or something like that.

Mike: No. that's not what I felt.

Therapist: How often do you still experience it?

Mike: Maybe... [thinks] a couple of time a month? It used to be pretty bad, almost every night, and I would need to get out of bed and walk around. It really made it difficult to fall asleep. I could not relax. Trying to relax made it worse.

Therapist: When you get it now, does it get in the way of sleeping?

Mike: Well, I still have to get up and walk a bit, but usually only once and then it does not bother me anymore.

Therapist: So you take pramipexole every night

Mike: Yes.

Therapist: I am glad it is under control.

Mike: Me too. I'm reading online some horror stories about it. I am so glad I found a solution.

**PLMD** is a disorder associated with periodic limb movements, usually of the lower leg, during sleep that are often followed by brief arousals. The limb movements are caused by contractions of the muscles. Patients with PLMD, unlike those with RLS, are rarely aware of their limb movements. Bedpartners' testimony of leg movement, kicking during sleep, and disheveled sheets in the morning, may indicate the presence of PLMD. However, the diagnosis requires an overnight sleep study. Its severity is indexed by the PLM index, defined as the average number of periodic limb movements per hour of sleep. The treatment of PLMD is similar to the treatment of RLS and the two disorders often co-exist.

### Clinical Essence:

- **An overnight sleep study is not required for the diagnosis of RLS.** The diagnosis is based on clinical symptoms.
- **Prominent symptoms of RLS** include an uncomfortable sensation in the legs and an urge to move the legs, usually to relieve the sensation.
- **An overnight sleep study is required for the diagnosis of PLMD.** The diagnosis is based on an overnight sleep study. Bedpartners' testimony of leg movement, kicking during sleep, and disheveled sheets in the morning, may indicate the presence of PLMD.

**Circadian rhythm sleep disorders** are disorders that emerge when a person's internal circadian clock is misaligned or otherwise not congruent with the desired sleep period. The most common disorders in this class are *delayed sleep phase syndrome* and *advanced sleep phase syndrome*. In both disorders sleep is disturbed only when attempted during times that are not congruent with the sleeper's biological clock. Other, more rare disorders in this class occur when the signals from the biological pacemaker are weak or otherwise abnormal.

Delayed sleep phase syndrome is diagnosed when there is a chronic or recurrent complaint of inability to fall asleep at a desired conventional clock time and of difficulty waking at desired and socially acceptable times. When allowed to choose their preferred schedule, patients with this syndrome exhibit normal sleep quality and duration for their age and maintain a delayed but stable sleep-wake pattern. Delayed sleep phase usually emerges during adolescence but may be present in earlier childhood. The script below is an excerpt from a sleep assessment of Carlos (page 9). Although Carlos presents with complaints of poor sleep, the therapist diagnoses delayed sleep phase syndrome and refers him to a sleep specialist.

Therapist: Carlos, what would you say is most disturbing about your sleep problem?

Carlos: I can't hold a regular job. I don't function very well during the day, and because of that, I just lost another job... because, I just can't do things during the day. I think it might be related to my sleep, because I'm having trouble with my sleep.

Therapist: What kind of problems with your sleep?

Carlos: It takes me hours to fall asleep and then it is really difficult to get up.

Therapist: That sounds really tough. Carlos, how would you describe yourself in terms of the timing of your sleep? Do you feel like you're more of a night owl? More of a morning person? Or somewhere in the middle?

Carlos: Definitely, I don't feel like I'm a morning person. [laughs]

Therapist: Do you think you are a night person?

Carlos: Definitely.

Therapist: Okay, so when did you start to notice that?

Carlos: Growing up, I really liked staying up late and sleeping in. My parents certainly noticed it when I was a teenager. My dad would sometimes come in and wake me up all upset at one in the afternoon.

Therapist: So you really slept in?

Carlos: Yeah, particularly on the weekends. Sometimes I would sleep until the middle of the afternoon.

Therapist: Okay, what about in your early 20s? Did you find that you had the same schedule?

Carlos: Well, ---- that was when I was in Iraq and in the Gulf.

Therapist: I doubt you had the choice to sleep in over there (smiles). Was there any set schedule?

Carlos: My schedule was very erratic, depending on when we were conducting operations. You are right. I didn't get to control it.

Therapist: Got it. So right now when you are able to sleep in, for example on the weekend or on vacation, what is your preferred schedule to go to bed and wake up?

Carlos: I guess on weekends now I tend to stay up fairly late and sleep in.

Therapist: So how late might you stay up on these nights?

Carlos: Around 2 or 3 am.

Therapist: And about how late do you sleep in till?

Carlos: Well I am for 10 to 10:30 a.m., but it's hard.

Therapist: Okay, I can see how it would be, and when you do that, allow yourself to sleep late, how well do you sleep?

Carlos: If I go to bed at 3:00 a.m., I fall asleep within half an hour and then I sleep till morning. I do not wake up but I still feel groggy when I wake up at 11:00 or 11:30 a.m. So I stay in bed till noon, half listening to the noises outside and half sleeping.

Therapist: If you were able to set your own schedule, if you could sleep at any time you wanted, what time would you get into bed, and what time would you get out?

Carlos: Well, it's most convenient when I'm up with the rest of the world, so yeah, it would be nice to go to bed at 11:00 p.m. or 12:00 a.m., and get up at say, 7 a.m., and head off to work at 8 a.m. That would be nice, because then, that's when the world is set up to do stuff. I can't do that.

Therapist: Yeah, that's a problem.

Carlos: When I do that, it doesn't work. I've tried it, so...

Therapist: So...people expect you to go to bed when most of them do, like midnight, and get up at 8 a.m.?

Carlos: Yeah.

Therapist: But if you were to set your own schedule, and everyone else would revolve around what you want, what would be an ideal time for you?

Carlos: [laughs] It would be great if I could wait until 3 or 4 a.m. to go to bed, and then sleep in until 10 or 11 a.m. That would be a lot easier.

Therapist: Do you think you would sleep better if you were on that schedule?

Carlos: Probably, but there's no way any boss would let me come to work at 11 a.m. or noon every day.

Therapist: So you're kind of out of sync.

Carlos: I'm totally out of sync. There's no question about that. The world doesn't work on those hours. Maybe a night shift job would be good for me. I don't know.... [trails off] They all get up and start working like, 8 a.m. to 5 p.m., or 9 a.m. to 5 p.m., and I can't do that.

Therapist: So, what is your best time of day in terms of when you feel you're the most alert?

Carlos: In the evening. I usually get a second wind around 8 to 9 p.m.

Therapist: You know Carlos, it sounds to me like you have a sleep problem called delayed sleep phase syndrome. People with this syndrome are biologically wired to be night owls. If they go to sleep very late, in the early morning hours, they sleep OK, but if they try to go to sleep at a socially acceptable time they really struggle.

Carlos: You are right. That is me.

Therapist: So you know what? I would like to refer you to a sleep specialist to treat this problem. Would that be OK?  
Carlos: Sure.

Advanced sleep phase syndrome is diagnosed when there is a chronic or recurrent complaint of inability to remain asleep until the individual's desired conventional wake time, together with difficulty staying awake until a desired and socially acceptable nocturnal bedtime. However, when these patients are allowed to choose their preferred schedule, they exhibit normal sleep quality and duration for their age and maintain an advanced but stable sleep-wake pattern. Advanced sleep phase is most commonly observed in older adults.

Treatment of both advanced and delayed sleep phase disorders remains beyond the scope of this manual. Briefly, it consists of using properly timed light exposure and changing sleep-wake behaviors to assist in shifting the individual's *circadian rhythm* to a desired sleep-wake time and to help maintain a stable sleep schedule. Properly timed low doses of melatonin can also be used to shift the circadian clock.

### Clinical Essence:

- Patients with a delayed or advanced sleep phase syndrome, who wish to shift their sleep-wake schedule to a more socially acceptable time, should be referred to a sleep specialist.
- In contrast, individuals with insomnia and a delayed or advanced sleep tendency, who do not desire a shift in their sleep-wake schedules and wish to improve their sleep, can benefit from CBT-I.

## F. Overview of Insomnia

Insomnia is diagnosed when poor sleep is associated with distress or daytime consequences, such as impairment in function or mood. Insomnia often begins during periods of stress. About 75% of people with insomnia can identify a trigger, or precipitating event, that initiated their insomnia. Examples include health issues or stress related to family or work situations (Bastien, Vallieres, & Morin, 2004). Poor sleep is a common reaction to stress but there are large individual differences in how people react to and cope with stress. These differences likely play a role in the development of insomnia.

Most of the time, sleep normalizes after the stress that started it subsides or after the medical condition that caused it is treated. However, in some cases insomnia persists. This can happen if there are *perpetuating mechanisms* present:

1. The bed and the bedroom become linked with wakefulness, arousal, or negative emotions. This is known as conditioned arousal or conditioned insomnia. The bed and the bedroom become unconscious cues for arousal rather than sleep. For example, many people with insomnia report that they doze off while watching TV or reading in the living room, only to become fully awake when they go to bed. For these people, past experience with tossing and turning while trying to sleep has made the bed a cue for wakefulness rather than sleep. Conditioned arousal can develop even when the main problem is prolonged awakenings in the middle of the night, rather than difficulty in initially falling asleep.
2. Some people react to poor sleep by trying harder. They extend the time they spend in bed, avoid previously enjoyed evening activities, and spend long periods tossing and turning in bed. These strategies do not solve the problem. In fact, such strategies make it worse. Prolonged time in bed actually promotes wakefulness. The very act of "trying" to sleep produces frustration, increases arousal, and can become a hidden source of stress. This process is akin to a Chinese finger trap. The harder a person tries to pull the fingers out, the more stuck the fingers become. When the person lets go, it becomes easy to ease the fingers out.
3. Worry about sleep is another common reaction to having difficulty sleeping, particularly in those individuals who are *predisposed* to worry. After a period of not sleeping well, apprehension and concern that the coming night will be another struggle emerge. When unable to sleep, worries about the negative daytime consequences of insufficient sleep develop and people start to plan their day and evening activities around their sleep. Such worries, though understandable, are mentally activating and end up making sleep even more difficult to achieve.

Below is a vignette in which a therapist describes the concept of conditioned arousal to Mike, sharing a diagram depicting the 3 P's model of insomnia (page 3). The therapist personalizes the model, referring to Mike's tendency to feel anxious and worried while in bed.

- Therapist: Mike, I'm glad you could come here today. I thought what we might talk about today is the way that insomnia develops and becomes a chronic problem.
- Mike: Okay.
- Therapist: You talked about your wife turning off the TV and lights at about 8:30 or 9:00 p.m. and that she falls asleep right away.
- Mike: Yeah, yeah, she has no trouble getting to sleep. She falls asleep right away. And she sleeps until 5:30 or 6:00 a.m.
- Therapist: It sounds like she is very sleepy when she goes to bed. Do you feel sleepy when you turn off the lights?
- Mike: Sometimes .... yeah.
- Therapist: Then, what happens?
- Mike: [thinks] It's strange, even if I am a little sleepy, when we turn off the TV, I still can't fall asleep.
- Therapist: [nods and waits]
- Mike: I just start thinking about her health and my grandson, and I'll really want to get to sleep, and I can't.
- Therapist: So you're worried.
- Mike: Yeah. And I try not to worry. I tell myself "I've got to get to sleep". It is pretty frustrating.
- Therapist: What happens is that your bed becomes associated with these worries and frustrations. It's like the turning off the lights triggers your mind to worry, whereas for your wife, turning off the light triggers a sense of calmness and sleepiness. She is a good sleeper, and the bed signals her brain to sleep.
- Mike: [nods to indicate he is following.]
- Therapist: So, it's kind of a conditioning problem or a learned problem. Are you familiar with Pavlov's dog experiment?
- Mike: I just remember the dogs drooling... [chuckles]
- Therapist: Yeah, yeah...so, Pavlov noticed, like we all do, that when he fed the dogs in his laboratory they would salivate. And then, he tried an experiment to see if he was able to get them to salivate just by ringing a bell, without food. So he would ring the bell each time he fed them.
- Mike: [nodding] Oh yeah...
- Therapist: And then, he rang the bell without bringing the food and the dogs salivated even without the food and just using the bell.
- Mike: Okay. Yeah. [nodding]
- Therapist: So, the dogs learned to respond to the bell with salivation. This is called learned association. And that sometimes happens to people with insomnia. Their bed is like the ringing of the bell. It becomes associated with alertness or being awake.
- Mike: Oh, okay.
- Therapist: This association develops because - night after night - you lie in bed awake and frustrated or worried. So the brain responds to getting into bed with alertness rather than sleep. [pauses and waits for a response]
- Mike: [thinks, then answers] This makes sense because my mind really starts going when I try to sleep, even when I am very tired.
- Therapist: [Therapist picks up graph of 3-Ps model and shows to patient] I have a picture here, that I think is helpful to show how chronic insomnia develops. This line here represents the threshold for insomnia. This first block here represents each person's predisposition for insomnia, kind of how likely they are to respond to stress with difficulties sleeping. Then usually something precipitates poor sleep, typically by some kind of a stressor. What you can see here this is referred to as acute insomnia. [pauses] Have you experienced that?
- Mike: Yes. When I am stressed I do not sleep well.
- Therapist: So, what happens is that, for some people, the insomnia will just...go away after the stress is gone, and for others, it develops into a chronic problem. [Pauses, looks at Mike] [Mike nods slowly, in agreement]
- Therapist: And usually it is related to the bed becoming associated with alertness. It can also be related to what people are doing during the night when their sleep is disrupted.
- Mike: Hmmm
- Therapist: For example, did you know that researchers have caused good sleepers to have insomnia simply by asking them to try to sleep longer?
- Mike: Interesting. Why is that?

Therapist: Well, there are several reasons that we will discuss next. For now, I wanted to make sure you understand the idea of conditioning as it relates to insomnia

Mike: Yes. I think I got that. It's when going to sleep signals the brain to be awake and alert. I think it happens to me.

Therapist: OK. Let's move on.

# Chapter 2: Assessment and Case Conceptualization

This chapter covers the assessment interview (Section A), which is the focus of Session 1; the sleep diary (Section B), which is introduced at the end of Session 1, and used throughout the treatment; and the case conceptualization (Section C), which is completed between sessions 1 and 2 for purposes of developing a patient-specific treatment plan.

## A. The Assessment Interview

The first step in any treatment intervention is to evaluate the nature of the patient's presenting problem, in this case, the sleep problem. The evaluation covers details about the presenting problem, including its history and the patient's current sleep habits, and explores the presence of unhealthy sleep practices. It also covers factors that interfere with the regulation of sleep, such as factors that may weaken the sleep drive, the patient's circadian tendency and potential misalignment of the patient's sleep schedule relative to this tendency, as well as factors that contribute to sleep-related hyperarousal. In addition, the evaluation includes assessment of potential comorbidities that might be contributing to the present sleep difficulties. The interview concludes with goal setting. A form to help structure the initial assessment (Intake Form) is provided in Appendix C.) The organization of the text below mirrors the Intake Form.

**A1. Assessing current sleep pattern.** In conducting the initial evaluation, ask the Veteran to think about how sleep has been during the last week (or, if the last week was unusual, the most recent typical week). Most insomnia patients describe variability in their sleep schedule and their sleep difficulties. Help focus the discussion by asking for the number of times in the last week that certain problematic aspects of their sleep were present. Some patients speak in general terms and have a difficult time answering questions pertaining to their sleep schedule. These patients may find it easier to answer the question about last night or the worst night in the past week. Then inquire about other nights and encourage patients to make their best estimates. Inquire about the following:

1. **Sleep schedule:** Inquire about the time the Veteran usually gets into bed for the night, and separately, the time the Veteran usually turns out the lights, as these are often not the same. Whereas for most patients lights out signifies the intent to go to sleep, some patients may lie in bed in the dark watching TV, or they may intentionally leave the light on and fall asleep in the middle of reading or listening to music. In such cases, identify the time at which the patient intended to fall asleep. Pay attention to, and if needed inquire about, the night-to-night consistency or variability of these times (particularly weekdays versus weekends). For example, ask: **Is your wake-up time the same on your weekend days?**
2. **Pre-bedtime activities:** Failure to set aside time to unwind before bedtime can lead to being too activated to allow sleep to naturally unfold after getting into bed. Therefore ask: **What do you do during the two hours before bedtime?** Follow up with questions that explore how the patient unwinds before bedtime.
3. **Problems at the beginning of the night:**  
**Do you have trouble falling asleep?**  
**How long does it usually take you to fall asleep?**  
**What do you do when you have difficulty falling asleep?**
4. **Problems in the middle of the night:** Ask for details about middle of the night awakening. The following are examples of questions to pose to your patients to ascertain this aspect of sleep:  
**Do you wake up in the middle of the night?**  
**How many times?**  
**Is there a period of prolonged awakening, if so, how long is it?**  
**When does it tend to occur?**  
**How long are you awake in the middle of the night (counting across all awakenings)?**  
**What do you do if you are awake during the middle of the night?** Ask questions to determine if the patient stays in bed awake for extended periods of time at night because this can weaken the strength of the bed as a cue for sleep.

5. Morning wake-up time and time out of bed: Inquire about the night-to-night variability of these times (for example, differences between weeknights and weekends).
6. Problems at the end of the night: Problems at the end of the night may be related to waking up too early, which may be a problem for some depressed patients and in people who have strong morning tendencies, or the opposite, having difficulty waking up in the morning, which may be pronounced in individuals who are night owls. Both aspects should be explored by asking:
  - Do you wake up earlier than planned/intended and then find that you cannot go back to sleep?**
  - Do you have difficulty waking up in the morning? For example, do you need to hit the “snooze” button multiple times?**
  - Do you have difficulty getting out of bed in the morning?**
7. Estimated total sleep time: Many people with insomnia underestimate how long they sleep. Therefore, in addition to computing total time asleep based on the information provided so far, directly ask: **On average, how many hours of sleep do you get?** Clarify any large discrepancy between your calculation and the patient’s self-report.
8. Sleep medications: Ask if the Veteran takes sleep medications. If so, ask for the specifics (name and dose) and when the sleep medication is taken (before bedtime, at bedtime, or in the middle of the night). It is also important to know whether the medications are *taken as needed (PRN)* or only after first trying to sleep without them. PRN use is adequate when the sleep problem first emerges but not after prolonged nightly use. With prolonged nightly PRN use the medication repeatedly acts as a “rescue”, which promotes psychological dependence. Again, do not yet discuss any dysfunctional patterns of medication use. Listen to the patient’s responses making note of other signs of possible psychological dependence on sleep medication. For example, when a patient refers to the sleep aid as “my” medication, or when the patient states inability to sleep without medication.
9. Alcohol as a sleep aid: Does the Veteran use alcohol to help with sleep? If so, **How frequently? How much? When is it consumed** (before bedtime or in the middle of the night)?
10. Bedroom environment: Ask questions to determine if the sleep environment is conducive to sleep. Specifically:
  - Do you feel safe in your bedroom?**
  - Is your mattress comfortable, when was it last changed?**
  - How much light is in the room at night and in the morning?**
  - Is the bedroom noisy and is there a source of white noise?**
  - Is the room temperature comfortable?**
  - Do you have a bedpartner that disrupts your sleep?**
  - Are there caregiving issues that disrupt your sleep?**
  - Do you have a pet in the bedroom? If yes, does it disrupt your sleep?**
11. Precipitating factors:
  - When did this sleep problem start?**
  - What was going on in your life when it first started (e.g., stress, personal loss, life change)?**
  - What did you do to try to improve your sleep?**
12. Premorbid sleep schedule: Inquire about the Veteran’s premorbid sleep schedule and, if different from the current schedule, ask for the reasons for the schedule change. This knowledge provides insight into the patient’s response to insomnia and can later assist in tailoring the behavioral interventions to the patient’s presentation.

### Clinical Essence:

- Large night-to-night variability in sleep schedule and sleep disruptions are common among patients with insomnia, who typically respond to these questions with the pretext “it depends”.
- It is best to anchor the patient to the most recent typical week.



**A2. Assessing circadian chronotype (tendency).** The assessment of the Veteran's circadian chronotype (tendency) includes asking about the following:

If there is a suspicion of an evening chronotype ask:

**Do you find it difficult to wake up in the morning?**

**Do you need to press the snooze button more than once?**

**How long does it take you to feel fully awake after you wake up in the morning?**

**Do you have difficulty falling asleep before very late into the night or difficulty disengaging from nighttime activities?**

**Has this been a long-standing pattern? (most of your life?)**

**At what times of day are you most likely to be tired or sleepy? At what times most awake?**

If there is a suspicion of a morning chronotype ask:

**Do you find it difficult to stay up for evening activities?**

**Do you dose off without wanting to in the evening?**

**Do you wake up earlier in the morning than you would like and then cannot fall back asleep?**

**Has this been a long-standing pattern? (most of your life?)**

The Morningness-Eveningness Questionnaire (Smith et al., 1989) can help with this assessment. A score < 23 indicates morningness. A score > 43 indicates eveningness. However, because eveningness may be stigmatic, patients' responses to the questionnaire may be skewed by their desired, rather than their innate, preferences. Other reasons for response bias to questionnaires that assess circadian tendencies were discussed on page 17. Therefore, clinically evaluate the patient's chronotype using the suggested questions above. The following is an excerpt from an initial sleep evaluation with Pete. The therapist assesses his underlying circadian tendency by gathering information about his sleep-wake behaviors and preferred sleep schedule.

Pete: I appreciate you seeing me today.

Therapist: Thanks for coming in, Pete. So what brings you here to see me?

Pete: Well, my sleep is bad. And it's messing up my life.

Therapist: How so?

Pete: It's taking a long time to fall asleep. I fall asleep late at night. And by late I mean like, 2 or 3 in the morning. And then, I am having a hard time waking up in the morning, and it is difficult to be at work on time, and I definitely do not feel very sharp when I come to work.

Therapist: What's going on in the evening time, until 2 in the morning?

Pete: It—it's kind of a strange experience. My head won't stop—you know my wife says that when she goes to bed, her head sort of slows down, and—eventually it stops. Well, I become much more alert at night until very late. I feel like I'm on guard duty again. I'll sit there and watch old movies, something like that to try to do something a little low key, and as soon as I turn out my lights and put my head on the pillow, it's on again.

Therapist: Why do you think you're more on alert at night?

Pete: Well, when I was deployed we were often conducting operations at night. That was also the time we were most likely to receive enemy fire.

Therapist: So... nighttime has not been a safe time for you?

Pete: Right.

Therapist: What time are you actually getting into bed?

Pete: Lately not until about 1 or 2 a.m., because I have a feeling I'm not going to fall asleep at 11 p.m. or midnight, so—I'm going to be up for awhile.

Therapist: And then you said you had trouble functioning—that you're tired during the day...is it all day, or just part of the day?

Pete: Well, certainly earlier in the day, because if I force myself to get up say at 7 a.m., I'm useless until at least 9 or 10 a.m.

Therapist: Uh-hmm.

Pete: I haven't had very much sleep, so my brain doesn't start really functioning until like 10 or 11 a.m. I feel better in the afternoon, and it's even a little bit better around dinner-time.

Therapist: So then you kind of get a second wind.

Pete: Yeah, which is odd, because I'm tired. But I can't fall asleep.

Therapist: When you go to bed very late, do you fall asleep faster?

Pete: A little bit.

Therapist: And after you fall asleep, do you wake up and have difficulty falling back asleep again?

Pete: Yes. I am up and then I check the house and the doors and the windows. And it is difficult to go back to sleep.

Therapist: Oh, I see. Some people say that they're either a morning person, or a night person, or somewhere in between, based on when they feel most energetic. Do you think you may be a night person?

Pete: Well, I'm honestly more awake in the evening. I'm not sure I would say I'm energetic and lively, but I do more after the sun sets than I do after it rises.

Therapist: Mmm hmm.

Pete: So I guess that would make me a night person.

Therapist: [summarizing] So at night you're much more alert, and that makes it difficult to fall asleep when you want to. You know, it sounds like your hyper-alertness at night could be due to your being more of a night owl by nature, and it could also be due to nighttime not being a safe time for you. Which of these do you think is the bigger factor?

Pete: I think it's a combination of the two.

Therapist: Probably right. So we will work on both issues. I'm going to have you fill out a questionnaire that will help us figure out how strong of a night person you are.

Pete: Okay, sure...

### Clinical Essence:

- The Morningness/Eveningness Questionnaire alone is insufficient for the assessment of circadian tendencies and should not be a substitute for clinical assessment.
- Because the circadian tendency is a trait, it is best assessed as a life-long tendency with a focus on periods with little environmental constraints on the sleep-wake schedule.
- If there is no life-long tendency for morningness or eveningness, and the sleep schedule is advanced or delayed, assess factors that contribute to the shifted schedule.

### A3. Assessing day-wake time behaviors that can impact sleep.

- Napping behaviors:** Many people with insomnia are unable to nap. Some use the word “nap” to describe a period of lying down to rest, even when they do not sleep during that time. Make sure the patient is clear about what is being asked. Start by asking: **“Do you nap?”** If the patient answers “No” – ask: **“If given the opportunity, are you able to fall asleep for a nap?”** If the patient answers “Yes” – inquire about the frequency, length, and timing of daytime naps. Inability to nap in the face of insufficient or inadequate sleep can serve as a behavioral index of sleep-related hyperarousal because it reflects an inability to sleep when there is high sleep need. Inquire about unintentional dozing (e.g., on the sofa while reading or watching TV) as well. Long naps or frequent dozing, particularly in the evening, can diminish an individual's sleep drive and compromise nocturnal sleep. Short afternoon naps (20 to 30 minutes or less) usually do not disturb sleep at night.
- Patterns of stimulant use:** Does the Veteran have a pattern of using stimulants? If so, what stimulants are used and when are they consumed? These include caffeine, nicotine, specific prescription and nonprescription medications, and some illicit drugs. It is important to know if such substances are ingested close to bedtime.
- Daytime activity levels:** A sedentary lifestyle and being under-stimulated can hinder sleep; whereas vigorous exercise less than four hours before sleep is thought to interfere with sleep. These issues can be probed with questions such as:  
**How busy are you during the day?**  
**Do you exercise? If so,**  
**When and what type of exercise?**  
**Is it vigorous exercise?**
- Daytime sleepiness and fatigue:** Patients with insomnia often complain about being tired, fatigued or sleepy. They tend to use the terms interchangeably. Sleep specialists find it important to distinguish between *sleepiness*, which refers to the propensity to fall asleep if given the opportunity, and the terms *tiredness* and *fatigue*, which refer to a low energy level

that does not necessarily reflect a sleep need. The term sleepiness is akin to the term hunger in that they are the signals for seeking sleep and food respectively.

A person may be tired and fatigued for reasons unrelated to the quantity or quality of his sleep, such as low iron, thyroid dysfunction, depression, and other conditions. A form entitled “Reasons for Feeling Tired” (Carney & Manber, 2009) may help assess sources of fatigue and later explain them to the patient. Failing to distinguish sleepiness from fatigue may lead patients to extend time in bed, which, as discussed earlier, may interfere with sleep. Therefore, it is recommended to clarify the distinction by asking about levels of sleepiness and then asking separately about fatigue, as well as about how each is distributed across the 24-hour day.

The following is an example of a therapist helping a patient (Rosa) recognize when she feels sleepy. This is later used to help Rosa use sleepiness as a cue for going to bed.

- Therapist: Rosa, Do you remember when you slept well? [pauses and continues after patient nods] How did you decide when to go to bed back then?
- Rosa: Well, [pause] in the military, you know it was very regimented and structured, and we didn't have – we were very busy during the day and very um, you know, lights out and I would crash.
- Therapist: Do you remember how those last moments of wakefulness felt? How it felt in your mind just before you crashed?
- Rosa: Yeah, during that time I, you know, when the lights were out, I would start feeling heavy eyes, and I would, just drift off, you know
- Therapist: So that sounds like you were sleepy. Sleepiness for you meant heavy eyes, a sense of mind drifting. That's what I mean when I talk about sleepiness. Do you remember how you decided when you were going to go to bed before the military?
- Rosa: I guess it was similar, you know, it just wasn't a problem you know, so around 11 p.m., I would just .....
- Therapist: And how about now, how do you know when to go to bed now?
- Rosa: Well, now, I'm going to bed at nine and kind of whenever it happens, it happens.
- Therapist: Why nine? Do you feel sleepy at nine?
- Rosa: No, I don't feel sleepy, I'm just going – to bed.
- Therapist: You just go to bed...and.. And when do you turn off the light?
- Rosa: Probably around 9:30 p.m.
- Therapist: Do you feel sleepy then?
- Rosa: I wouldn't say I feel sleepy, I'm just kind of hoping and trying at that point.
- Therapist: Okay, [pause] I think it will help to go back to what you used to be doing... [pauses] that you go to bed when you feel sleepy. You'll need to wait until you feel sleepy, do you think you can wait?
- Rosa: Yeah. Yeah I think it would probably coincide more with a later bedtime.
- Therapist: Like how it used to be.
- Rosa: It used to be around 11 p.m.
- Therapist: Okay – Let's talk about the specific bedtime.
- Rosa: Okay.

**A4. Assessing factors that contribute to hyperarousal-hyperactivation.** In individuals whose sleep is satisfactory and undisturbed, sleep occurs without much effort or concern. By contrast, chronic insomnia is associated with increased *sleep effort* and increased preoccupation and apprehension related to sleep, which in turn hinder sleep. Therefore, it is necessary to pay attention to overt and covert cognitions and behaviors that may be manifestations of increased sleep effort. These include behaviors and cognitions that reflect rigid sleep-related behaviors and rituals and excessive concern about sleep. Attention should also be given to the coping strategies the patient uses, as many strategies actually perpetuate insomnia either directly or by increasing cognitive arousal. Some of these issues can be clarified with questions such as:

- Do you do anything to try to get yourself to sleep at night?**
- Do you try to hold your eyes closed or stay very still at night when you can't sleep?**
- Do you ever find that you are working at getting to sleep? Is that frustrating?**
- Do you think about your sleep during the day?**

**A5. Assessing cognitions.** When Veterans with insomnia describe their sleeping problem they usually also provide very important information about the level of their distress, their preoccupation with their sleep, their dysfunctional beliefs about sleep,

and the effort they put into “trying to sleep”. During the initial evaluation, write down patient statements that reflect dysfunctional beliefs (for example, “Unless I get 8 hours of sleep my health will be compromised”), excessive focus on sleep, and behaviors that fall into the category of “trying too hard to sleep” (for example, refusing social invitations in the evening because of fear that they might interfere with sleep). Later recall such statements and use cognitive therapy techniques to address them. Also consider administering the Dysfunctional Beliefs About Sleep questionnaire that assesses counterproductive cognitions (Morin, Vallieres, & Ivers, 2007).

**A6. Assessing possible comorbidities.** The assessment interview will not be complete without an assessment of medical and mental health comorbidities and a comprehensive list of non-sleep medication usage. Much of this information will be available in the Computerized Patient Record System (CPRS), but as Veterans may also receive care elsewhere, inquiring about these aspects of health should be an integral part of the sleep assessment.

It is also important to determine whether the patient is suffering from comorbid sleep disorders. Two of the most common sleep disorders, comorbid with insomnia complaints, are OSA and RLS. Both disorders require the attention of a medical sleep specialist. Below is information that can help evaluate the need for referral to a sleep specialist for further assessment and treatment of these conditions.

**Obstructive sleep apnea:** The following symptoms may indicate the presence of OSA:

1. Loud snoring: Particularly if gasping for air, snorting or witnessed cessation of breathing are reported. These are highly suggestive of OSA. Ask the Veteran:  
**Have you been told that you snore loudly?**  
**Has anyone witness you stop breathing?**
2. Daytime sleepiness: This is distinct from *tiredness* and *fatigue*, and is common in OSA.  
**Are you likely to doze off when inactive (e.g., watching TV, reading, attending a boring lecture, etc.)**
3. Obesity and older age: These are also risk factors for obstructive sleep apnea.
4. Administer and score the “STOP Questionnaire” (Chung, Yegneswaran, Liao, Chung, Vairavanathan, Islam, Khajehdehi, & Shapiro, 2008): This short questionnaire can be completed by the patient before or during the assessment session. Answering “Yes” to two or more questions indicates high risk of OSA and the need for referral to a sleep specialist.
5. Previous diagnosis of OSA: Inquire if it is being treated with CPAP, and if so, assess the patient’s level of adherence to CPAP in terms of the number of nights it is used each week and the number of hours it is used per night. Patients should be using CPAP at a very minimum of 4 hours per night for at least 5 nights per week, but more frequent and longer nightly use is better. Encourage adherence to nightly treatment with the goal of using it for the entire night. A comprehensive discussion of CPAP adherence issues remains beyond the scope of this manual.

**Restless legs syndrome:** The hallmark symptom of RLS is an uncomfortable sensation deep in the legs, typically in the calves, when lying down. Unlike cramps, which usually resolve with stretching the affected leg(s), RLS prompts the patient to get out of bed and walk in order to relieve the symptoms. The following questions can help you diagnose RLS: **Do you have any sensations in your legs when you are trying to sleep? Can you describe them? What do you do to alleviate these sensations?** (In Chapter 1, page 27 there is a script of a therapist assessing RLS.) If RLS symptoms are present administer the “Restless Legs Syndrome Rating Scale” (Walters, 1995) to determine its severity. The interpretation of the RLS questionnaire scores is as follows:

Mild (score 1 to 10);  
Moderate (score 11 to 20);  
Severe (score 21 to 30); and  
Very Severe (score 31 to 40). If unclear, or if a patient scores 11 or more, refer to a sleep specialist.

**A7. Treatment goal.** At the end of the assessment ask the patient to articulate a treatment goal(s). The goal(s) should be

operationalized so that progress can be tracked. For example, a Veteran whose goal is to sleep like a “normal person” can be asked what this means. The goal should also be realistic. For example, consider a 67 year old retired Veteran who used to sleep 6.5 to 7 hours a night before retirement and felt alert and functional during the day, but now has a goal to sleep 8 to 9 hours a night because he has more time and life is less stressful. This may not be realistic because the patient wants to sleep more than his historical sleep need. Moreover, for many people, older age is associated with diminished ability to sleep as long as when they were younger. A discussion of unrealistic goals will be most productive following some relevant sleep education. For example, a patient who is up for 2 hours in the middle of the night may wish to sleep without interruption through the night. Such an individual could be reminded that even good sleepers have some waking during the night. Then help the patient alter the goal, for example, to falling back to sleep within 15 minutes of waking.

**A8. Insomnia symptom severity.** The “Insomnia Severity Index (ISI)” (Bastien, Vallieres, & Morin, 2001; Carney, Buysse, Ancoli-Israel, Edinger, Krystal, Lichstein, & Morin, 2012) is a validated seven-item questionnaire that assesses night and day time symptoms of insomnia. Its total score provides an overall index of insomnia severity. Administering the ISI at the beginning of each session helps track patients’ progress in treatment. The following is a validated interpretation of ISI scores:

- No clinically significant insomnia (score 0 to 7);
- Subthreshold insomnia (score 8 to 14);
- Moderately severe clinical insomnia (score 15 to 21); and
- Severe clinical insomnia (score 22 to 28).

A reduction of 8 or more points in ISI score represents moderate improvements and a reduction of 9 or more points represents marked improvements (Morin, Belleville, Belanger, & Ivers, 2011).

## B. Sleep Diary

Patients need to complete a sleep diary each morning during treatment. It is essential for implementing CBT-I. For most accurate recall, it is best to complete it shortly after waking up. Show the patient how to complete a sleep diary (Carney et al., 2012). Go over the sleep diary and demonstrate how to enter data by using the patient’s sleep parameters from the night before the assessment session as an example. Encourage the Veteran to complete a sleep diary each morning to allow both of you to accurately track progress. To illustrate how difficult it is to recall sleep information retroactively, ask the patient to try supplying sleep data for a few nights prior to your session.

Emphasize that the information in the sleep diaries are the foundation of treatment. Some patients become overly concerned about the accuracy of their recording. Acknowledge that reports about sleep are rarely exact and ask just for their best estimates. Emphasize that although sleep diaries are important, the patient should not be overly concerned about the minute by minute accuracy of the report. Tell patients that the primary interest is in tracking change in their sleep-wake experience over time, and that the way people experience time at night tends to stay consistent. Provide opportunities for patients to ask questions and ask whether they anticipate any difficulties in completing the sleep diary.

Sleep diaries may reveal discrepancies between patients’ global estimates of their sleep patterns and their actual night by night sleep patterns. Global estimations often depict a much worse problem than the prospective daily charting, which is likely closer to reality. Thus sleep diary data: (a) allow tracking of change with treatment, (b) provide the basis for implementation of behavioral components discussed in the next chapter, and (c) help patients alter misperceptions.

### Clinical Essence:

- **Adherence to completion of the sleep diary** is improved if it is explained early on that the sleep diary is essential for the design of optimal treatment enhances.
- **Daily recording in the sleep diary is important.** When asked to complete in session, sleep diary information for the last three nights, patients learn that retrospective reports are not accurate and are more likely to complete the diary information daily.

## C. Case Conceptualization

Before beginning treatment, complete the Case Conceptualization Form (Appendix D). It will help in considering factors that are relevant to the Veteran’s presentation of insomnia and making treatment plans. Major issues to consider include *factors that*

## Case conceptualization

1. **Sleep drive:** What factors may be weakening the Veteran's sleep drive? (e.g., extended time in bed, dozing off in the evening, daytime napping)
2. **Biological clock:** What factors may be weakening the signal from the Veteran's biological clock? Some examples include irregular wake or out of bed time, time in bed window that is not congruent with the patient's chronotype (circadian tendency).
3. **Hyperarousal:** What manifestations of hyperarousal are evident? (e.g., conditioned arousal, excessive sleep effort, specific erroneous beliefs about sleep, presence of hyperactive mind in bed)
4. **Unhealthy sleep behaviors:** What unhealthy sleep behaviors are present? Consider substances, nocturnal eating, timing of exercise, and etc.
5. **Comorbidities:** What comorbidities may impact the Veteran's sleep and how? Consider sleep, medical and psychiatric conditions. For example, depression may contribute to excessive time in bed, PTSD may be associated with hypervigilance, and OSA treatment may not be well-tolerated and thus may interfere with sleep.
6. **Medications and substances:** What medications might impact the Veteran's sleep or sleepiness? (Consider carryover effects, tolerance, and psychological dependence.)
7. **Predisposing, precipitating and maintaining factors:** What are the *predisposing*, *precipitating*, and *maintaining* factors? (High trait anxiety may be a predisposing factor; interpersonal stress, job stress, loss, significant life changes are all examples of precipitating factors; and sleep effort and extended time spent in bed are examples of maintaining factors.)
8. **Other:** What other factors are relevant to the patient's presentation?

*affect the regulation of sleep (the biological clock, the sleep drive and the role of hyperarousal), and the effect of substances, medications, and the comorbidities, as well as understanding if and how conditioned insomnia has developed.* It is important to consider all domains. These domains are often interconnected and mutually impact each other. Completing the Case Conceptualization Form will ensure awareness of how each of the domains below may impact any specific recommendations to be made. It will also help anticipate adherence issues, and be better able to troubleshoot issues that may arise. The eight questions (left) should be considered:

For each of the domains (left), devise a plan to address the relevant issues. Then identify the most important one to three issues that need to be addressed first. When making these choices try to strike a balance so that the starting point of treatment is feasible and does not overwhelm the patient, yet will likely lead to improvements in sleep. Careful selection of treatment elements matched to the patient's presentation and the order in which they are introduced are essential for effective administration of CBT-I.

# Chapter 3: CBT-I Treatment Components and Implementation

This chapter introduces the behavioral components of CBT-I (Sections A and B) and common adherence issues, and how to address them. After describing each of the behavioral components separately, this chapter describes how to combine them into a set of five patient guidelines (Section C). Then cognitive therapy techniques are introduced for addressing sleep-interfering cognitions and cognitions that may hinder adherence to the behavioral guidelines (Section D)

## A. Behavioral Components

The primary behavioral components of the CBT-I treatment protocol are *Stimulus Control (SC)* and *Sleep Restriction Therapy (SRT)*. Each is described separately (A1 and A2). Together, SC and SRT aim to: (a) strengthen the bed as a cue for sleep by eliminating sleep incompatible behaviors from the bed and bedroom; (b) strengthen the signals generated by the patient’s circadian clock by regularizing the patient’s sleep-wake schedule; and (c) increase the patient’s sleep drive by limiting the time spent in bed (TIB). Scripts for presenting the combination of the two treatments to the patient are presented in Section C.

**A1. Stimulus control.** SC was first introduced in 1972 by Richard Bootzin (Bootzin et al., 1991), a pioneer of psychological treatment of insomnia. SC is a set of instructions based on the idea that, for individuals suffering from insomnia, *the bed and bedroom have become conditioned to arousal, rather than to sleep*. That is, whereas for good sleepers the bed is a cue for sleep, for people with insomnia the bed has often become a cue for arousal. Conditioned arousal is developed through repeated experiences of frustration, anxiety or tension when unable to sleep. Many individuals with insomnia report that they struggle to stay awake on the sofa in the living room, yet become wide awake upon getting into bed. SC instructions aim to end the association between bed and arousal (known by behaviorists as “extinction”), and instead to strengthen the bed as a cue for sleep. The following are the core SC instructions:

### Stimulus Control Instructions

1. Go to bed only when sleepy (not just fatigued or tired).
2. Use the bed and bedroom only for sleep (and sex).
3. If unable to sleep, get out of bed and return to bed only when sleepy.
4. Wake up at the same time every day regardless of how much you slept.
5. Do not nap.

**A1.1 Enhancing adherence to SC.** To optimize the benefits from SC, explore potential obstacles to adherence when first presenting the intervention and to help the patient come up with solutions. A few common obstacles to adherence to SC are discussed here and additional ones are discussed in Section D below. This section addresses cognitions that may interfere with adherence such as: “I will never feel sleepy”; and “If I get out of bed I will have less time to sleep”). In addition, Chapter 5 discusses how common comorbidities among Veterans impact their adherence to SC.

**Difficulty identifying sleepiness:** Not all people with insomnia can distinguish between sleepiness (the sensation of almost dozing off, having to almost struggle to stay awake) and fatigue (low energy, low motivation to stay awake). To help patients follow the SC instruction to go to bed only when sleepy, make sure the patient understands this distinction. If not already explained during the intake interview this is a good time to ask: **Do you know the difference between being tired and being sleepy?** To help the patient identify times he was sleepy, ask: **Do you remember dozing off when you did not intend to or having had to struggle to stay awake? Have you ever felt tired but “wired”?** The handout “Alternative Reasons for Fatigue” (Carney et al., 2009) may be helpful for this discussion.

Some Veterans with insomnia may not feel sleepy. If this is the case, explain that the process of getting out of bed when unable to sleep may help the patient become familiar with the sensation of sleepiness. Some patients may go to bed too early relative to their circadian tendencies (chronotypes). This means their circadian clocks are still generating strong alerting signals.

In such cases, explain the role of the circadian clock in the regulation of sleep (see Section D below for a suggested script) and discuss the advantage of a later bedtime. Allowing some time to unwind from the day is also important for helping patients recognize sleepiness. This is discussed in Section B below. When high levels of arousal or hypervigilance are present, as is the case with some patients with PTSD, the instructions to go to and return to bed only when sleepy are modified as discussed in Chapter 5 Section B.

Difficulty getting out of bed when unable to sleep: Leaving a warm bed in the middle of the night may not be easy, particularly in the winter. It may help to prepare a place that will be appealing (or at least less objectionable). For example, the patient can prepare a comfortable sitting place, with a throw blanket and a space heater readily available. This may be helpful in winter, when the idea of getting out of bed is particularly unappealing. It may also help to identify activities for the time spent out of bed in the middle of the night. To facilitate a re-emergence of sleepiness, out of bed activities need to be sufficiently engaging so that the patient can be distracted from “trying to sleep,” but not so engaging or energizing (e.g., showering) that it prolongs wakefulness. Some Veterans get out of bed and take a shower, eat or exercise. Such activities will prolong wakefulness in the middle of the night. Even reading a suspenseful book or watching a long movie may prolong wakefulness. Eating in the middle of the night can be detrimental to sleep because the circadian system interprets it as a signal for wakefulness. Doing chores in the middle of the night is also discouraged because it gives insomnia “a function”. When patients get up to pay bills, do laundry, or get office work done, that is otherwise not getting done during the day, they are giving themselves a reason to wake at night. The “Things to Do if You are Awake” handout can be helpful for this discussion (Appendix E).

Some patients are concerned about getting out of bed in the middle of the night because they fear they will stay up for the rest of the night. Whereas advising them to choose reading materials with non-upsetting and non-stimulating content may reduce some of this concern. It is also important to convey that the most important activity to avoid is trying to sleep. They should make the experience as pleasant as possible. It is OK if it keeps them awake longer, because what they are doing is not meant to help tonight anyway, but rather to help in the long run. They cannot unlearn the bed-arousal association in one night. By being awake more in the short-run they are building sleep drive. If they adhere to the recommendations they will eventually be repeatedly pairing their beds with sleepiness and falling asleep quickly. Because light is activating, it is best to minimize light exposure when out of bed in the middle of the night. For older adults with age-related vision impairment it is important to emphasize the need for enough light to prevent a fall. Discourage sleeping the rest of the night on the couch. Instead, encourage patients to go back to bed when feeling sleepy but before actually falling asleep.

### **Veteran Alert:**

Some Veterans get out of bed in the middle of the night and engage in activating behaviors, such as taking a shower, eating, drinking coffee, and exercising. In these cases, provide information and consider using cognitive therapy (Chapter 3 Section D) to explore why the Veteran is choosing to engage in these behaviors, despite knowing they are likely to interfere with sleep.

Bedpartner-related obstacles to adherence to SC: For patients with a bedpartner, going to bed only when sleepy may mean going to bed at a different time from that of the bedpartner. This may be problematic because it may raise concerns about intimacy and about waking the bedpartner, depending on who goes to sleep earlier. For example, consider a “night person” with insomnia who now goes to bed early, because this is when his wife is ready for bed, but he does not feel sleepy. Help the patient consider the option of separating spending time in bed with his wife at her bedtime from his time for going to sleep. That is, the couple can go to bed at the same time, but when the wife is ready for sleep the patient leaves the bedroom and does not go to bed again until feeling sleepy.

Another common concern is that going to bed later, or getting out of bed in the middle of the night or morning, might disturb a bedpartner. This may or may not be the case. Our experience suggests that many patients with insomnia report that their bedpartners are good sleepers. In such cases, use skillful questioning (guided discovery in Section D2 below) to help the patient realize that: (a) the bedpartner might not be awakened by the patient’s leaving and returning to bed; (that b) the bedpartner will likely be able to fall back asleep easily if awakened; and (c) getting out of bed is less likely to disrupt a bedpartner’s sleep than tossing and turning.



Difficulties adhering to the designated waketime: Common reasons for non-adherence to getting out of bed at the same time every morning are: (a) wanting to catch up on lost sleep; (b) having a strong eveningness tendency; and (c) low motivation and anhedonia (lack of pleasure from previously enjoyed activities). During the winter, patients may also voice objections such as “It is still dark out” or “It is cold in the morning and my bed is toasty.” A good understanding of the importance of fixed wake and out of bed times for the regulation of sleep is essential. A script for explaining the regulation of sleep is in Section C.

Veterans with an *eveningness tendency* often have difficulty getting out of bed in the morning because they tend to have strong sleep inertia. That is, they wake up feeling they want to go on sleeping and need more time in the morning to shake off this feeling. As a result, they find it harder than others to get going in the morning. Moreover, sleep inertia may compromise their ability to accurately judge their sleep need, which among other things may lead to greater sleep effort.

Individuals with *depression* also often find it hard to start the day, usually because of low motivation and anhedonia. Patients with both depression and an eveningness tendency may be helped by planning activities for which they will be highly motivated, or that involve commitment to other people. The Things to Do if You Are Awake handout can assist in identifying activities for different times in the evening or morning, as the situation requires (Appendix E). A companion handout, “Enjoying Your Morning”, can also assist patients in identifying things to do to help them get out of bed in the morning Quiet Your Mind Book (Carney et al., 2009). These forms may be particularly relevant to patients who are socially isolated and to those dealing with depression.

In addition, SC adherence is enhanced when a convincing rationale is presented. To do so, explain conditioned arousal as learning that occurs without awareness and results from repeated pairing of the bed with wakefulness. Section C includes a suggested script for presenting the rationale for SC and each of its five components. Case examples are provided later in this section and in Section C.

**AI.2 Safety.** Some SC instructions, such as getting out of bed in the middle of the night when unable to sleep, can be difficult, and even potentially dangerous for frail Veterans, such as those with restricted mobility and those with medical conditions bearing increased risk of falls, (e.g., orthostatic hypotension). In such cases variants of SC, such as counter control may be used instead. In *counter control* (Davies, Lacks, Storandt, & Bertelson, 1986), the recommendation to get out of bed when unable to sleep is replaced with the recommendation to sit up in bed and read, watch TV, or similar activity other than sleep. The aim is to reduce the association between the bed and trying to sleep and suffering the frustration of not sleeping. Counter control is also useful when SC instructions cannot be tolerated, fear of going to bed is prominent (e.g., some Veterans with PTSD), and in individuals who are over-zealous about getting out of bed in middle of night, and thus do not allow enough calm time in bed to fall back to sleep.

### Clinical Essence:

- **To enhance adherence with SC** elicit feedback about the patient’s comprehension of each of the five guidelines, and ask the patient to anticipate difficulties that may arise.
- **Safety issues:** Counter control, a variant of SC, should be used with patients for whom getting out of bed is not safe or not medically feasible.

The following clinical vignette exemplifies how the therapist revisits the previously explained concept of conditioned arousal to introduce SC to Chris. The therapist anticipates and preempts some potential obstacles and troubleshoots with Chris’ anticipated difficulty getting out of bed at the same time every morning.

Therapist: Now I would like to talk about some recommendations to help you learn to associate the bed and the bedroom with sleeping. We talked earlier about how the bed and bedroom become associated with wakefulness in the first place. Now I want to make a few recommendations about what you can do about it. Following this set of guidelines [refers to brochure] will help you to learn to re-associate the bed and the bedroom with sleep...

Chris: Yeah, yeah, sounds like a good idea.

Therapist: The first guideline is to wake up at the same time every day.

Chris: That’s going to be hard.

Therapist: Yeah. I know that's not something you're doing right now. Let's first think about what time you could use as a regular wake up time that you stick to seven days a week.

Chris: That's...that's hard. There are some days I actually have to get up at 7 a.m. to take my daughter to school. It's only three days a week that I have to do that...

Therapist: But you have to do it...

Chris: Yeah.

Therapist: Yeah, so maybe that's a good place to start. Because you're going to have to get up three days a week around seven did you say?

Chris: Yeah... [thinking]

Therapist: And so, the way to get you out of bed is...

Chris: [interrupts] That's going to be hard, sometimes I can turn my alarm off almost while...I'm half asleep still, I think. Seems like when I'm finally sleeping - right at that time - the alarm goes off. [pauses] I guess one thing I might do is put my alarm farther away.

Therapist: Yeah, maybe put it across the room so you have to get out of bed to turn it off.

Chris: Yeah.

Therapist: It's a good suggestion. With an alarm clock that is across the room so you would have to get out of bed at 7 a.m. to turn it off. The next guideline is that you only go to bed when you're sleepy. Right now, how are you deciding when to go to bed?

Chris: When my wife goes to bed. Which is around 11 p.m....

Therapist: Okay, so you are using an external cue. It is better to pay attention to your internal cues. Your internal cues for sleepiness could be...that your eyes start to get tired, or your head starts to nod off, or you're yawning.

Chris: [chuckles] If I did that, I guess I would take a nap every day at work.

Therapist: Well, those are the same cues you should look for at night. Those are the cues for sleepiness - rather than the external cues, like your wife going to bed. [patient nods] One other thing that will be important for you is to get out of bed when you're unable to sleep. This gets back to the idea of associating the bed and the bedroom with sleepiness. We don't want you lying in bed doing the things that you've talked about, like worrying about getting up in the morning, about work and getting frustrated and trying harder.

Chris: You mean after I've already gone to bed?

Therapist: Yes. I know it sounds strange. When you first get into bed or during the night. If you are struggling with sleep, get out of bed.

Chris: Get back out of bed in the middle of the night...?

Therapist: Yes. I know. You're going to lose a few battles before you win the war. But try this. [Pauses to give patient time to think.] And right now, you're lying awake for an hour, or an hour-and-a-half at the beginning of the night. And then, during the night, you also sometimes have awakenings. The same guidelines apply in both cases. Get up, and get out of bed if you can't sleep. This will help your body learn to re-associate the bed and the bedroom with sleepiness and sleep.

Chris: Okay

Therapist: So there is one more thing you can do to re-learn the bed and the bedroom is for sleepiness. [referring back to the guidelines] It is not a good idea to watch TV in bed, or read, or do other activities in bed that aren't associated with sleepiness and sleep, because it can make the bed a cue for things other than sleep. One exception is sexual activity.

Chris: I heard about this before but did not know why people say not to watch TV in bed.

Therapist: And then finally, it is best to avoid daytime napping. Are you napping now? Your diary says...

Chris: [interrupts] uh, not so much...I'm dead tired sometimes at work and I'd really like to, but it wouldn't look good. [laughs]

Therapist: It wouldn't fit in...[both laugh] so, napping is not so much of an issue for you. Napping does tend to decrease that sleep drive, so in general we want to avoid it.

Chris: All right.

Therapist: Those are the guidelines in a nutshell.

Chris: Patient nods in agreement.

Therapist: Okay, so do you have any questions?

**A2. Sleep restriction therapy**, SRT was first introduced in 1987 by Arthur Spielman and colleagues (AJ Spielman et al., 1987). SRT is an iterative (gradual, multi-step) process designed to improve sleep quality by decreasing wakefulness after

sleep onset. The first step is to reduce Time in Bed (TIB) to the time the patient is currently able to sleep, although never below what will be safe. This usually results in a marked decrease in unwanted wakefulness and improvement in sleep quality. When the desired effect of consolidating sleep is attained, TIB is slowly expanded, as long as sleep remains consolidated but daytime alertness is not yet optimal. By equating the TIB with the patient’s reported time asleep, the initial step may lead to some reduction in sleep quantity. The term, sleep restriction, may raise anxiety in some patients with insomnia. Alternative terms to use with patients are: *time in bed restriction*, *sleep quality enhancement*, and *sleep efficiency training*. These terms also better describe the initial step, which in fact restricts TIB and increases sleep quality. SRT is particularly helpful for consolidating fragmented sleep (middle insomnia), but the increase in sleep drive can also help reduce difficulty falling asleep at the beginning of the sleep period (early insomnia), and even for difficulty staying asleep at the end of the sleep period (late insomnia). It was initially developed to help older adults with fragmented sleep, and has since been used to treat insomnia in all age groups.

**A2.1 Determining TIB for SRT.** Determining the TIB for patients is a fairly straightforward process that relies on data from at least a week of daily sleep diaries. Sleep in insomnia patients may vary a great deal over the course of a week. If the patient only records sleep information for a few nights, the entries may not adequately represent the patients’ usual sleep behavior and may lead to inaccurate estimation of the average total sleep time (TST), on which SRT is based. The initial TIB is determined using the following formula:

$$\text{TIB} = \text{Average of TST in the past week (based on sleep diary)}$$

In the sample sleep diary below, the average TST was 400 minutes. Therefore, the recommended TIB for the next week would be 6 hours and 40 minutes (or 400 minutes). This will restrict the TIB for the following week relative to the diary-based average of 9 hours (540 minutes) in the past week.

*The initial TIB should never be below 5 hours, even if the average TST is less than that (e.g., 3 hours). Despite multiple reminders, and despite emphasis on the importance of the data, some patients do not complete a sleep diary. In such cases, though not ideal, it is possible to determine the initial TIB based on self-reported sleep schedule. The recommended TIB based on retrospective reporting may not be accurate because insomnia patients’ sleep may vary greatly from day-to-day and their retrospective report may be impacted by their most recent or worst sleep.*

### Sample Sleep Diary

Day of Week	Mon	Tue	Wed	Thurs	Fri	Sat	Sun
Calendar Date	4/5	4/6	4/7	4/8	4/9	4/10	4/11
1. Yesterday I napped from ___ to ___ (note time of all naps).	None	None	None	None	None	None	None
2. Last Night I took ___mg of _____ or _____ of alcohol as a sleep aid (include all prescription and over- the-counter sleep aids).	None	None	None	None	None	None	None
3. Last night I got to bed at ___ (a.m. or p.m.).	11:00 p.m.	11:30 p.m.	11:15 p.m.	10:30 p.m.	11:15 p.m.	10:30 p.m.	11:00 p.m.
4. Last night I turned off the lights and attempted to fall asleep at ___ (a.m. or p.m.).	11:30 p.m.	11:30 p.m.	11:15 p.m.	11:00 p.m.	11:15 p.m.	10:50 p.m.	11:00 p.m.
5. After turning off the lights it took me about ___ minutes to fall asleep.	20 min	35 min	75 min	45 min	15 min	20 min	15 min

Sample Sleep Diary (continued on page 44)

Sample Sleep Diary (continued from page 43)

Day of Week	Mon	Tue	Wed	Thurs	Fri	Sat	Sun
<b>Calendar Date</b>	4/5	4/6	4/7	4/8	4/9	4/10	4/11
6. I woke up from sleep ___ times. (Do not count your final awakening here).	2	1	3	2	1	2	1
7. My awakenings lasted ___ minutes. (List each awakening separately).	25 min 15 min	60 min	10 min 25 min 30 min	60 min 40 min	90 min	30 min 45 min	10 min
8. Today I woke up at ___ (a.m. or p.m?). (NOTE: this is your final awakening).	6:30 a.m.	7:00 a.m.	7:15 a.m.	7:30 a.m.	7:00 a.m.	7:15 a.m.	7:00 a.m.
9. Today I got out of bed for the day at ___ (a.m. or p.m.).	7:00 a.m.	7:30 a.m.	7:30 a.m.	7:45 a.m.	7:15 a.m.	7:30 a.m.	7:15 a.m.
10. I would rate the quality of last night's sleep as: Very Poor      Fair      Excellent 1 2 3 4 5 6 7 8 9 10	2	3	2	3	2	3	5
11. How well rested did you feel upon arising today? Not at All    Somewhat    Well Rested 1 2 3 4 5 6 7 8 9 10	1	4	2	5	1	3	5
<b>Total Sleep Time</b>	360 min	415 min	400 min	425 min	390 min	410 min	400 min
<b>Average TST = 400 min; Average TIB = 500;</b>							

**A2.2 Determining waketime and bedtime for SRT.** Having determined the appropriate TIB for the patient, the next step is choosing a wake-up time that fits the patient’s life circumstances and circadian tendencies or chronotype. After determining TIB and waketime, determining bedtime naturally follows. It involves counting back from waketime. For example, if it is determined that TIB should be 6 hours and his work schedule dictates a 6:30 waketime then his bedtime will be 6 hours before waketime, or 12:30 a.m.

It is important to emphasize that *waketime needs to be the same, even on non-work days*, and that the patient should get out of bed 5 to 10 minutes after waketime. When combined with SC, the Veteran is also instructed to go to bed only when sleepy, whichever is latest. In the previous example, the Veteran should set an alarm to wake up at 6:30 a.m. and be out of bed by 6:40 a.m. regardless of how well or how much he slept. However, when SC is also implemented and the Veteran is not sleepy at 12:30 a.m. he should not yet go to bed. That said, it should be noted that some patients continue to have a difficult time judging when they are sleepy. This is sometimes the case with veterans with PTSD who postpone going to bed until they can no longer resist the urge to sleep, either because they anticipate having a nightmare or because they are apprehensive about being “off guard” while asleep. As discussed in Chapter 5, in such cases focus on addressing these fears and recommend going to bed at the assigned time regardless of how sleepy the Veteran feels, emphasizing that if he does not fall asleep quickly he should get out of bed and focus on calming down. Please see the PTSD section of Chapter 5 for additional modifications of SC in such cases.

**A2.3 Collaboration.** It is essential that the Veteran is actively involved in the decision about the optimal times to go to bed and get out of bed, and that he considers both “ends” of the night. For example, a patient may initially decide that 7:30 a.m. is a desirable time to wake up. However, if the initial TIB recommendation was set at 6 hours, a 7:30 a.m. waketime would mean a 1:30 a.m. bedtime, which he may consider much too late. Upon realizing that a 7:30 a.m. waketime means such a late bedtime he may wish to select an earlier waketime so that his bedtime can be earlier. This collaborative process should not be rushed. The trial and error process provides an opportunity to digest the parameters of SRT and to identify potential obstacles to adherence.

**A2.4 Enhancing adherence to SRT.** To optimize the probability of adherence to this counterintuitive treatment, it is essential to identify potential obstacles to adherence as early as possible and to help the patient overcome these obstacles. Before determining TIB, waketime, and bedtime, it is important to explain that, with time, as sleep becomes more consolidated, the allowed TIB will be expanded. In other words, the initial restricted TIB is only the first step in a gradual multistep process, and that over time the TIB will slowly be extended. Knowledge of the overall plan and how it works may reduce anxiety in response to the idea of limiting TIB.

Some common obstacles that will be addressed in this section are: difficulties adhering to recommended waketime and bedtime (e.g., staying up until the designated time or getting out of bed in the morning at the designated time), patients’ concerns about disturbing their bedpartners’ sleep and other bedpartner related issues, and heightened anxiety in response to SRT. Cognitions and beliefs that are not congruent with SRT may also interfere with adherence and are addressed in Section D. Comorbidities present special challenges to adherence to SRT and are also discussed in Chapter 5.

*Dealing with anticipated difficulties with adhering to the TIB window:* Difficulties waiting until the SRT designated bedtime and getting out of bed at the designated time in the morning are common and may stem from different causes. Some of these issues were discussed in Section A1 above, where obstacles to adherence to SC were discussed.

The importance of planning activities that will assist with adherence at either end of the night has also already been discussed. As noted before, different times of the day or night call for activities that are either calming or activating. For example, pre-bedtime activities should usually be calming and relaxing. Veterans with strong evening tendencies may need to have long wind-down times during which they will engage in calming activities. In contrast, an older Veteran with a morningness tendency, who needs to delay bedtime during SRT, may need to engage in activating activities in the evening in order to avoid dozing off too early. As discussed in Section A1 of this chapter, Veterans with difficulty waking up in the morning may be helped by planning activities for which they are highly motivated or that involve commitment to other people. Use the Things to Do if You Are Awake handout (Appendix E) to help the patient identify activities for different times in the evening and morning as the situation requires.

There is also a companion worksheet: “Staying Awake Until Your Scheduled Bedtime” (Carney et al., 2009) on which the patient can list the activities he selected and rate each activity with respect to the likelihood it will be helpful in keeping him awake until the recommended bedtime and with respect to the likelihood that the activity will interfere with sleep. These forms may be particularly relevant to patients who are socially isolated and to those who are depressed.

Spouse or partner-related obstacles to adherence to SRT: The spouse-partner related obstacles to adherence to SC, discussed in Section A1, also apply to SRT. One additional partner-related challenge may arise for a patient with a tendency towards morningness whose SRT-determined bedtime is later than the couple’s habitual bedtime, particularly if the Veteran is concerned that his later bedtime may compromise intimacy. In Section A1 of this chapter it is suggested that a “night” person with a concern about intimacy may want to visit with his bedpartner at the couple’s current bedtime and then leave the bed until his SRT-designated bedtime. This solution may not be feasible for a morning person who may have difficulty staying awake while visiting with his bedpartner. The couple may come up with another solution. For instance, the bedpartner may agree to go to sleep later during the early stage of SRT and help the patient stay awake until his bedtime. It may help the couple if they are aware that the later bedtime will likely be needed only for a relatively short time, and that later in the course of treatment, as the patient’s sleep improves, bedtimes may become earlier.

Dealing with heightened anxiety in response to SRT: Sometimes the idea of restricting TIB leads to significant anxiety. As discussed earlier, anxiety can compete with the increase in sleep drive that is produced by SRT. When anxiety is very high, it may override the benefits of a stronger sleep drive. Under such circumstances, reducing anxiety is essential. Sometimes, alternative versions of SRT may solve the problem.

Two alterations of SRT that have been previously reported in the literature, are described. The first allows the initial TIB recommendation to be greater than the average of TST in the past week (based on sleep diary), setting it as TST + 15 or 30 minutes (Edinger, Hoelscher, Marsh, Lipper, & Ionescuc-Pioggia, 1992). This more liberal TIB window takes into account time to fall asleep and brief nocturnal arousals, which are normal. This modified procedure may also be useful for reducing safety concerns in patients with high levels of daytime sleepiness.

A second modification to SRT that may help in cases with extreme anxiety about restricting TIB is called *Sleep Compression Therapy* (Lichstein & Reidel, 2001). This variant of SRT consists of gradually restricting TIB. For example, if the current TIB is 8 hours and average TST is 6 hours, standard SRT would recommend 6 hours in bed. Sleep compression instead recommends an initial TIB of 7.5 hours and then reducing it in subsequent weeks by half an hour. There are a number of variants of the TIB recommendation in sleep compression therapy, but the essential element is the *gradual*, rather than *abrupt*, restriction of TIB. This variant of SRT may also be applicable for older Veterans and people with severe daytime sleepiness.

When choosing which version of SRT to use for a patient with high sleep-related anxiety, there is a need to balance the cost and benefit of each instruction. A flexible but authoritative therapist models a flexible attitude towards sleep, which can further relax patients who are regimented about their sleep-related activities. As was the case for SC, adherence will be enhanced when the rationale for SRT is presented in a manner that is meaningful and nonthreatening. In Section C, there are scripts for presenting the rationale for SRT and the presentation of the intervention.

**A2.5 Safety and side effects.** Alert patients that daytime sleepiness might emerge during the initial stages of SRT and that they should avoid driving or conducting other potentially dangerous activities (such as using power tools) while sleepy. When sleepiness is an issue (for instance in patients with OSA), encourage brief naps to offset severe daytime sleepiness. When severe daytime sleepiness (as distinct from tiredness and fatigue) is present, as may be the case in Veterans with severe OSA, even the liberal version of SRT might create a safety concern, and is, therefore, contraindicated. In such cases, it is best to avoid SRT altogether and instead emphasize SC.

SRT may aggravate several preexisting conditions, including epilepsy, bipolar disorder, sleep walking, night terrors, and illnesses that are associated with excessive daytime sleepiness. Sleep loss induced by SRT may lower seizure threshold in epileptic patients (Fountain, Kim, & Lee, 1998), precipitate mania in patients with bipolar disorder (Colombo, Benedetti, Barbini, Campori, & Smeraldi, 1999), and exacerbate sleep walking and night terrors (Mahowald & Bornemann, 2005). In such cases, it is best to avoid SRT altogether and emphasize SC instead. In rare cases, SRT may worsen insomnia, usually in individuals who respond to the idea of spending less time in bed with high levels of anxiety. In these instances, address the anxiety before beginning SRT.

In the following example, the therapist uses prior explanation of sleep regulation to introduce sleep restriction therapy, calling it “sleep efficiency training”. The therapist works collaboratively with Chris to set up an initial TIB schedule, reminding Chris that this is but the initial step in a process that aims to first improve sleep quality and later increase sleep quantity.

Therapist: Okay Chris, thank you so much for filling out the sleep diary.

Chris: Sure, no problem.

Therapist: We are going to use information from this diary today. But before we get into the details, I want to talk about something we call “sleep efficiency training”

Chris: Okay

Therapist: What that means is going for quality of sleep before going for quantity of sleep. I know one of your goals is to get more sleep, right?

Chris: Yeah, absolutely. That’s my goal.

Therapist: And that’s the goal we want to work toward. But there’s also something to getting quality sleep. Let’s talk about what I mean by that. Typically, a shorter duration of uninterrupted consolidated sleep feels better than a lot of broken up and fragmented sleep. By “consolidated” we mean: you get into bed, you fall asleep relatively quickly and you sleep through the night, or maybe have just a very brief awakening. By “broken” sleep, we mean getting sleep that is interrupted by wakefulness. Typically, this feels less restful than shorter sleep that is consolidated.

Chris: Hmm, okay. [thinking about this]

Therapist: I know. It seems counter intuitive, right? You might be thinking, “but I want more of that longer duration of sleep to feel better during the day,” right?

Chris: Yeah, that'd be nice.

Therapist: Initially we're going to work for good quality sleep. That may mean giving up some quantity to go for the quality.

Chris: Hmm, okay.

Therapist: In looking at your sleep diary, I notice that it takes around an hour, to an hour and a half, for you to fall asleep.

Chris: Yeah, that's probably about right. On average.

Therapist: So you're in bed about an hour, an hour and a half, trying to get to sleep, but it's not quite happening –

Chris: Yeah, that's right.

Therapist: Okay – and I know you have to be up by 7 a.m. on some days. Is that correct?

Chris: Yeah, that's right. That's when I need to be getting up...

Therapist: Okay. So getting back to when we talked about the sleep regulation. We had mentioned how we want to have a strong sleep drive and go to sleep at the right time for our biological clock. So, the sleep efficiency training will help us do that. We want to come up with a time in bed window for you that maximizes your sleep drive, or sleep hunger. So you are going to bed when your sleep drive is high. This will increase the likelihood of you falling asleep sooner. The second important piece is that we want to strengthen your circadian cycle and to align it better with the sleep drive. We want it to send alerting signals at the right time for your sleep schedule. We do that by anchoring the wake time. With variability in wake time, the circadian cycle can be dampened. We need something consistent.

Chris: I hear you.

Therapist: Based on calculations I made from your sleep diary you kept, it looks like you're sleeping - on average across the week - about six hours. And you're actually in bed or attempting to sleep for about eight or nine hours.

Chris: Wow, so I'd like to be getting more than six hours of sleep...

Therapist: Understandable. That's a lot of time in bed trying, but, but not such a great return.

Chris: Yeah, it's true. I feel like I'm doing all I can.

Therapist: And you have been. You know, in doing the sleep efficiency training, we are going to take a somewhat different approach. We want to come up with a time in bed window for you that will make the sleep you are getting be of better quality. Right now, you're getting an average of six hours, so that would be the time in bed window that we would start with.

Chris: That is strict – you're going for a decrease in quantity? Wow, um.

Therapist: Just initially...

Chris: Okay. I think I can give it a try... [somewhat skeptical]

Therapist: You will be giving up some quantity of sleep initially, to go for the quality.

Chris: Okay.

Therapist: Once we get the quality, we start slowly expanding to move towards that quantity.

Chris: Alright. So you're saying that this is just temporary then... ok...

Therapist: So, you say you need to be up by seven, so that would mean getting into bed at what time?

Chris: Um, one?

Therapist: Yes. No earlier than 1 a.m. Remember that we also talked about not getting into bed before you are "sleepy". So we're anticipating a bedtime of one, but if at 1 a.m. you're not sleepy, you don't get into bed at that time. You would wait until you become sleepy. Also, you should continue doing relaxing activities before bedtime like you are now, but you just want to move that to a bit later now – about 11:30 P.M., or 12 o'clock now.

Chris: Okay.

Therapist: If you're not sleepy, just continue doing those relaxing activities.

Chris: Alright.

Therapist: Sound fair enough, Chris?

Chris: Yeah, I'll see what happens.

Therapist: Okay. Getting up at 7 a.m. every day, and it's important to be consistent across the week; even on weekends.

Chris: Yeah, okay.

Therapist: Any questions? Any concerns?

Chris: Well, this is going to be a challenge. [pauses] But it sounds like you really think it'll work, so – I'll give it try and see what happens.

Therapist: Okay, fair enough. Sounds good, so we'll check back in a week, and we'll be able to make adjustments then...

## Clinical Essence:

- **To reduce anxiety response to the term sleep restriction**, alternative terms such as time in bed restriction, sleep quality training, or sleep efficiency training, are recommended
- **To reduce anxiety response to the idea of restricting time in bed**, emphasize that the restricted time in bed is temporary and is designed to improve sleep quality before attending to its quantity.
- **Safety issues:**
  - Do not restrict TIB to less than 5 hours.
  - Patients should be advised that SRT may initially compromise alertness and cautioned to avoid activities that are not safe to engage in when alertness is compromised, such as driving.

**A2.6 Instructions for subsequent TIB alteration.** In subsequent treatment sessions, begin by assessing adherence to the recommended TIB. If the TIB recommendation was not followed, identify and work through obstacles to adherence and discuss what would be a more realistic schedule before proceeding. After working through the obstacles, encourage the patient to follow the TIB recommended at the previous session, unless the average TST changed. In the latter case, recalculate TIB based on the reported average TST for the past week. This recalibration should be done in all ambiguous situations.

After the initial TIB recommendation has been followed for at least one week, administer the 4-item Sleep Need Questionnaire (Appendix G) and compute the patient's average sleep efficiency for the past week. [Sleep efficiency is the percent of time asleep relative to the time spent in bed. It can be estimated using the following formula:  $100 \times (\text{average TST} / \text{average TIB})$ ]. The decision for the next week's TIB recommendation hinges on two factors: (a) **sleep efficiency (SE)** and (b) **sleep need**. At the beginning of each session, review the sleep diary and enter data into the sleep diary calculator, which will automatically compute SE for each day and the average across the week. Sleep need is determined by clinical judgment and the patient's score on the Sleep Need Questionnaire (Spielman). Figure 6 summarizes the rules for changing TIB, which are as follows:

If SE in the prior week was at least 85%: modify TIB according to the following scores on the Sleep Need Questionnaire:

- (a) Score 9 or less: → no change in TIB\*
- (b) Score 10 to 12 → TIB is increased by 15 minutes
- (c) Score 13 or more → TIB is increased by 30 minutes for that week.

## Veteran Alert:

Reporting biases need to be considered along with the scores on the sleep need questionnaires. For example, some Veterans may under-report their sleep need and others may over-report it. Consider the scores and their clinical judgment to decide how to alter TIB. For example, if a Veteran TIB is 5 hours, his sleep efficiency is high, and his sleep need score is under nine, the possibility of under-reporting needs to be considered and assessed. When under-reporting is present then continuing with 5 hours in bed could lead to sleep deprivation (sleeping below one's need) that should be ameliorated.

If SE is less than 80%: reduce TIB by 15 minutes, but only if the score on the Sleep Need Questionnaire is nine or less.

Otherwise, do not change TIB. Instead, try to discern why there has been no, or insufficient progress. No, or inconsistent adherence, are common reasons for failure to sufficiently improve, but by no means the only reason to consider. For example, there may have been change in the patient's life circumstances such as increased stress, illness, travel, and etc. Sometimes the issue is that the TIB window may not have been ideal for the patient's chronotype, possibly because it was hard to identify the patient's circadian tendency. Another reason is increased sleep-related anxiety, which may not have been foreseen, and may indicate that the patient is not yet ready for SRT, or that one of the alternatives to SRT may need to be considered. Chapter 5 discusses considerations for the use of SRT for Veterans with depression, PTSD, and chronic pain and for those who are taking sleep medications.



When using SRT with Veterans with multiple chronic illnesses, a more moderate approach may be taken, such as sleep compression or, if using SRT, not decrease TIB over subsequent sessions even if SE is less than 80%.

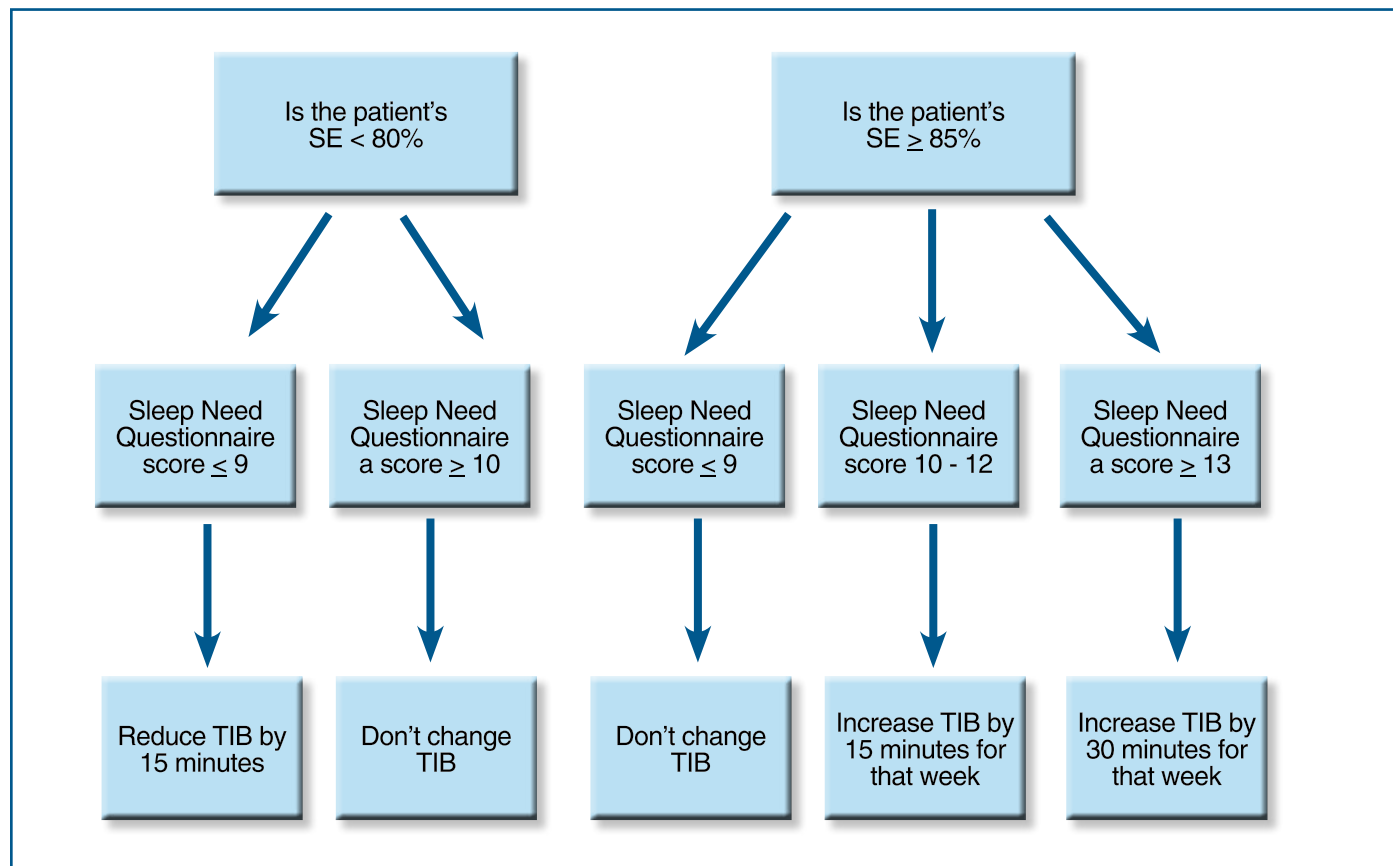


Figure 6. Rules for Changing TIB in SRT

The following is an excerpt from the first meeting after sleep efficiency training was introduced. The therapist reviews Chris' sleep diary, assesses his progress and works with Chris to extend his time in bed according to his sleep diary and his score on the sleep need questionnaire.

Therapist: So Chris, thank you again, for filling out the sleep diary. How did this last week go?  
 Chris: I have to tell ya, the beginning of the week sucked. It was really hard. It got a little bit better. I was just so tired at first.  
 Therapist: Yeah, that can happen. When were you feeling tired?  
 Chris: The next morning, particularly. I couldn't fall asleep, so I'd get out of bed like you said. Yeah... I was just dead tired the next morning.  
 Therapist: Mm hmm. Based on the sleep diary, it looks like you stuck with getting out of bed by 7 a.m.  
 Chris: Yeah. It got a little easier later on in the week, but it was really hard on me at first.  
 Therapist: So I applaud your efforts, as you were saying, it was very difficult. It got easier toward the end of the week? [questioning]  
 Chris: Yeah, towards the end of the week, I was actually falling asleep, pretty close to [pointing to diary] as you can see there - pretty close to ...when I was supposed to go to bed.  
 Therapist: So initially you didn't get into bed until after 1 a.m., it's 1:30, 1:45, 1:20, and then towards the end of the week, you were getting in bed at 1 a.m. and falling asleep really quickly.  
 Chris: Right. Right.  
 Therapist: Based on the total amount of time you were asleep given the total time that you were in bed, your sleep efficiency was above 90%. This is a great improvement from last week.  
 Chris: Mmm hmm. [still focused on how tired he was early in the week] Yeah, but I was pretty tired.

Therapist: So, if you remember this is to be expected. We increased your sleep drive and it helped you fall asleep faster, and have less interrupted sleep, but it also made you sleepier. Now that your sleep quality has improved we can start paying attention to its quantity. As you say and as your sleep need questionnaire reflects, you need more sleep. So it is time to increase your time in bed a bit. With a score of 11 on the questionnaire, I would extend you by 15 minutes. So essentially, you could be getting into bed at 12:45 if you're sleepy.

Chris: Okay, well – I think I probably already did on a few nights.

Therapist: Ok. Now you can do it every night. Try to stick to this as your earliest time you go to bed. If you extend too fast you may lose some of your gains. One question I have for you is, how did it go with your wife, that you made this past week, going to sleep at 11 or 11:30? How was it for you to stay up until 1 a.m.?

Chris: Yeah, that was difficult to figure out too, it just didn't seem right to go to bed separately every night. I guess what we worked out is I...I began my unwind time like you and I talked about, like, just relaxing with my wife in bed for a short time, and since I knew I was not gonna sleep right then, I just got back out of bed. She falls asleep pretty quickly anyway, so it wasn't a big deal. I hope that's ok.

Therapist: That's a creative solution, really.

Chris: Yeah, it seems to be working for us.

Therapist: Very nice, very nice. And so, it sounds by 1 o'clock, you are feeling sleepy?

Chris: Now I am, yeah. At the beginning of the week I wasn't falling asleep at 1 a.m., so I'd get out of bed, but towards the end of the week... I'm pretty sleepy by one, for sure, now. Or maybe even earlier now...

Therapist: Very good. This is your sleep drive in action [both smile]. Now, based on your sleep efficiency and your score on the sleep need questionnaire, we can extend your time in bed for 15 minutes.

Chris: Yeah, you said 15 minutes. But why not more?

Therapist: I know it may sound stingy. We do go slowly, so that you maintain the gains that we're seeing here. If progress continues, we would keep extending in this manner.

Chris: Right. Alright. Okay

Therapist: So what will be your new time to get into and out of bed?

Chris: You said bedtime at 12:45a.m. and getting up at 7 a.m....

Therapist: Can you do it?

Chris: Yeah, I think so; it won't be any harder next week than it was last week, I guess.

Therapist: Any questions? ...[patient shakes his head - no] The first initial days last week were...

Chris: [Interrupts] Yeah...those were the hard ones. It's going to be easier now. I can see that, I think.

Therapist: And you pushed through those first few days. Any questions or concerns?

Chris: No. 'll go for it.

Therapist: Okay, great. You have done it last week and you were creative in terms of how to manage going to bed at a different time from your wife. So I trust you will be able to do it this next week. You will be spending time with your wife for a bit, at 11 or 11:30 p.m., relaxing with her, then getting out of bed till your 12:45 a.m. bedtime, but remember doing relaxing activities before then. Ok. Very good. So, I look forward to next week, and seeing how things go.

Chris: Sounds good.

When should the expansion of the TIB window stop? Expanding usually stops when the patient starts to feel refreshed and alert during the day and is satisfied with the current TST. However, some patients want to stop the expansion even if they are still sleepy, and could use more sleep, because they are excited about finally sleeping better and are afraid to “rock the boat” and lose all of their gains. Such “fragile sleepers” should be encouraged to continue to expand their TIB. Invite such a patient to experiment with TIB expansion and test its limit (SE drops below 85%) so that they can eventually use the skills they have acquired in therapy to bring SE back up. Such experimenting with the sleep schedule will help to build the patient's self-efficacy with regard to sleep and go a long way to preventing relapse in the future.

Another indication that expansion has proceeded far enough is when SE starts to drop below 85% and remains below 85% for a few weeks. If the patient has been slowly expanding TIB, based on the 85% and sleep need criteria, and the most recent expansion resulted in SE < 85%, consider the possibility that the patient's sleep window may have increased a bit too far. However, sleep is variable and a drop in SE can occur for other reasons (e.g Flu, increased workload, travel, and etc.). This means a decision needs to be made on whether the drop in SE is transient or represents a pattern. In the former case, when the stressor remits it may be very reasonable to continue with expansion, especially if the patient is still feeling sleepy with the current TIB window. If the latter, then recommend a return to the last sleep window that was associated with SE over 85%; in this case the

expansion would stop. If the patient is not feeling well-refreshed with this sleep window, consider the possibility that a previously undiagnosed comorbid sleep disorder might need to be assessed and addressed, and make a referral.

## B. Addressing High Arousal/Activation

Heightened arousal can mask sleepiness and interfere with sleep: Masking of sleepiness occurs when an underlying sleepiness is overshadowed by vigilance, as is the case when an individual engages in an activity that requires a high level of alertness. For example, when a sleep-deprived person is anxious about having to appear before a traffic judge, this person generally does not feel sleepy at the hearing despite getting insufficient sleep the night before. When the threat of the court appearance is over, and this individual is relaxed, he may nod off while reading a magazine article because the underlying sleepiness, generated by insufficient sleep the night before, rises to the surface and is unopposed by the hyperarousal caused by the thought of appearing in court. This example demonstrates how the balance between sleep-promoting factors (sleep drive) and wake-promoting factors (such as a perceived threat, anxiety, active mind, and body tension) determines the likelihood of sleep at a given time. Ideally, this balance is tipped in favor of sleep when a person is in bed for the night, but this is not the case if arousal is high. Common sources of hyperarousal at bedtime include thinking about issues that have not been adequately resolved or addressed during the day, trying to remember what needs to be done the next day, and worrying about things not within one's control. Several strategies for reducing hyperarousal in bed are described below.

1. Creating a time to unwind before bedtime: The time set aside to unwind serves as a buffer between being active and engaged in striving activities and being quiet and calm, a state of low arousal that facilitates surrender to sleep. This time is a "buffer zone". This should be a time spent in a non-striving state of being, doing pleasant activities that are not done as a means to an end, but rather for their own enjoyment. These activities do not bring about sleep directly. Instead, buffer zone activities are designed to facilitate sleep by eliminating sleep-interfering arousal.
2. Addressing intrusive worries ("scheduled worry time"): This method has been proven effective (Borkovec, Wilkinson, Folensbee, & Lerman, 1983) for people with generalized anxiety disorder and is helpful for some individuals with insomnia, as well. Patients are instructed to set aside a daily time dedicated to worrying. They are instructed to limit worries about things not in their control to this scheduled worry time. When intrusive thoughts about such things occur outside of this scheduled time they are to postpone worrying about them until the next scheduled worry time. This may sound counterintuitive, and even foolish, but it is rooted in the idea that thought suppression is not an effective strategy to deal with unwanted, intrusive thoughts. Instead, facing these intrusive thoughts diffuses their intensity and reduces their frequency. It is best, however, to schedule the time to worry not too close to bedtime. In the script below the therapist introduces the scheduled worry time to Mike.

Therapist: Let's talk about a strategy that can help you manage your worries so you worry less in the middle of the night. It is called a worry time.

Mike: Mmm hmm (smiles) What's that?

Therapist: The idea is that rather than your worry time being in the middle of the night you will move the time you worry to earlier in the day. I recommend that you set 15-20 minutes aside to just worry.

Mike: [seeming skeptical] What do I do?

Therapist: You can journal, you can write down your worries, you can just think about the worries, you mold that time into what would be helpful for you.

Mike: Okay, yeah it makes sense although it sounds strange. I was trying to get myself not to think during the day, put the thoughts away, but when it's quiet at night, worries just come racing through.

Therapist: Exactly. Because there are lots of distractions during the day, too, as opposed to at night, like when you're just lying there and not sleeping. It's easy for the worries to come out. If you can face them during the day, they will bother you less at night.

Mike: Right.

Therapist: Okay, do you have the brochure from last week? (Mike looks in his folder and hands it over to therapist) [therapist points to location on page] Here is what we talked about today. Can you circle it? [Mike circles on page] So now you will continue to follow the recommendations we discussed and wrote in last week and this new one. We'll see you back next week and see how it goes.

Mike: Okay, alright.

3. “To do” list for tomorrow: Taking time at the end of the day (but before the buffer zone time) to list what needs to be done on the next day can help allay worries about these tasks when trying to fall asleep either at the beginning of the night or if awake during the night. Having a written plan for the day will likely reduce worries related to feeling overwhelmed about tomorrow’s tasks. Critically examining the feasibility of the list can be additionally helpful for people who tend to hold unrealistic expectations about what they should be able to accomplish in a day.
4. Relaxation training: Relaxation can also help reduce tension and anxiety experienced when trying to sleep. There is no single relaxation method that is best for everyone. Progressive muscle relaxation, meditation, and diaphragmatic breathing can all help calm an active mind. Progressive muscle relaxation may not be ideal for Veterans with certain comorbidities, such as those with musculoskeletal problems. For such individuals, body scan, imaginal progressive muscle relaxation, and imagery and breathing based relaxation methods can be effective. Veterans with PTSD and associated hypervigilance may experience increased anxiety when trying to relax, and may achieve a better result engaging in activities that produce relaxation indirectly as a side effect, such as listening to certain music.

Select a relaxation method that best fits the patient. Encourage patients to make their relaxation practice (or relaxing activities) a part of their wind-down routine prior to going to bed. Regardless of the relaxation method used, it is a good idea to tell the patient that relaxation is a skill that like many other skills requires training and practice. Assign daily relaxation practice and consider creating a relaxation log for monitoring relaxation practice. The key to relaxation around bedtime is letting go of sleep effort. Relaxing in order to sleep may become sleep effort in disguise. Some people have difficulty learning relaxation procedures and some become more anxious when they try to relax by letting go of control (relaxation-induced anxiety). In these cases, provide further guidance to help the patient overcome these difficulties. The anxiety is often about relinquishing control.

It is strongly recommended to practice relaxation in session before suggesting that patients engage in between session practice in order to promote mastery of the strategy and instill recognition of benefit. Also, suggest using a relaxation log (Appendix H), as it may promote adherence to relaxation practice.

5. Shift focus from anxiety when trying to relax: Patients who become anxious when trying to relax are able to calm down through methods that emphasize attention to, rather than control, their breathing. Another strategy to help those with difficulty relaxing is to *shift the focus from thinking about relaxing to engaging in an activity that promotes relaxation as a side effect*. Examples of such activities include stretching and listening to music. A shift away from relaxation to a non-striving calming activity may be particularly helpful for those with paradoxical responses to relaxation training (i.e., relaxation induced anxiety).

### Veteran Alert:

Veterans with high levels of hypervigilance may experience relaxation induced anxiety response to the idea of relaxation and may, instead, benefit from engaging in an activity that promotes relaxation as a side effect

6. Discourage behaviors that reflect trying too hard to sleep. Some of these behaviors, such as lying in bed for long periods tossing and turning, may be obvious; others are less so. For example, rigid avoidance of evening activities may represent a high level of sleep effort. (That said, engaging in stimulating activities, such as exercise, close to bedtime may interfere with sleep.) “Praying for sleep” can sometimes be a manifestation of sleep effort. Whereas praying can be an excellent meditative pre-bedtime activity, praying for sleep may reflect anxious concerns, likely to interfere with sleep. As prayer is a very personal issue, this subject needs to be addressed respectfully, sensitively, and delicately.

## C. Scripts for Presenting Behavioral Interventions to the Patient

**C1. Scripts for setting the stage for treatment:** The following is a set of scripts that provide rationales for presenting SC and SRT. Scripts for combined SC and SRT are presented in Section C2. It is not intended for the scripts to be read verbatim. Instead, the scripts should be tailored to the patient’s presentation and comprehension level. This should not be a monologue. The explanations should be interactive. Pause frequently to provide patients the opportunity to ask questions. Comprehension can be assessed by asking patients whether the explanations make sense to them, and by periodically asking for summaries. Importantly the ideas do not need to be presented all at once. It is best to base pacing decisions on the patient’s presentations. It

is a good idea to provide the handout “A Guide to Overcoming Your Insomnia”, which summarizes the combined SC and SRT guidelines (Appendix I). When clinically indicated, the handout “Questions and Answers about the Guidelines” (Appendix J) can be provided. It offers additional written explanation of the reasons for the guidelines.

Sleep needs vary from person to person: *We will help you discover your sleep need: A question often on people’s mind is “How much sleep do I need each night?” Generally speaking, there is no single amount of sleep that ‘fits’ everyone. Most healthy adults need 7 to 8 hours of sleep per night. However, at the extremes, some people need only 4 hours of sleep and others require 10 hours of sleep. A person’s sleep need might also depend upon what is going on in his life. At this point, it is important to set aside any previous beliefs you might have about your sleep needs. These beliefs may be wrong and may interfere with your progress. This treatment will help you discover the ideal amount of sleep for you, so that you can feel alert and energetic during the day.*

Harnessing the sleep drive: *Sleep loss increases the sleep drive and helps you sleep better. You might have noticed that, after one or several nights of poor sleep, you sometimes sleep better. This is because after a few nights with poor sleep, your sleep drive gets stronger. Being awake makes you your sleep drive stronger. The longer you are awake the stronger your sleep-drive and the better you sleep at night. For example, a person is much more likely to sleep for a long time after being awake for 16 hours in a row than after being awake for only 2 hours. Most people who have sleep problems are worried about how this will affect them the next day; they forget that some sleep debt promotes a “healthy appetite” for sleep. Trying to catch up on lost sleep by napping during the day might back fire. If you nap during the day then your sleep drive the following night will not support good sleep. This way your sleep problem continues night after night.*

Short uninterrupted sleep is more refreshing than longer fragmented sleep. *Most people feel more refreshed after 6 hours of continual sleep than after 7 hours of broken sleep.*

Worry about sleep makes it worse. *Our body can keep us awake even when our sleep drive is strong. For example, it is difficult to sleep when we are anxious or worried. This is true even if we are extremely tired. Worrying about what will happen if we do not get enough sleep makes us anxious. It makes it harder to sleep. The body has a wake system responsible for keeping us awake when we believe we are threatened. Worrying makes us feel threatened*

Your body’s wake system has the ability to tolerate less than ideal amounts of sleep. *If people have very little sleep, they are usually tired the next day; they might have some trouble concentrating; and they tend to feel somewhat grouchy or irritable. However, people can usually continue most normal daytime activities and need not worry too much about sleep. If they feel sleepy, not just tired, they should avoid doing things that require high level of alertness.*

## **C2. Scripts for presenting SRT and SC combined.**

*As a first step to improve your sleep, it is important that we focus on improving the quality of your sleep. As your sleep quality improves, we will gradually increase the amount of sleep you are getting. As we just discussed, the quality of sleep is impacted by how broken it has been. Therefore, our first goal is to reduce the time you are awake at night. We do this by helping you build a strong sleep drive. It looks like you sleep on average XX hours per night and that on average you spend YY hours in bed.*

*Since you sleep XX hours, I recommend that you stay in bed only for as long as you are now able to sleep, which means XX hours. I am not recommending that you do it forever. Instead, if you follow this recommendation until I see you next time, chances are good that the time you are awake in the middle of the night and the time it takes you to fall asleep initially at the beginning of the night will be shorter and you will wake up feeling like you slept better. Most likely, you will still wish for more sleep. When you have fewer and shorter wake periods we will guide you in a process of gradually expanding your time in bed until an optimal amount of sleep is reached. Remember, the optimal amount of sleep is the amount that optimizes your sense of well-being during the day and is not a single magic number, such as 8 hours. For now, I suggest that you stick to \_\_\_ hours in bed until I see you next time.*

Here is a summary sheet with guidelines that will help you sleep better (Appendix I). Let's start by deciding on a time when you would like to wake up in the morning.

Guideline 1: Fix your waketime and get out of bed shortly thereafter. The timing of your sleep period should fit well with your life schedule and with your natural tendency based on output from your "biological clock". People have a powerful internal biological clock that affects their sleep-wake behaviors. This biological clock sends alerting signals that oppose the sleep drive and increase in strength as the day goes on. At a certain point during the night, the alerting signal starts to weaken, the person feels sleepy, gets into bed, and goes to sleep. The alerting signal continues to weaken during the night and then at a certain time it starts increasing again, signaling it is time to wake up. (A note to the therapist: When the chronotype of the patient is delayed or advanced, elaborate this point and discuss the relationship between sleep and the temperature rhythm as discussed in Chapter 1 Section A3).

If you follow your biological clock, you will sleep better. To ensure that the signals from your biological clock are strong, it is VERY important that you wake up at the same time every day regardless of how much sleep you actually get on any given night, and that you get out of bed within a few minutes after your alarm rings. This helps strengthen the natural cues from your internal biological sleep clock. An irregular sleep-wake schedule, particularly an irregular wake up time, can weaken the signal from your biological clock. In fact, if you vary your wake up time from day to day, you can create the type of sleep problem that occurs in jetlag. If you stick to the same wake-up time, over time you will gradually notice that you become sleepy at roughly the same time most evenings. This will eventually allow you to fall asleep more quickly, get more sleep, and, thus, satisfy your sleep need. Let's enter this wake-up time in your summary sheet (A Guide for Overcoming Insomnia in Appendix I) Now let's decide when you should go to bed.

Guideline 2: Setting the earliest bedtime: Your ideal bedtime can now be determined by your fixed waketime and our decision that you should be in bed only for XX hours. What would that be for you? However, for best results, do not go to bed before you are sleepy, even if it is your bedtime. If you are not sleepy at this time, it may be because your biological clock is still sending strong alerting signals or that you are not yet calm enough to fall asleep easily. Sleep cannot be forced. Trying to force sleep is not effective and can make sleep more difficult. If you do not feel sleepy at the bedtime we just decided on, wait until you do feel sleepy. By going to bed only when sleepy, you increase the likelihood that you will fall asleep easily and stay asleep.

Some people misjudge their state of sleepiness. They confuse the sense of being sleepy with the sense of being tired, fatigued, and the wish to rest the mind and the body. Being very sleepy means having to almost struggle to stay awake. When you are close to that, you are sleepy. Fatigue and tiredness reflect low energy that signals the need to rest; on the other hand, sleepiness signals the need and readiness for sleep.

Now that we set your time to get in and out of bed, let's talk about what to do if you cannot fall asleep and what you can do to make your sleep as good as it can be.

Guideline 3: If you can't sleep, stop trying. Ideally you should get out of bed and do something pleasant, but not too activating, and return to bed when you feel sleepy enough to fall asleep quickly. I understand that doing this is not easy. Lying in bed feels comfortable, you might want to at least get some rest, and you believe that keeping on trying to sleep will help you fall asleep. But, this is far from being true. The reality is that long periods of being awake in bed often lead to tossing and turning, becoming frustrated and worrying about not sleeping. These reactions, in turn, make it more difficult to fall asleep. When you lie in bed awake trying to sleep, wanting and hoping to go back to sleep, you are training yourself to be awake in bed. (A note to the therapist: This is a good time to invoke an example of conditioning, such as Pavlov's dog, learned hypervigilance, or similar examples. This can help explain conditioned arousal and extinction of conditioned responses). Many people with insomnia report that they struggle to stay awake on the sofa in the living room yet become wide awake upon getting into bed. This is a clear sign that being in bed has become a cue for arousal (not feeling sleepy). Conditioned arousal is a learned association between a mental state (arousal) and a physical cue (your bed). This type of "learning" usually happens without our awareness. Scientists have demonstrated that over time by consistently avoiding your bed when not sleepy, conditioned arousal is undone and your bed and bedroom become associated with sleepiness rather than wakefulness. This is why we encourage you to get up, go to another room, and return to bed only when you feel sleepy enough to fall asleep quickly.

If you find yourself awake for what seems to you like 15 to 20 minutes or so, and you do not feel as though you are about to go to sleep, you should leave the bed and, if possible, leave the bedroom. It is not a good idea to use a clock to decide when it is time to get out of bed because awareness of the clock time could make you anxious about not sleeping, and, in turn, further increase wakefulness. Instead, we suggest that you get out of bed when you feel that sleep is not about to happen or when you start to get frustrated. Do not dwell on this decision. Just learn to calmly observe your state of mind and let it guide you. It is OK to keep the clock in the room but turn it away from you. This way it can still function as an alarm clock but you won't see it.

The following are answers to common patient questions regarding SC:

What if I never feel sleepy? By getting out of bed when you can't sleep, you will eventually learn the difference between feeling sleepy and feeling tired. Remember that not trying to force sleep and going to sleep only when sleepy will maximize the chance of meeting your natural sleep need. If you try to sleep when you feel tired but "wired," your bed is likely to become an unconscious cue to be awake rather than to sleep.

What to do when you are out of bed? Sleep naturally comes when your body and your mind are calm. Therefore, the things that you choose to do when you get out of bed should help make you feel calm. Your goal is not to fall asleep but to become calm until sleepiness (re)emerges. The most important thing you can do to improve your sleep is to STOP trying harder. This means not only that you should stay out of bed when your state of mind is not compatible with sleep, but also that, when you are out of bed, you should be fully involved with whatever activity you do and avoid thinking about sleep or about 'not being asleep'. Getting out of bed tonight will eventually help you sleep better but it will not help you sleep better tonight. This takes time. However, if you get out of bed you may enjoy your time awake more than if you stay in bed tossing and turning and being frustrated. If you are consistent with this strategy you will eventually establish strong association between your bed and sleep. This is a long-term strategy that could allow you to sleep better in the nights to come and for the long haul.

The importance of being consistent: Inconsistent observance of this guideline reduces the potential benefits you stand to gain. Here is why: Whereas for good sleepers the bed is a cue for sleep, for people with insomnia the bed has become a cue for arousal. This happens because repeated experiences of frustration, anxiety, or tension when unable to sleep create what we call conditioned (or learned) arousal. Research shows that unlearning requires consistency. Inconsistency in following this rule might actually make it even more difficult to break the link between the bed and arousal and associate the bed with good sleep.

Guideline 4: Eliminate sleep incompatible behaviors from the bedroom. While in bed, you should avoid doing things that you do when you are awake. Do not read, watch TV, eat, study, use the phone, or do other activities in bed during the day or night. Doing these things in bed creates associations between the bed and wake activities, rather than with sleep. In other words, doing these things in bed can train your mind to stay awake in bed. If you don't do these things in bed, your bed will eventually become a stimulus or cue for sleep; it will become a place where it is easy to go to sleep and stay asleep. Sexual activity is the only exception to this guideline. The most important activity that you should eliminate from the bed is the activity of trying to sleep because it interferes with the natural sleep process. If you find yourself thinking or worrying about sleep while in bed, get out of bed (Guideline 3). In some situations, such as dorms or studio apartments you may need to reorganize your room to make a separation between the space you use for sleep and the spaces you use for other activities.

Guideline 5: Limit napping: During this period of transition to better sleep, you should avoid napping. Sleeping at times other than your specified time in bed, particularly for more than 30 minutes or close to bedtime, might weaken your sleep drive and could reduce the quality of your sleep. However, if you find yourself very sleepy (not just tired, but actually sleepy) take a brief (15 to 30 minutes) nap to ensure your safety. These safety naps can be taken at any time because safety is always most important.

If you can and want to take a nap because you are sleepy but have no safety concerns, it is best to place this nap 7 to 9 hours after your morning waketime so that it will coincide with the pattern of your biological clock, which has a natural dip (lower alertness) at that time. A carefully placed short nap is usually refreshing and not likely to interfere much with your

*sleep at night. It is best that naps are taken at about the same time every day because irregular naps may weaken the sleep signal from your biological clock. Naps should be taken in your bed because you are training yourself to associate the bed with sleep. Set your alarm so you don't nap too long and weaken your sleep drive for the upcoming night.*

In the following clinical vignette, the therapist introduces Stimulus Control and Sleep Restriction, using a Sleep Restriction Diagram (Appendix K). The therapist explains the ideas and involves Mike in implementing the treatment principles. The therapist helps Mike come up with plans to overcome potential obstacles. A later script (page 8), is a clinical vignette from Mike's next session.

- Therapist: Thank you for filling out the sleep diary. This gives us information about your sleep and will help us come up with treatment recommendations to help your insomnia. From this diary, it looks like you have been in bed for about 9.5 hours, on average. This includes times you are watching TV with your wife in bed and the time that you were awake but not asleep. But of the 9.5 hours that you were in bed, you seem to be sleeping only 6 hours on average.
- Mike: [nods slowly] Well, it's because I'm not sleeping very well. And I'm waking up and so I'm trying to stay in bed and get more sleep. [looks at therapist] To see if I can make up for my lost sleep, you know.
- Therapist: Okay, so you're casting a wide net, hoping to collect more sleep.
- Mike: Yes, because I just really want more sleep.
- Therapist: I imagine this has been hard for you. How well has this strategy been working for you?
- Mike: [laughs] Not too well. My sleep is still pretty bad, I suppose.
- Therapist: We are going to talk about a treatment strategy that will first focus on improving the quality of your sleep and will then, later on in treatment, after your sleep quality improves, we will focus on increasing the quantity of your sleep. This might sound like the opposite of how you have been approaching your sleep, up till now, but it is going to increase your natural sleep drive – remember we talked about that last time? [patient nods] and this will help you sleep more soundly. As you just said, casting a wide net, has not worked well.
- Mike: Ok...
- Therapist: What would represent better quality of sleep for you? Sleeping 6 hours uninterrupted or 7 hours with 1 or 2 hours awake in the middle of the night?
- Mike: I guess..... When I sleep 6 hours without waking up, I feel much better. It's better if my sleep is solid but it has been a long time since this happened.
- Therapist: Let me show you what the plan is, using an example from another patient. [Therapist shows sleep consolidation Figure (Appendix K)]. This is an example of someone's sleep. The gray areas are times he is awake and the black areas are times that he is asleep. You can see that it takes this person some time to fall asleep and he is awake multiple times during the night. In this case if we sum all the black times it adds up to 6 hours. However, if we sum the gray and black together we see that this person was in bed for 8 hours. So he was asleep for 6 hours, but the sleep was interrupted by periods of time awake.
- Mike: OK. I see...
- Therapist: The strategy we used to improve the quality of his sleep was to squeeze out the middle of the night awakenings to get him a more consolidated, uninterrupted sleep. So, we recommended that for the next week he should be in bed only 6 hours, [pauses, looks at patient reaction] .. but we also told him that this was temporary, and that after his sleep became less interrupted he would slowly increase how much he stays in bed. [Mike looks attentively at page. Appears to understand.] The next graph shows his next week's sleep. What do you notice happened?
- Mike: He only slept 5.4 hours! [Somewhat anxious]
- Therapist: Yes, however, it is also true that this patient - despite only sleeping 5.4 hours - felt like his sleep improved a lot. What do you think explains why he felt his sleep improved?
- Mike: [Smiling] I suppose it has to do with his sleep being less interrupted.
- Therapist: True. There is much less of the gray wake time and as you said, less interrupted sleep feels much better. But he also told me he was sleepy during the day and could not imagine doing it for a long time. Now that his sleep quality has improved so much, we started to slowly increase how much time he was in bed. You can see in the Figure how his sleep was after 4 more weeks.
- Mike: [takes time to look at the graph, pauses and says:] I still see some gray...
- Therapist: Brief awakenings in the middle of the night are not that unusual, even for people that do not have insomnia. How would it be if we used the same strategy with you?
- Mike: [thinking.] But I have not slept six uninterrupted hours for years. Do you really think I will be able to do it?



Therapist: Yes. I trust that your sleep drive will be stronger and will help you get there. Do you remember our discussion of the sleep drive?

Mike: Yes.

Therapist: Do you remember how the sleep drive makes you sleep better after a few very bad nights?

Mike: Yes, after a few bad nights I do sleep better for a night or two.

Therapist: What we want is a more consistent sleep quality. So are you ready to try it?

Mike: I suppose.

Therapist: So, how would you apply this strategy to yourself?

Mike: I don't know, you tell me.

Therapist: You will start with being in bed only as long as you are sleeping. Do you remember how much that was?

Mike: Six hours?? [Looks at therapist, who is waiting for his response then says in disbelief and with a worried expression: ] So you mean I should only be in bed six hours?

Therapist: Six hours may not sound so appealing, but remember, it isn't permanent. This is just a place to start. If you sleep about 6 hours every night you will have a strong sleep drive at night and be awake less in the middle of the night. Does this make sense?

Mike: Okay.

Therapist: At least for right now. Once you are sleeping more solidly, we would make adjustments.

Mike: Okay, so for now, I need to go to bed at a different time?

Therapist: Right, get into bed at a different time.

Mike: Mmm hmm.

Therapist: And, so if you had a six-hour window for sleep, what time would you want to wake up?

Mike: Well, right now I'm waking so early. I like to wake up early but 4:30 a.m. is too early, especially when I had such un-refreshing kind of sleep. Um, 6:30 a.m., maybe?

Therapist: 6:30 a.m.? OK. Let's see. If you are going to be in bed 6 hours that would mean you will not get into bed until... (pause waits for answer)

Mike: 12:30 a.m. Ohh... I can't do that. Uh, May be I can push it and wait until 11:30.

Therapist: So that would mean you wake time will be...(pause)

Mike: 5:30 a.m.

Therapist: Do you feel that 11:30 to 5:30 is doable?

Mike: Uh, I think so. I will try. If you tell me to do something I will do it.

Therapist: Okay. and how would that be for you, staying up until 11:30 p.m.?

Mike: That's going to be tough.

Therapist: What do you think will happen?

Mike: It will be hard to stay awake.

Therapist: Okay so let's talk about the staying up part. We need to think about activities you can do in the evening to help you stay awake until 11:30 p.m.

Mike: Yeah, that's going to be...that's going to be hard, to figure out things to do.

Therapist: Okay. So we'll go over some possible activities that you might be able to do. (Pulls list and says..) Let's look at this list. Can you see some activities that you can do in the evening that will help you stay awake but not too awake?

Mike: So how about paying bills?

Therapist: Will that increase your anxiety?

Mike: No, it would be fine.

Therapist: Good. That would be one possibly, but I assume you can't do that every day. What can you do on other evenings?

Mike: It isn't on this list but I'm thinking I can work on my car in the garage.

Therapist: How late would you work on the car?

Mike: Maybe 10 or 10:30 p.m.

Therapist: OK. That sounds good too. Let's try being in bed from 11:30 to 5:30

Mike: OK

Therapist: One more thing to think about. If the middle of the night awakenings continue, we don't want you to stay in bed hoping and trying to sleep.

Mike: Hmmm. [suspiciously] What do you mean?

Therapist: Staying in bed trying to sleep is something you have been doing and it has not helped. This is not surprising because we can't force sleep. You can't make it happen. And actually, by trying to "make" it happen, you may

make it happen less. That is part of the hyperarousal piece that we talked about last time. So I recommend that you get out of the bed, and create a little place that you can go to and do something that's soothing if you are struggling to get back to sleep during the night. What would those activities be for you?

Mike: Maybe reading. That's soothing. I often fall asleep when I do that. (pause) Listening to some quiet music may be something else I could do.

Therapist: This sounds like a good plan. You can do that and as soon as you start feeling sleepy get back into bed.

Mike: Okay. Uh, how do you know, at what point – like, I may wake up and I go to the bathroom, and go back to bed, and, you know that I'm trying to sleep at that point.

Therapist: Right, right – it gets tricky. So one answer is you should get out of the bed the moment that you start to feel frustrated or restless, or you start tossing and turning or your mind starts to get activated, and you start to worry. You've told me that one of the things that impact your sleep in the middle of the night is that your mind gets active. And you start to worry.

Mike: Yeah. I - It's, you know, I told you about my wife and her cancer, and I'm concerned about my grandson, and he is going to be deployed, and so all those thoughts just come up.

Therapist: This sounds like a hard time for you. Certainly important thoughts, I don't want to say they're not important and not to worry, because they are worrisome.

Mike: Yeah.

Therapist: Having them in bed just won't help you get to sleep. It's better to get up for a while, and go back to bed when you feel sleepy again. So let's summarize what we decided. Can you tell me what you will be doing with respect to your sleep?

Mike: I should go to bed at 11:30 p.m. and get out of bed if I cannot sleep.

Therapist: Very well. Let's put it down in writing on this page. (Shows patient the guidelines handout and gives him a pen. ) On number two here you will write that your bedtime will be 11:30 p.m. Do you notice that it says "not before 11:30 p.m."?

Mike: [While writing] Yes you said it. But I will be so sleepy, I am more worried I will not last till then. I can't imagine staying up later than that.

Therapist: It sounds like it's going to be a challenge for you. Maybe you could keep yourself more active earlier in the evening with the activities we discussed. What do you think about that?

Mike: That works.

Therapist: Do you remember what we said about when you would get out of bed?

Mike: Yes. 5:30 a.m.

Therapist: Yes. You would write this here [points to the page.] That is your plan until the next time we meet. At that point, we'll take a look at your sleep diaries and decide whether we need to make any adjustments.

Mike: Okay, sounds good...

Therapist: I look forward to seeing you at the next session and seeing how it goes...

### C3. Scripts for presenting guidelines for quieting the mind.

Guideline 6 - The buffer zone: *The buffer zone is a quiet time right before bedtime. It is a bridge between activities of the day and the quiet more peaceful time of sleep. During this buffer zone, do things that you enjoy. Let go of the day's excitements and tensions. This will calm you and allow sleep to unfold naturally.*

Guideline 7- Dealing with intrusive thoughts when unable to sleep: *Being in bed at night you should not worry, mull over problems, or think about what you need to do tomorrow. Doing these things while in bed can increase arousal and interfere with your sleep. If you can't seem to shut off your thoughts, get up and go to another room. Stay there until you feel sleepy again. You may also find it helpful to set aside a time each day to do the thinking, worrying, problem-solving, and planning you need to do. Then, if unwelcome thoughts occur during your sleep period, postpone them to the "thinking and worrying time" for the next day. Set aside a specific time for daily focus on your concerns. If you do it consistently you will find that you are having fewer unwelcome thoughts while you are in bed. The time you set aside for this purpose should not be close to bedtime and the place of worry should not be in your bedroom.*

A note to the therapist: If patients ask for directions on how to deal with their intrusive thoughts, consider mentioning general strategies, such as free writing, making lists, identifying what is and what is not under their control, or writing down one step they can take to begin to deal with a problem. This can be as preliminary a step as seeking out some information about the problem. The sense of taking action, any kind of action, usually reduces the intensity of intrusive thoughts. Endlessly mulling over problems is counterproductive and often depressing.

#### **C4. Scripts for changing TIB (after the first SRT session).**

Below is a script for helping patients understand the process for changing TIB in SRT. Before proceeding to do so, administer and score the 4-item Sleep Need Questionnaire (Appendix G). Use the time the patient completes this questionnaire to review the patient's sleep diary and compute the average SE.

*Last time we met, I explained that when your sleep quality improves we might extend the TIB window. We will make this decision based on your sleep efficiency, which is the percent of time you spend asleep relative to the time you spend in bed. Based on your sleep diary, I computed how much time you slept on average during the past week. According to my computation, your sleep efficiency is approximately XX %. This means that XX% of the time you were in bed you were actually asleep.*

#### Script for when SE is at least 85% AND sleepiness is still present (increase TIB):

*Your sleep efficiency last week was XX%. This is an improvement from when you first came in. It looks like your sleep drive has increased and it helped reduce the amount of time you spend awake at night. Your answers to the four questions I just asked you, suggest that you need more sleep. Therefore, we want to slowly increase the time you are in bed. Until I see you next, your time in bed will be 15 minutes (or 30 minutes, depending on the score on the Sleep Need Questionnaire). You should still keep the same waketime every morning. This means you will now go to bed no earlier than XX and get out of bed no later than XX. In the morning when you wake up at XX, don't lay around in bed – no being a bed potato!! You need to get up and out of bed. The guideline that focuses on associating your bed with sleep applies here. In other words, you don't want to spend time awake in bed at any time of the day or night. We will continue this process until we find the amount of time in bed that lets you sleep soundly through the night and feel reasonably alert during the day. (A note to the therapist: Write the new in-and-out-of-bed times on the patient's sleep diary. In very rare cases the extension may be achieved by a later wake up time rather than an earlier bedtime.)*

#### Script for when SE is at least 85% and sleepiness is not present (no change in TIB):

*It seems like this schedule is working well for you. Stay on your current sleep schedule.*

#### Script for when SE is less than 80% and sleepiness is not excessive (reduce TIB):

(A note to the therapist: If the SE is higher than the previous week, highlight the improvement and its relation to the changes the patient made. Otherwise, explore what might have interfered with progress (e.g., increased anxiety about sleep, change in circumstances, wrong timing of the sleep window, and etc.). When applicable, address the issue(s) that has interfered with progress before considering further reduction in TIB, as it may not be necessary. In some cases, TIB can be reset rather than reduced. To reset TIB use Step 1 of the SRT procedure based on the patient's current average TST. If it is decided to reduce the TIB use the following script.)

*Your sleep efficiency last week was XX%. This is not quite ideal. Your sleep drive may have not been strong enough. To make your sleep drive stronger next week, I recommend that you decrease the time you are in bed by 15 to 30 minutes (depending on the rules of SRT as described above). You do this by going to bed XX min later, yet still keeping the same waketime every day. (This means you will now go to bed no earlier than XX and get out of bed no later than XX). Stay on this new schedule until our next visit.*

If SE is between 80% and 85%:

(A note to the therapist: In these cases the SRT algorithm dictates no change in the TIB window. Instead, try to discern why there has been no, or insufficient, progress. No or inconsistent adherence is a common, but by no means the only, reason to consider. For example, there may have been a change in life circumstances such as increased stress, illness or travel. Sometimes, the issue is that the TIB window may have not been ideal for the patient's chronotype, possibly because it was hard to identify the patient's circadian tendency. Another example is increased sleep-related anxiety, in which case the focus needs to shift to techniques for addressing anxiety, including cognitive therapy techniques to address thoughts and beliefs that produce anxiety, and counter arousal techniques, such as relaxation. A script is not presented for this scenario because it needs to be tailored to the specific circumstances of the patient.)

The following is an excerpt from a session immediately following the introductions of SRT and SC to Mike, who was not able to fully adhere to the recommendation to push his bedtime till 11:30 p.m. The therapist works with him on finding ways to stay up later.

- Therapist: It's nice to see you again, Mike - welcome back, I hope the drive in was okay...so last week we decided on some things you could do. How did it go?
- Mike: Well, it was hard. And I wanted to keep the schedule, because I understood what you wanted me to do, but...I could just barely make it to 10:30 p.m., and just had to go to sleep, I just couldn't do that 11:30 p.m.
- Therapist: So let's have a look at the sleep diary. [looks at diary with patient] Nice job at pushing it to 10 p.m. That was quite a change from 7 p.m.
- Mike: Yes it was!
- Therapist: I applaud your efforts; I know previously, you were going to bed between 7:30 to 8:00 p.m., so you managed to push that by 2 hours.
- Mike: Yeah, it was hard.
- Therapist: And, what did you notice from this last week to the previous week...in terms of your sleep?
- Mike: Well, um, one thing was that I still would wake up, but...it didn't take me as long to fall back to sleep. I wasn't awake as long during the night, and um, I tried really hard. I heard what you said about the morning time too, how important it is to anchor that and be consistent – to get up at the same time - so I stayed pretty much to that. It was like 5:30 a.m., so sometimes I was awake almost at five, so at that point I would just get up.
- Therapist: So I'm noticing a good trend here. In terms of last week to this week, it looks like your middle of the night awakenings have decreased somewhat.
- Mike: Mm hmm. [Agrees]
- Therapist: You're still having them, but they've gone from an hour to an-hour-and-a-half before, to now down to 45 minutes to about an hour.
- Mike: Yeah, so...they're still there. I am still having trouble shutting my mind off.
- Therapist: Today I would like to suggest a strategy to help clear your mind. But before I do that let's talk about how we can build on your progress and maybe think of how you could stay up a little bit later. You've done a lot of the work. We just need to push it just a little bit more. Ok? We can look over this list and find some more activating activities to help you stay awake in the evening. The good news is we're in the summer months, and we have a lot of light in the evening time, so that means there are more things to choose from...
- Mike: Oh, okay, you mean, to get out and walk, or something?
- Therapist: Yes, being outside in the evening can help push your biological clock to a later time. That would be one idea.
- Mike: Mmm hmm.
- Therapist: So, in the evening time, around 7 or 7:30 p.m., you can go out for a walk, and get some of that evening light that's available this time of year. Evening light sends a message to the brain, that it's okay to still be awake.

Mike: Okay, alright...

Therapist: So it can be a learning...

Mike: [interrupts] That could be something I could get my wife to do...it would be good for her to go out with me and...

Therapist: Wonderful. Wonderful. So, I think you like this idea and you will get some evening light. Let's see how that goes. There is plenty of light outdoors right now, and it's free, so let's take advantage of it.

Mike: Um, so that would be like, I get back, let's say we did a half hour or 45 minutes, I still have that time to figure out what to do. From about 8 or 8:30 p.m. until my bedtime. We have been watching games and movies, um, and watching those together during that time.

Therapist: Are you dozing off during that time?

Mike: Sometimes. My wife has been trying to shake me when she sees that, and she's been trying to help me with this.

Therapist: How did the car projects go?

Mike: You know, I only did it on two evenings and it was fine. I guess I can do it more.

Therapist: On the evenings you did work in the garage, did you have better luck staying up later?

Mike: Come to think of it... Yes. I guess I should do that more.

Therapist: Anything else you can think of, just to have some more options...

Mike: Um, I don't know, Maybe... you know we have a bunch of pictures that are in this box, that you know, from all the kids and grandchildren. My wife has been saying for a long time we should organize them. Maybe I could just start organizing them or something like that. It will make her happy. Maybe she can help.

Therapist: Wonderful, that sounds like a great idea because that can be more active and activating so, it will help you stay awake until that 11:30 p.m. time.

Mike: Yeah, it would probably be fun looking at those times. Okay...we'll try that. So, that takes care of trying to stay up in the evenings, but it's when I'm in bed that's the problem. All these worries come back to me when I wake up in the middle of the night.

## D. Addressing Cognitions that Interfere with Sleep

Cognitions that interfere with sleep may emerge at any point of the night or day. For instance, when getting ready to go to bed (“I really have to sleep tonight because tomorrow I have to be at my best.”); when in bed (“Here we go again, I am up at 1 a.m., and will likely be up for a while now.”); or during the day (“I am so tired, if I could only sleep more I will have more energy during the day.”). Many of these cognitions are “automatic thoughts”. They are based on, and fueled by, beliefs we have about sleep and ourselves. For example, a belief that one has to have 8 hours of sleep for functioning well during the day, or that if one is tired during the day it is only because of poor sleep, or that one is unable to cope after a night of poor sleep. The aim of cognitive strategies is to help Veterans understand how such beliefs and thoughts interfere with sleep, and guide them to alternative, more helpful, and often more accurate, thoughts.

The primary techniques for changing sleep-interfering cognitions are: (a) education about the facts and myths underlying a belief about sleep (sleep education); and (b) evaluation and modification of thoughts (cognitive restructuring), by guiding patients to make discoveries on their own (guided discovery). These strategies can be used in conjunction with each other. It may be beneficial to provide scientific facts that may alter inaccurate cognitions that emerged during the cognitive restructuring process. Cognitive therapy strategies can also be used to prepare patients to make difficult changes to their behaviors. An overview of sleep education and cognitive therapy strategies used in CBT-I is provided below. For additional reading, refer to the Cognitive Behavioral Therapy for Depression in Veterans and Military Servicemembers Therapist Manual (Wenzel et al., 2011).

**D1. Sleep education to help change sleep-related thoughts and beliefs.** General education about sleep and the rationales provided for the behavioral guidelines (Section C and Chapter 1) are expected to alter patients' beliefs about sleep and their sleep-interfering cognitions. For instance, when introducing the behavioral components of CBT-I, discuss the notion that there is no single amount of sleep that “fits” everyone. By altering their belief about how much sleep is optimal, this information may relax some patients' anxiety about not getting as much sleep as other people they know. Another example is suggesting that the patient should focus on the quality rather than quantity of sleep that was introduced when SRT was initially presented. This suggestion is likely to shift the focus away from how much the patient sleeps. It is also likely to alter a patient's belief that getting the desired quantity of sleep is the only way to feel refreshed in the morning, thereby reducing anxiety about not getting “enough” sleep. Thus, knowledge about sleep and its regulation, and understanding the rationale underlying SRT, help reshape misleading beliefs and cognitions about sleep that underlie many sleep-related anxieties. Sleep education, when tailored to fit patients' comprehension and thinking style, and to address their dysfunctional beliefs about sleep, will reduce arousal and enhance their readiness to follow the behavioral guidelines.

**D2. Cognitive Restructuring.** Cognitive restructuring involves the identification, evaluation, and modification of inaccurate or thoughts that are maladaptive. In the context of insomnia, the focus is on sleep-related thoughts that increase arousal, and therefore interfere with sleep directly (sleep-incompatible) thoughts), and indirectly (by interfering with adherence to behavioral components of CBT-I). Cognitive restructuring is best achieved through a *collaborative* process that guides the patient through a series of questions to first identify sleep-incompatible and adherence-interfering thoughts, evaluate their validity, relevance or usefulness, and then change the content of the thoughts to ones that are more accurate, relevant or useful. Thoughts that are not useful or relevant are labeled as such, discarded and replaced by relevant and useful thoughts. Thoughts that are inaccurate are evaluated and replaced by alternative, more accurate and relevant thoughts. There is often a “grain of truth” in thoughts that are not useful but have become exaggerated or distorted. Most relevant to insomnia is the tendency to “catastrophize” and over-estimate the probability of negative consequences of insufficient or poor sleep.

Many, but not all, patients with insomnia can readily identify thoughts they have when they are trying to sleep. They are less aware of thoughts they have during the day that may contribute to high arousal at night (e.g., “I can’t concentrate,” or “I wish I slept better.”) A helpful tool to help identify and examine the validity of thoughts that interfere with sleep is the *thought record*. (An example entitled “Changing Your Thoughts about Sleep” is in Appendix L). This seven-column thought record asks the patient to answer the following questions:

1. What was the situation in which you started having this thought?
2. Use one word to describe how it made you feel; How intense was this feeling (using a 0-100 Likert scale).
3. What were you thinking about? Which of these thoughts was the most likely to make you feel that way?
4. Why do you think this (most likely) thought is true? Please stick only to factual evidence.
5. Why do you think this (most likely) thought might not be true?
6. Considering the evidence for and against the thought, what would be an alternative, more helpful thought?
7. If you had this alternative thought, how would you have felt? And how intense would this feeling be (using the same 0-100 Likert scale)?

The first three questions can help identify thought that are relevant to the experience of insomnia and can be used as an alternate three-column thought record when identification of sleep interfering thoughts is the main target. The remaining four questions assist in examining the veracity of the thought and coming up with revised or alternative more accurate thoughts that are likely to also alter the patient’s pre-sleep emotional experience and reduce pre-sleep arousal.

The following are examples of questions that can be used during cognitive restructuring when examining the validity of thoughts:

- What evidence supports that thought? What evidence does not support that thought?**
- Could there be any other explanations?**
- What is the worst that could happen? The best? The most realistic?**
- If the worst thing were to happen, how bad would that be? How would you cope with it?**
- Do you know for certain that \_\_\_\_\_ will happen?**
- Are you 100% sure about this?**
- Does \_\_\_\_\_ have to lead to or equal \_\_\_\_\_?**

The following are examples of questions that can be used during cognitive restructuring when examining the utility of thoughts:

- What is the effect of believing this thought?**
- What will be the effect of taking a different perspective on this situation?**
- How useful is it for you to be focusing on this thought?**

The following are examples of questions that can be used during cognitive restructuring to help patients come up with alternative or revised thoughts:

- What would you tell a friend if he or she were in the same situation?**
- How have you dealt with it in the past?**
- Now that I have told you about how sleep is regulated, what does it mean about your thought?**

Initially, guide the patient through these steps, with or without the thought record. Over time, the patient will learn to go through this process on his own when experiencing sleep-interfering thoughts. Cognitive restructuring is demonstrated with two

examples of sleep-interfering thoughts, followed by two examples of adherence interfering thoughts. The first example is of one of the most common sleep-interfering thought contents, worries about the negative consequences of sleep.

### ***D2.1 Examples of Cognitive Restructuring of Sleep Interfering Thoughts and Beliefs***

1. Night time worries about the negative consequences of insufficient sleep: Such worries are not compatible with sleep and interfere with the patient getting out of bed when unable to sleep at the beginning or middle of the sleep period, or when waking too early in the morning. Patients are concerned about their performance at work, their appearance, their temper, and long-term health consequences, to name a few of their worries. The cognitive errors that are involved in these instances are “*catastrophizing*” (that is, focusing on the worst or catastrophic outcome) and “*probability over-estimation*” (that is assigning a feared consequence a higher probability than is warranted by evidence). Sometimes the worries are expressed in general terms and the stated consequence may be but the tip of the “worry iceberg.” A cognitive restructuring tool called the *downward arrow technique* may help identify a catastrophic or low probability feared consequence. This technique can be used to address a thought such as “If I do not have enough sleep than XYZ.” (where XYZ are predictions of negative daytime consequences). Ask: “so if XYZ happens then what?” and continue with this line of questioning (downward arrow) until a catastrophic event that has a low probability is articulated.

At this point, acknowledge that poor sleep usually compromises one’s resources for dealing with extra burden. Provide relevant scientific information (sleep education) as part of a discussion of the fact that routine performance is usually not compromised, and if compromised, it is usually to a much lesser degree than the patient predicts. Research has shown that people with insomnia have greater arousal or activation than good sleepers (Bonnet & Arand, 2000; Perlis, Merica, Smith, & Giles, 2001; Vgontzas & Chrousos, 2002). This hyperarousal interferes with sleep at night, but also protects the patient with insomnia from the daytime consequences of insufficient sleep. People with insomnia do, however, feel they need to put more effort into activities that they can perform effortlessly when they sleep well. The first part of the explanation reflects an understanding of the daytime effects of poor sleep, while at the same time, the second part of the explanation helps to decrease the added distress caused by inaccurate catastrophic predictions.

2. Morning Predictions: “I had a lousy night; I will have a terrible day.” Morning predictions that the day will be “terrible” are also common among patients with insomnia. Begin by first exploring what the term terrible (or another such general term) means. With clearer understanding, then proceed to examine the evidence for such predictions. For example, ask the patient to reflect on times when: (a) the prediction was wrong (almost every person with insomnia can recall instances of functioning well despite insufficient sleep); and (b) the patient did not function well, but it was because of reasons unrelated to sleep. In that way the erroneous belief that there is a one-to-one correspondence between poor sleep and poor function on the subsequent day can be dispelled. An alternative approach is to design, in collaboration with the patient, a behavioral experiment to test this assumption.

Behavioral experiments: *Behavioral experiments* are designed to test sleep-interfering beliefs, typically between sessions. These can be powerful for testing predictions and beliefs that increase sleep-related anxiety and sleep effort but may not be valid. Work collaboratively with the patient to decide how a belief will be tested. For instance, in this case, after clarifying what the specific fear is, add a row to the sleep diary for monitoring the specific feared outcome. Then examine the relationship between the reported time asleep and the feared outcome.

### **Safety consideration**

One concern related to sleep loss that deserves special attention is worrying about *falling asleep at the wheel* while driving the day after a poor night’s sleep. This may be a valid concern in cases with untreated or undertreated OSA or when a sedating medication is taken. It may also be a valid concern during the initial stages of SRT. Even patients who have not presented initially with a high level of sleepiness may become sleepy when their TIB is restricted. This is because many people with insomnia underestimate how much they sleep. In such cases being in bed only for as long as their current *reported* sleep time will result in less than their current actual sleep time, hence in sleep deprivation. Thus this cognition is not a target for change. Instead shift focus to behaviors that promote safety. In such cases, alter the behavioral recommendations (e.g. using a liberal version of SRT or not using it at all), and advise patients to be aware of their alertness level, and to take precautions when appropriate. As stated earlier, short naps can be restorative and should be encouraged when sleepiness is a safety concern. Advise patients that if they become sleepy while driving they should pull off the road to a safe place, and either nap, or get some coffee, or both, if necessary before resuming driving.

## D2.2 Examples of Cognitive Restructuring of Adherence-Interfering Thoughts

The following are examples using three different cognitive restructuring techniques to deal with obstacles to getting out of bed when unable to sleep addressing three common reactions to this experience.

1. “I should at least rest.” The first example is a vignette demonstrating a therapist addressing a patient’s reaction to this treatment guideline with the statement “I should at least rest.” The therapist is using Socratic questioning, referring to previous sleep education.

Patient: If I do not sleep, I should be at least resting in bed.  
 Therapist [joins]: Resting is indeed important.  
 Therapist: Do you remember what staying in bed when not sleeping does to the association between the bed and sleep?  
 Patient: Yes. I know. I know it makes it so that when I go to bed my brain starts going. But I need my rest.  
 Therapist: You told me that when you stay in bed you toss and turn and become frustrated. Is that really restful?  
 Patient: I guess not really.  
 Therapist: If you stay in bed when you cannot sleep will it solve your sleep problem in the long run?  
 Patients: I don’t know.  
 Therapist: You said you know that staying in bed when unable to sleep makes the bed a poor cue for sleep. What did you mean by that?  
 Patient: As you said, like the dog that learned to salivate.  
 Therapist: How does it apply to you?  
 Patient: It means that my brain learned to be become awake in bed.  
 Therapist: Yes. If you stay in bed when you are unable to sleep, it will continue to teach your brain to be alert in bed. It will not solve your sleep problem in the long run. Right?  
 Patients: I guess not.  
 Therapist: Let’s discuss better ideas for resting out of bed. How can you create a comfortable corner for rest?

2. “If I get out of bed I will be up for the rest of the night.” The challenge in working with this thought is that there is some truth to this concern; it is possible that getting out of bed may prolong time awake in the middle of the night. Here the therapist is using another cognitive therapy technique called cost benefit analysis to help the patient examine the negative consequences of staying in bed when unable to sleep.

*Cost benefit analysis* is a specific type of guided discovery that examines the utility, rather than accuracy, of a given thought or belief. It is useful in this example because there is some truth to this concern; it is just not helpful for long term improvement in sleep. Cost benefit analysis consists of listing the advantages and disadvantages of holding a belief. It can be aided by dividing a blank page into two columns, one for cost and one for benefit.

Benefits of staying in bed	Cost of staying in bed
<ul style="list-style-type: none"> <li>• It may hasten sleep that night.</li> </ul>	Staying in bed will strengthen the association of bed with wakefulness rather than sleep, and is therefore counterproductive for the patient’s goal of resolving insomnia.
<ul style="list-style-type: none"> <li>• It is easier and more comfortable than getting out of bed.</li> </ul>	

In this case, the patient can be guided to the conclusion that it may be necessary to sleep less on some nights as a strategy for improving sleep in the long run. Analogies can be helpful in this regard. An analogy from the game of chess may bring this point alive. Chess players routinely sacrifice a few chess pieces in order to win the game. A war analogy, sacrificing a battle to deceive the enemy and win the war, may resonate with some Veterans. These analogies invite the patient to accept that there is merit in sleeping less for a few nights (by getting out of bed and possibly prolonging wakefulness), because this strategy might eventually improve insomnia.

3. “If I get out of bed I will disturb my bedpartner’s sleep.” Work with the patient collaboratively to design a behavioral experiment. For example, the patient can stay in bed on half the nights, between the present and next sessions, and get out of bed when unable to sleep on the remaining nights, noting each morning in the comment section of his sleep diary



whether or not that night he got out of bed when unable to sleep. Both the patient and the partner will independently note their sleep quality. The notes will then be examined during the next session.

***D2.3 Coping cards.*** *Coping cards* are index cards on which to write down strategies that were developed during the session to help patients: (a) deal with thoughts that interfere with sleep, (b) handle consequences of poor sleep, and (c) adhere to the recommendations made in the session. The coping cards summarize statements that were developed in the course of cognitive restructuring as alternatives to sleep incompatible thoughts or to enhance adherence with behavioral changes. They provide a quick, easy method to access these coping strategies, thus helping patients remember to apply them to their problem areas. Below is an example of a coping card. For additional information about coping cards, refer to the “Cognitive Behavioral Therapy for Depression in Veterans and Military Servicemembers Therapist Manual” (Wenzel et al., 2011).

**Coping Card example:**

**Coping thought:** I am so tired. If I could only sleep more I will have more energy during the day.

**Coping strategies:**

- Remind myself that when we looked at my sleep diary there was not a clear connection between how tired I was and how much I slept.
- Remind myself that I can take a 5-minute break during the day to do something I really like and that this will energize me.

***D2.4 Addressing cognitions common among older Veterans.*** The duration of insomnia of older Veterans is typically longer than that of younger Veterans; therefore their dysfunctional cognitions about sleep may be more longstanding and deeply rooted. In addition, older Veterans may have some unique beliefs about sleep that require targeted attention with cognitive therapy techniques. For instance, an older Veteran may attribute his insomnia to physical factors such as aging or a chronic illness. Guided discovery can be used to modify the belief that aging inherently leads to poor sleep. For example, the Veteran can be asked if he has an older adult acquaintance who sleeps well. This can begin a line of questioning that leads the patient to the realization that although there are normal changes in sleep with aging (as discussed in Chapter 1, under Sleep Education), not all older persons have insomnia.

Another example of a commonly-held belief among older adults is that insomnia in old age is caused by a chronic illness or chronic pain and therefore cannot be improved. In this case, acknowledge that the illness (or pain) may have precipitated, or is contributing to poor sleep, but also remind the patient that poor sleep habits (behaviors) and conditioned arousal contribute to the perpetuation of insomnia and that these factors are amenable to change. In other words, unlike physical conditions and the aging process, changes in sleep behaviors (such as going to bed when sleepy and waking up at the same time every morning) are under the Veteran’s control. This conversation may be most effective if it consists of education mixed with guided discovery.

Older Veterans may also have unrealistic expectations about sleep. For example, they may think they should be able to sleep as they did when they were younger, or they may believe that since they can allot more time to sleep they should do it. Consequently they go to bed early and stay in bed until later in the morning than when they were younger. To encourage realistic expectations and discourage extended time in bed, review age-related sleep changes. For example, even good sleepers experience some changes in their sleep as they age. Point out that there are individual differences among people in many areas such as eye and hair color, height and weight. It’s the same with sleep; everyone is different. Cost-benefit analysis may be helpful for addressing the belief that extended time in bed is beneficial. Like their younger counterparts, older adults with such beliefs can benefit from placing less emphasis on sleep and sleep loss, and greater focus on the importance of engaging in life’s activities.

***D3. Motivational enhancement (ME).*** This technique is anchored in the principles of motivational psychology (Miller & Rollnick, 1991; Miller, 1985) and it can help prepare patients with very high sleep anxiety and sleep effort to engage in SC or SRT. A transtheoretical model, described by Prochaska and DiClemente (Prochaska & DiClemente, 1984), explains how people change addictive behaviors and has been applied to prepare people to engage in behaviors needed for other desired changes. In the context of CBT-I, this approach can help patients who experience anxiety when they hear what SC and SRT entail. ME is designed to mobilize the patient’s own change resources and support intrinsic motivation for change. It is based on five basic motivational principles (Miller et al., 1991).

1. Express empathy.
2. Develop discrepancy (help patients consider how they sleep and how they want to sleep).
3. Avoid direct argumentation.
4. Roll with resistance.
5. Support self-efficacy.

Motivation for change occurs when people perceive a discrepancy between where they are and where they want to be. Seek to raise the patient's awareness of the personal adverse consequences of poor sleep, and to focus the patient's attention on the discrepancy between his current and desired sleep. Patients are more likely to engage in this discussion in a psychologically safe, empathic environment, and when "it is the patient and not the therapist who voices the arguments for change." (Miller & Rollnick, 1991). Use empathy, roll with resistance, and gently help the patient realize that change of current sleep-related behaviors (e.g., getting out of, rather than staying in, bed when unable to sleep, or curtailing the time allotted for sleep) is possible. A full discussion of the intricacies involved in using these techniques is beyond the scope of this manual. Please see Miller & Rollnick (1991) for further reading. This technique is demonstrated with an example.

### **Example of Using ME to Assist Engagement in SRT**

After hearing the therapist describing SRT the patient responds:

- Patient: I can't do it. If I don't sleep I can hardly function
- Therapist: How much sleep do you think you need?
- Patient: Ideally I need 8 hours. If I get less than 6 hours I am so tired I can hardly do anything. I am irritable; I snap at my kids; I am not fun to be around.
- Therapist: I see from your sleep diary that you are in bed from 10 p.m. to 8 a.m., this is 10 hours in bed. How much sleep are you actually getting on average?
- Patient: Probably about 6 hours.
- Therapist: I see from your sleep diary that most nights you sleep less than 6 hours, how do you cope with that?
- Patient: It's hard. I do much better when I get 7 hours and I really need eight.
- Therapist: What will happen if you continue to stay in bed 10 hours like you are used to?
- Patient: I guess nothing will change. But I can't go on like this.
- Therapist: So what do you think you will need to do?
- Patient: I guess I have to stay in bed less, but there is no way I can cut it back to 6 hours.
- Therapist: What do you think you can commit to?
- Patient: I can do 7 hours.
- Therapist: Are you sure you can do it?

At this point the therapist decides to start sleep compression (rather than SRT), starting with TIB of 7 hours, and continues to work with the patient on identifying and addressing remaining barriers to adherence. They use a coping card as part of the plan. It states: "It is going to be hard, but I have to do it if I want my sleep to get better."

# Chapter 4: Session-by-Session Implementation

This chapter describes the protocol for CBT-I and discusses implementation issues. Section A provides a flexible session-by-session treatment protocol that allows CBT-I to be individually tailored to each patient based on case conceptualization. The discussion of the last session is focused on relapse prevention. Section B is focused on general implementation issues.

Research has shown that among patients with insomnia and no other complicating comorbidities, the optimal number of individual CBT-I sessions, after the sleep intake session, is generally four (Edinger et al., 2007). This protocol is designed for implementation in six 50-minute sessions (one assessment session and five treatment sessions), in light of the comorbidities and other presentation factors common among Veterans seeking treatment for insomnia. Some Veterans may need additional sessions, though this is likely to not be the typical experience. Sessions usually last 50 to 60 minutes and are spaced one to two weeks apart. The content of the treatment sessions is not fixed. The selection of components and the order they are introduced are informed by the case conceptualization (See Chapter 2 Section C). An outline of a typical session is presented in Table 1.)

## A. Outline of Sessions

**Session 1:** This initial session consists of a thorough assessment of the presenting problem and goal setting. The structured intake form (Appendix C) is helpful in guiding this sleep intake evaluation and ensuring it is comprehensive. It is often helpful to supplement the intake assessment with the following assessment questionnaires, all described in Chapter 2: (a) STOP Questionnaire (to assess OSA); (b) Restless Legs Syndrome Rating Scale (to assess severity of RLS); (c) Eveningness/Morningness Questionnaire (EMQ; to assess circadian rhythm tendency); and (d) Dysfunctional Beliefs About Sleep (DBAS; to assess sleep-related cognitions). Then, depending on how much time remains in session, describe Spielman's model of insomnia, and explain the regulation of sleep, emphasizing aspects of sleep regulation that are most relevant to the patient's presentation. Tailor the explanation to the patient's intellectual curiosity, as time allows. For example, if the patient takes long daytime naps or dozes off in the evening, the description of the sleep drive can include a discussion of the effects of these behaviors on weakening the sleep drive. If the patient maintains an irregular waketime, the description of the circadian clock can include a discussion of the effects of this behavior on the biological clock. The education should focus on factors that are most likely to negatively impact the patient's sleep (e.g., substances, inappropriate timing of exercise and eating, clock watching, inconsistent wake-time, and etc). Pace the education to match the patient's comprehension, attention and needs, and avoid overwhelming the patient with information. If time does not permit, patient-tailored education about insomnia and sleep regulation can be postponed to the next session.

At the end of the session introduce the sleep diary and ask the patient to complete it each morning throughout treatment. Take time to explain the importance of completing the sleep diary each morning, rather several days at a time. Adherence with completion of the sleep diary is enhanced when the patient understands the relevance and importance of the information it provides for optimal treatment outcome. Adherence with diary completion is also enhanced when the patient is provided the opportunity to become familiar with the task, by completing information about last night during the session, and is given enough time to ask for clarification. To demonstrate the importance of prospectively completing the diary information, ask the patient to then also complete the information for three nights ago. Most patients will quickly realize they do not remember the details very well.

After the first session ends, complete the Case Conceptualization Form (Appendix D). The art of CBT-I involves careful selection and relative emphasis of treatment elements to optimize progress. Conceptualization of the case will help guide which component(s) to present first, and how to present the treatment plan to the patient during the next session.

**Session 2:** This and all subsequent sessions begin with a review of the sleep diary, paying attention to schedule irregularity, and calculating average TST and TIB. Guided by the case conceptualization, introduce treatment components that are most relevant to the patient. In most cases, the second session is when the combined SRT and SC guidelines are introduced and the handout A Guide to Overcoming Insomnia (Appendix I), that contains the seven essential guidelines, is provided to the patient. This tri-fold handout has spaces to write the agreed upon WT and BT, a notes section for recording tailored recommendations, and a side bar that lists sleep hygiene recommendations. To enhance adherence present the rationale, ensure the patient understands the rationale and how it applies to him, and explore potential obstacles to adhering to the selected guidelines. The handout "Questions and Answers about the Guidelines" (Appendix J) can be provided when clinically indicated. Using a Q & A format,

this handout provides answers to commonly asked questions about each of the seven guidelines. A few additional handouts can be used to enhance adherence. The handout entitled “Things That May Get in the Way of Following the Guidelines” (Carney et al., 2009) can be used to identify treatment recommendations that the patient may find challenging and reasons why they will be difficult to adhere to. This form asks patients to rate the likelihood they will follow each of the guidelines. When there are difficulties staying awake until the designated bedtime, or the opposite, disengaging from activities that may interfere with sleep onset, use the handouts “Staying Awake Until Your Scheduled Bedtime” (Carney et al., 2009). The first asks patients to identify activities that they now engage in before bedtime, and to rate the likelihood that each activity will hinder staying awake until bedtime or interfere with sleep. Help the patient come up with alternative activities as needed, using the second of these two handouts, that lists activities from which the patient can select ones relevant to him.

However, in some cases, one or more of the behavioral components may be overwhelming or contraindicated and may need to be introduced gradually or in a modified fashion. For example, a Veteran with a extremely irregular out-of-bed times, who is not ready for implementing all seven guidelines may benefit from a focus on a single guideline, such as fixing his wake and out of bed times (Guideline 1). Another example is a Veteran who responds to SRT and SC with very high levels of anxiety, for whom it might be important to first address the anxiety. In this second example, it may be better to postpone the implementation of these components until the patient is ready.

The session concludes with a review of homework. Homework always includes continued recording in the sleep diary. The “Guide to Overcoming Insomnia” will help patients remember their homework. Encourage patients to mark the guidelines that were discussed in session.

Subsequent sessions: Each session begins with a review of the sleep diary (tracking progress and adherence to the homework assigned in the previous session) and ends with a new homework assignment. Review the diary, paying attention to the patient’s sleep schedule in the previous week, progress, and, for sessions following the introduction of SRT, also adherence to the TIB guidelines. Use the sleep diary data to compute SE and administer the Sleep Need Questionnaire. Based on SE and score on the Sleep Need Questionnaire, adjust the TIB base, as indicated by the SRT protocol (Chapter 3, Section A2.6) and clinical judgment. Adherence issues are identified and discussed, using cognitive therapy techniques (Chapter 3, Section D). Discuss the relationship between progress and adherence. This is important because attribution of progress to the patient’s behavior enhances self-efficacy, and attribution of absence of progress to non-adherence could promote future adherence. This is particularly relevant to adherence with the SC and SRT guidelines. Throughout the session, elicit feedback from the patient to ascertain that he understands the (revised) SRT guidelines and assess his commitment to adherence. The rest of the session is devoted to introducing new treatment components, as needed. Most commonly, this includes arousal reduction methods (Chapter 3, Section B) and cognitive therapy techniques to address thoughts and beliefs that promote arousal. If SRT and SC were not introduced in session 2 they may be introduced in one of the subsequent sessions, as clinically indicated.

Final session: The final treatment session is, in most cases, session six. However, termination of treatment is decided based on goal attainment and following basic clinical guidelines. Some patients remit with fewer than six sessions and others may need more. Treatment can be extended if the patient is committed to treatment and it is believed that additional sessions will be productive. The last session is dedicated to relapse-prevention.

Relapse Prevention: Begin by asking the patient to summarize what he has gained and to identify what was helpful. The *relapse prevention* handout (“Action Plan for Addressing Insomnia in the Future” in (Appendix M) is a tool for identifying treatment elements that were helpful, as it lists many components of CBT-I. Components that are important for the patient’s action plan can be added to the list, as needed. A discussion of the possibility that worsening of sleep may emerge in certain situations (such as situations of personal loss) is an important part of relapse prevention. It may be useful to mention that sleep is a physiological system that is very sensitive to life distresses. The challenge is not to prevent any sleep loss, but to prevent a few bad nights from becoming a long episode of poor sleep. The best protection is the realization that a few bad nights do not constitute a problem, but if too much focus is placed on sleep, or if a person becomes overly alarmed by a few bad nights, these few nights can become the start of a new episode of insomnia. It is useful to remind patients that, since disturbed sleep is a symptom of stress, directing effort at addressing the stress itself may be better than trying harder to sleep. Remind the patient that the treatment components that have helped him during treatment can be useful again if (or when) insomnia re-emerges. The patient now has had experience monitoring sleep with diaries and interpreting the data, so he can resume using the sleep diaries if he thinks his sleep is deteriorating. Make certain to ascertain that the patient understands how to self-administer SRT,

and advise the patient to come back to treatment if needed. This session is also the time to discuss signs and symptoms of sleep apnea and encourage patients to seek help should such symptoms emerge.

The following excerpt from Chris' final CBT-I session demonstrates relapse prevention. The therapist asks Chris to reflect on his progress and identify treatment guidelines that were particularly helpful. The therapist highlights guidelines that will be important for Chris to follow in the future.

Therapist: Welcome back, Chris. It's good to see you again. How are you doing?

Chris: Good. I think I'm doing better...glad I stuck with it...

Therapist: What we will do today is talk about where you've been and how you've progressed with treatment. Then we'll talk about what you can continue to do to keep these gains going. [Patient nods] From your sleep diary it looks like you're now getting about 7 hours of sleep, you go to bed at midnight and wake up at 7 a.m. every day.

Chris: Yeah, yeah.

Therapist: And how's that going now?

Chris: Good! It's nice to be up at the same time every day and be at work actually a little bit early on the days I don't have to take my daughter to school. So that's really helped out I think, cause I'm sleeping better, maybe? My mood's a little bit better. I feel like, it's just going better. I'm – I'm happier.

Therapist: It sounds like there's been a positive impact at work. Have you noticed any changes at home as well?

Chris: Well, I guess that too. I mean I'm feeling better and less worried about things at work. My home life seems to go better too, so yeah, it's been helpful.

Therapist: So, how is it working getting to bed at midnight – because I know that your wife's bedtime was I think about 11:30 p.m.?

Chris: Yeah, well now that I'm at 12 a.m., it's not that different. She just stays up a little later and we go to bed together

Therapist: Kind of a compromise?

Chris: Yeah, exactly. Going to bed a half an hour later isn't really hurting her schedule. It's been fine for her. Of course, when I was going to bed at one, that was too late, but... midnight is fine.

Therapist: How about getting up at 7 a.m.?

Chris: That's ... yeah... there are times when that's still a struggle. But only for a little while. I figured out that if I just get up, I feel fine after a little while.

Therapist: That's not unusual, most people have that kind of sleep inertia when they first wake up ...and you're functioning well during the day. So one of the things we should do now is have an action plan for you for addressing insomnia should you experience it in the future. Let me pull this hand-out here. Why don't you go ahead and check off some of the things you are doing, and will continue to do going forward? [Checking off] This will be a good reference in the future for you to review what was helpful in treatment, should you need it. It looks like you're already set with your schedule. You don't need to make any more adjustments there. I think you're uh, good to go.

Chris: Thanks, you know, that's just been the real key. Just scheduling.

Therapist: Right. That's a good point. I see you marked it down on this list. Is that the thing that helps you the most?

Chris: I think so, I think that has been the most helpful...part of what seems so simple now, thinking about it in that respect. That and...

Therapist: The regular schedule.

Chris: Yeah, that's what I mean, keeping that regular schedule has been you know... getting up on time, has been the most difficult and the most helpful thing, probably. But then also, not feeling like I needed to go to bed early to improve my sleep time. That it would be okay to wait till I was sleepy to go to bed. That was helpful too. Now I'm pretty much sleepy every night before midnight anyway.

Therapist: So that sleep drive is doing its work.

Chris: Yeah it is. You know, the scheduling, that part of what we went through has really worked for me.

Therapist: That's great. Chris, It has been such a pleasure seeing you and seeing your progress and getting to this point.

Chris: Well thank you. I really appreciate all the help you've given me.

Therapist: If you need to follow-up in the future. I'm here.

## Clinical Essence:

Although there is a great deal of flexibility in deciding which components of CBT-I to introduce in sessions two through six, it is best to introduce SC and SRT as early in the course of treatment as it is clinically feasible. The session-by-session outline in Table 1 below represents the most typical order of components by session.

**Table 1**  
*A Session By Session Outline*

Session	Content	Homework	Measures / Handouts
1	<ul style="list-style-type: none"> <li>• Comprehensive assessment</li> <li>• Goal setting</li> <li>• Case conceptualization</li> <li>• Introduce sleep diary</li> </ul>	<ul style="list-style-type: none"> <li>• Complete sleep diary.</li> </ul>	<ul style="list-style-type: none"> <li>• Intake form</li> <li>• Assessment questionnaires</li> <li>• Sleep diary</li> <li>• ISI</li> <li>• Case conceptualization form</li> </ul>
2	<ul style="list-style-type: none"> <li>• Review sleep diary.</li> <li>• Provide sleep education tailored to patient.</li> <li>• Introduce SC and SRT guidelines and rationale anchored in sleep regulation.</li> <li>• Use cognitive therapy as needed.</li> <li>• Emphasize most relevant components and add components based on case conceptualization.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete sleep diary</li> <li>• Follow recommended times for getting into and out of bed.</li> <li>• Follow other relevant guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>• Sleep diary</li> <li>• ISI</li> <li>• “A Guide to Overcoming Your Insomnia”</li> <li>• Other relevant worksheets</li> </ul>
3	<ul style="list-style-type: none"> <li>• Review sleep diary and adherence.</li> <li>• Discuss adherence in relation to progress.</li> <li>• Modify TIB based on SRT rules.</li> <li>• Use cognitive therapy as needed.</li> <li>• Introduce relaxation when needed (unless already introduced in session two)</li> </ul>	<ul style="list-style-type: none"> <li>• Complete sleep diary.</li> <li>• Follow recommended times for getting into and out of bed.</li> <li>• Follow other relevant guidelines (including relaxation home practice).</li> </ul>	<ul style="list-style-type: none"> <li>• Sleep Need Questionnaire</li> <li>• Sleep diary</li> <li>• ISI</li> <li>• Other relevant worksheets</li> </ul>
4 and 5	<ul style="list-style-type: none"> <li>• Review sleep diary and adherence.</li> <li>• Discuss adherence in relation to progress.</li> <li>• Modify TIB based on SRT rules.</li> <li>• Use cognitive therapy as needed.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete sleep diary.</li> <li>• Follow recommended times for getting into and out of bed.</li> <li>• Follow other relevant guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>• Sleep Need Questionnaire</li> <li>• Sleep diary</li> <li>• ISI</li> <li>• Other relevant worksheets</li> </ul>
6 (Final)	<ul style="list-style-type: none"> <li>• Review sleep diary and adherence.</li> <li>• Modify TIB based on SRT rules.</li> <li>• Develop continued care plan.</li> <li>• Develop a relapse prevention plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Follow continued care and relapse prevention plans</li> </ul>	<ul style="list-style-type: none"> <li>• Action Plan for Addressing Insomnia in the Future</li> <li>• Sleep Need Questionnaire</li> <li>• ISI</li> <li>• Sleep diary</li> </ul>

Table 2 summarizes patients' handouts and worksheets and the sessions for which they may be particularly useful.

**Table 2**  
*Summary of Handouts and Worksheets*

Handout/worksheet	Session
Sleep diary	Session 1 and each subsequent session
A Guide to Overcoming Your Insomnia (Summary of guidelines)	Session 2
Action Plan for Addressing Insomnia in the Future. (A relapse prevention handout)	Last session
Optional Handouts/worksheets	
Questions and Answers about "the Guidelines."	Session 2 (or later) for patients who can benefit from detailed explanations behind guidelines.
Activities for Wakeful Times.	Session 2 (or later) to help identify activities for pre-sleep, middle of the night awakening, and morning (to motivate getting out of bed).
Staying Awake Until Your Scheduled Bedtime.	Session 2 (or later) to help identify pre-sleep activities.
Enjoying Your Morning	Session 2 (or later) to help trouble shoot difficulties getting out of bed.
Changing Your Thinking About Sleep.	A thought record to be used as needed.
Things That May Get in the Way of Following the Guidelines.	Session 2 (or later) to help identify and work through obstacles to adherence.
Reasons for Feeling Tired.	Session 2 (or later) to help distinguish sleepiness and tiredness.

## B. General Treatment Implementation Guidelines

It is important to remain genuine and avoid patronizing the patient. As always, when discussing adherence, use language that feels comfortable and consistent, and use the patient's preferences and sensitivities. Collaborative empiricism should be used even for the behavioral components. For example, explain the rationale for SRT and ask the patient what he thinks his TIB should be. Emphasize that wake and out-of-bed times should be the same every day, including weekends and make sure the patient takes this into account when deciding what his fixed waketime (and out-of-bed time) should be. Involve the patient as each guideline is introduced. Make sure the patient understands relevant aspects of the regulation of sleep and use leading (Socratic) questions, rather than authoritative prescriptions. This will increase the likelihood of adherence. Collaborative empiricism is integral to cognitive therapy for addressing inaccurate beliefs and cognitions related to sleep. Use guided discovery and behavioral experiments to test sleep-interfering beliefs.

Principles for dealing with adherence issues: It is important to note and support incidents of adherence and partial adherence, and to discuss obstacles to adherence, as appropriate. Pointing out the relationship between adherence and improvement will reinforce continued adherence and effort toward more complete adherence. If progress is minimal, even in the face of adherence, explore what else might be maintaining the patient's problem. Failure to improve in the face of adherence can be discouraging and frustrating. It may be the result of increased sleep effort, or anxiety associated with restricted time in bed, or with following SC instructions. In such cases *motivational enhancement* techniques and counter arousal skills may need to precede SRT or SC and modified versions, such as sleep compression and counter control may be helpful.

When adherence issues become difficult, it may be helpful to go back to the completed Case Conceptualization Form and modify it with new information that may have emerged as treatment progressed. The revised case formulation may help generate new ideas for overcoming the presenting adherence issues. Previous sections discussed a number of adherence issues and strategies for addressing them, including cognitive restructuring (guided discovery), coping cards, facts about sleep, and setting behavioral experiments. Previous sections also described a few worksheets that may enhance adherence, such as “Things That May Get in the Way of Following the Guidelines” and “Questions and Answers About the Guidelines”.

Cautions and contraindications: CBT-I can be used with most but not all patients who meet criteria for insomnia. It has not been tested for improving sleep among individuals who do not meet criteria for insomnia; individuals with circadian rhythm sleep disorders, such as severe delayed sleep phase syndrome and shift work disorder (particularly night and rotating shift workers); and those whose sleep disturbances are exclusively due to a nightmare disorder. As discussed in the section on Sleep Restriction Therapy, excessive daytime sleepiness, uncontrolled seizure disorder, and bipolar disorder are contraindications for this component of CBT-I. Because getting out of bed in the middle of the night may be unsafe for patients who are fragile, stimulus control therapy should be modified, as discussed in Chapter 3 Section A1.2, to ensure safety. Individuals with current active alcohol and drug use disorder may not be able to benefit from CBT-I because it cannot reverse the deleterious effects of substance of abuse on sleep onset and continuity. In general, other comorbidities do not preclude the application of CBT-I, but it is important to consider time and other available resources in prioritizing the order of treatments for insomnia and the comorbid condition. For instance, prolonged exposure therapy (PE) for post-traumatic stress disorder is intensive and requires much work between sessions. Therefore, it may be best to postpone adding any additional treatment, including CBT-I, until the end of PE. Considerations for treating insomnia in patients whose sleep complaints emerge during the course of receiving treatment for other problems are discussed in Chapter 5.



# Chapter 5: Special Considerations for the Implementation of CBT-I

This chapter discusses issues relevant to insomnia when it is comorbid with other medical and psychiatric conditions common among Veterans, including depression, PTSD and chronic pain. New or greater challenges that these conditions pose for the application of CBT-I are described, and strategies for meeting these challenges are proposed. There is also a brief discussion of CBT-I for patients with alcohol use disorders and for those with hypnotic use, as well as strategies for incorporating CBT-I into routine mental health practice.

The presence of comorbidities requires adaptation of all aspects of the treatment, including assessment, case conceptualization, presenting the rationale to the patient, possible modifications to CBT-I, and dealing with adherence. The *assessment* of insomnia when comorbidities are present requires probing for disorder-specific features that are presented later in this chapter. *Case conceptualization* will guide the decision of: (a) the order of presentation of the different components (for example, addressing fear of going to bed may need to precede SRT with some PTSD patients); (b) which treatment components to emphasize (for instance, going to bed only when sleepy may need special emphasis in patients with depression who go to bed early as an escape from suffering); and (c) how to present the treatment rationale, making it as relevant to the patient's presentation as possible.

## A. Considerations for Patients with Comorbid Depression

Sleep difficulties are very common among patients with depression. These sleep problems often do not resolve with general psychotherapy or antidepressant medications (Carney, Segal, Edinger, & Krystal, 2007; Manber, Rush, Thase, Amow, Klein, Trivedi, Korenstein, Markowitz, Dunner, Munsaka, Borian, Martin, & Keller, 2003; Menza, Marin, & Opper, 2003). In general, individuals with co-occurring depression and insomnia tend to have more serious disability, greater depression severity, and poorer depression outcomes than those without insomnia (Pigeon, Hegel, Unutzer, Fan, Sateia, Lyness, Phillips, & Perlis, 2008). Depressed patients with disturbed sleep are also at increased risk for suicide and are more vulnerable for recurrence of depression (Agargun, Kara, & Solmaz, 1997; Fawcett, Scheftner, Fogg, Clark, Young, Hedeker, & Gibbons, 1990). It is therefore important to diagnose and treat insomnia when it is comorbid with depression.

To effectively treat insomnia in those with depression it is important to know about aspects of sleep that are particularly relevant to individuals with depression. These are listed below:

1. Patients with depression may go to bed early in the evening, wishing to sleep as an escape from their suffering: Many find it difficult to get out of bed in the morning due to anhedonia and diminished motivation. The net effect of earlier bedtimes and later wake and out-of-bed times is prolonged time spent in bed trying to sleep. As discussed earlier, this is likely to further exacerbate insomnia. Therefore, be sure to explore the possibility that trying to sleep as an escape plays a role in maintaining the patient's insomnia problem. When this is the case it needs to be discussed openly. Guided discovery can be used to help patients see how their "escape" behavior is not helping their depression but is actually making their sleep worse. Behavioral activation should also be considered, with an emphasis on evening and morning activities.

In the following excerpt from Rosa's treatment the therapist contrasts going to bed because the patient does not want to be awake anymore, with going to bed when feeling sleepy.

Therapist: Good. But one more thing: remember when we talked about how you used to feel sleepy when you went to bed back in the days you slept well?

Rosa: Yeah.

Therapist: Well this is how it is supposed to be. You sleep the best when you go to bed when you are sleepy. Because it means that your sleep drive is strong and this helps you fall asleep. Remember we talked about that?

Rosa: Yeah.

Therapist: Of course, it doesn't always work out that way. Some days you might be upset. [Brief Pause]

Rosa: I know.

Therapist: It might be one of those days you're thinking about how your boyfriend left you, and you're upset. Then, you might want to go to sleep just because you don't want to think these thoughts anymore... and not even feel sleepy.

Rosa: Yeah. I have done that before.

Therapist: It is understandable. But going to bed because you just don't want to be awake anymore... is different from going to bed because you are sleepy.

Rosa: I see your point.

Therapist: Even if you were sleepy, if you go to bed upset, how likely are you to fall asleep quickly?

Rosa: Well. You are right. I just keep thinking and cannot shut my mind off.

Therapist: Yeah. Yeah – exactly. So, even if 12:30 a.m. comes, if you do not feel sleepy, just wait. Do something that helps you calm down and when your mind is no longer preoccupied with painful memories, worries or other upsetting thoughts, you may start noticing sleepiness is coming and then it will be a good time to go to bed. Do you think you can do that?

Rosa: [Nods in agreement]

2. Waking up earlier than desired: This is more common among depressed patients than among individuals with primary insomnia. However, it may also be an indication of the patient's "morningness" chronotype. Because morningness is thought to be a trait, this distinction can be clarified by asking if early morning awakenings were present prior to the onset of the depression. This distinction is very important for determining waketime when delivering SRT and SC. For example, waketime may need to be earlier for a patient with a "morningness" tendency than for a patient who wakes up early because of depression.
3. Patients with depression and insomnia also endorse more and stronger dysfunctional beliefs and attitudes about sleep than patients with primary insomnia: This tendency often translates into higher cognitive arousal in bed. Therefore, when treating insomnia in depressed individuals, it is important to pay extra attention to cognitive hyperarousal and inaccurate sleep-related beliefs and expectations.
4. Obstructive sleep apnea (OSA) may be more prevalent among patients with insomnia and depression: (Ong, Gress, San Pedro-Salcedo, & Manber, 2009) because the elevated prevalence may be related to depression-associated inactivity and weight gain. Certain antidepressant medications, sedatives and opiate medications exacerbate sleep apnea, and some antidepressants may cause periodic limb movements. These possibilities need to be assessed and followed by a referral for an overnight sleep study when indicated.

**A1. The challenge of treating insomnia in depression.** The CBT-I protocol calls for behavioral and cognitive changes that may be difficult to implement even by non-depressed patients. Individuals with depression may be even more likely to discontinue CBT-I, but patients who stay in treatment derive equal levels of benefit compared to insomnia patients without depression. However, patients with insomnia and depression who stay in treatment report greater difficulty adhering to fixed wake and out-of-bed times and restricted time in bed. It is therefore particularly important to identify and work through potential obstacles to adherence to these two aspects of the CBT-I protocol when depression is present. Continued monitoring and discussion of adherence issues is crucial. Clearly, anhedonia, and low motivation and energy, could make it even more difficult to follow the recommended changes. Nonetheless, CBT-I is effective for outpatients with insomnia and depression and appears to have positive effects on depression as well. Indeed, a pilot study suggested that when patients with depression and insomnia received cognitive behavioral therapy for insomnia (CBT-I), in conjunction with medication management for depression, they had significantly better response to the depression medication (Manber, Edinger, Gress, San Pedro-Salcedo, Kuo, & Kalista, 2008) It is believed that the same will hold true for a combination of CBT for depression and CBT-I. There is no awareness of research on the efficacy and adaptation of CBT-I for hospitalized depressed patients with insomnia. Below are suggestions on how to work through the challenges faced by depressed patients undergoing CBT-I.

Problem quieting the mind at night: Much has been written about rumination in patients with depression. When ruminations occur in bed at night they interfere with sleep. This suggests that when depression is present, there may be a need to pay more attention to methods to quiet the mind before bedtime. These methods were discussed in Chapter 3. Individuals with insomnia and comorbid depression also more strongly endorse dysfunctional beliefs about sleep and increased sleep efforts that interfere with sleep. Such cognitions are therefore particularly important to identify and address in order to help patients with depression and insomnia quiet their minds at night. This can be done by using "cognitive restructuring" and "thought records", and by highlighting scientific data that are relevant to the patient's inaccurate beliefs about sleep.

Problem getting out of bed at the designated time: Depression-associated anhedonia can interfere with adherence to this important aspect of treatment. Scheduling morning activities, particularly activities that involve commitment to others, often helps motivate anhedonic patients to get out of bed at the “prescribed” time. (For patients with difficulty coming up with suitable activities, use the “Things to Do if Awake” handout.) Also explore and fill gaps in the patient’s understanding of the rationale for the guideline advocating fixed wake and out-of-bed times.

Failure to consistently get out of bed when unable to sleep: Chapter 3 discussed how to address cognitions that may interfere with this instruction. These sleep-interfering cognitions might be more pronounced among individuals with comorbid depression, and they may be complicated by the wish for sleep as an escape from emotional suffering. Therefore addressing cognitions that interfere with getting out of bed if unable to sleep is a priority when using CBT-I with depressed patients.

In this excerpt from Rosa’s therapy, the therapist helps her identify obstacles for adhering to the Stimulus Control and Sleep Restriction guidelines, and find a realistic plan to address these obstacles.

- Therapist: Let’s review what we talked about. Can you tell me what we decided you’d be doing next week?
- Rosa: So, [brief pause] you told me to... go to bed no earlier than 12:30 a.m., or when I’m feeling sleepy... [pauses to think] and to get up at 7 a.m.
- Therapist: Did we decide on anything else?
- Rosa: Uh, you also said to get up in the middle of the night if I..... [pauses and self corrects] get up if I cannot fall asleep.
- Therapist: Mmm hmm [affirming], So, of these things we discussed, which one do you think would be most difficult for you to do?
- Rosa: Probably going to bed piece ... staying up later would be a problem.
- Therapist: What would be in the way?
- Rosa: Really I – I go to bed because I’m trying to... [pause] not be a burden on my parents and give them a little alone time; they work hard during the day. I’m...I’m there all day now, so I am really in my room with nothing to do. So...
- Therapist: Uh, sounds like you go to bed because there is not much else to do. Can you think of something you can do to help you stay up until 12:30 a.m.?
- Rosa: I might be able to... go in the living room with them.
- Therapist: And what gives you this idea?
- Rosa: Well, that would keep me up easier, it’s just... (pause) I haven’t been doing it up until now, ‘cause like, like I said I just want to... [pause] I didn’t want to be a burden on them.
- Therapist: [empathic Hmm-mm] It sounds like you’re reconsidering whether you really would be a burden to your parents if you spend time with them. Do you have any reason to think why you might not be a burden?
- Rosa: Um... [long pause] well, my mom has told me on a couple of occasions that I’m welcome to join them, to watch TV, and um, she’s asked me what I do in the room, why I spend all my time in there, so...
- Therapist: So do you believe her that she means it?
- Rosa: She probably does; it’s just in my head; it has been hard to get over that.
- Therapist: So there something in your head that still makes it- even after you know that your mother has invited you to be there... that still is lingering there in your head that makes it difficult?
- Rosa: Um, [long pause] just really not wanting to be a burden on them. But I really have no reason, you know to be out there, I felt, but now that you’re telling me that, it’s probably...in my best interest, you know...it’s something that...
- Therapist: Ah, okay. So how likely is it that you’d be able to be out there then with them, with your parents?
- Rosa: You know, I’ll give it a try, you know, I’ll see how it goes –
- Therapist: Yeah? And...and how late would you be with them?
- Rosa: They’re usually up till 11 p.m., because they have to get up for work the next morning.
- Therapist: So what will you do between 11 and 12:30?
- Rosa: I’ll probably just stay up and watch TV...you know. Watch a movie, with them....
- Therapist: Okay, ...and then go to bed when?
- Rosa: So, 12:30, or [pause] you said when I’m feeling sleepy [sounding unsure]
- Therapist: So you will wait until you’re sleepy.
- Rosa: Yeah.

Therapist: OK, just be careful what you watch on the TV. You don't want to watch a suspenseful movie because it may keep you up late, but otherwise, it's a very good plan.

Rosa: Okay.

Therapist: Very good. Before you leave, I just want to remind you that you were going to see your psychiatrist to talk about your medications for your depression.

Rosa: Yeah. Yeah, I'll do that.

**A2. Additional challenges faced by depressed patients with strong “eveningness” tendencies.** Problems with delayed and irregular sleep schedules tend to be exacerbated by depression. One reason for this exacerbation is related to diurnal variations in mood, which among those with a tendency to eveningness manifests as low mood in the morning and better mood in the evening. Understandably, patients with eveningness tendencies delay bedtimes because they finally feel better in the evening. They postpone getting out of bed because they have lower mood in the morning and may therefore have low motivation for morning activities. Thus, it is important to help these patients comprehend how these behaviors worsen their sleep problems. Work collaboratively and creatively with the patient to find ways to: (a) start the buffer zone earlier, (b) avoid postponing bedtime, and (c) schedule morning commitments in order to increase adherence to fixed wake and out-of-bed times. Morning light exposure may be particularly relevant to this group of patients both because it helps anchor their circadian clock and because light can elevate mood.

## B. Special Considerations for PTSD

Difficulty sleeping and fatigue are common among Veterans with trauma exposure (Hoge, Terhakopian, Castro, Messer, & Engel, 2007). Overnight sleep studies reveal reductions in sleep time and sleep efficiency (Hefez, Metz, & Lavie, 1987; Mellman, 1997), and increased frequency of bursts of arm and leg muscle twitches as well as vocalizations during sleep (Germain & Nielsen, 2003; Lavie, 2001; Ross, Ball, Dinges, Kribbs, Morrison, Silver, & Mulvaney, 1994). Yet, opposite of what would be expected in the presence of hypervigilance, overnight sleep studies also show that PTSD patients have higher auditory arousal awakening thresholds at night (Lavie, Katz, Pillar, & Zinger, 1998).

Comorbid Sleep Disorders: There is a high rate of OSA among patients with PTSD (Krakow, Melendrez, Warner, Dorin, Harper, & Hollifield, 2002; Sharafkhaneh, Giray, Richardson, Young, & Hirshkowitz, 2005). This may be due to indirect factors, such as increased obesity, use of sedating medications, and sleep fragmentation. Several reports have also found that individuals with PTSD have higher levels of automatic motor behavior, such as, periodic leg movements (Brown & Boudewyns, 1996).

Sleep Avoidance: Sleep avoidance is the tendency to avoid bed or sleep because of painful or fearful associations with sleep or the bed. Indications of this behavior pattern may be a delayed bedtime and sleeping in locations other than the bedroom, such as the living room, where the Veteran feels that he is better positioned for safety purposes. Common reasons for sleep avoidance among PTSD patients are fear of the loss of vigilance, trauma-related associations, and fear of nightmares. These are discussed in the next section.

*Cognitive Processing Therapy* and *Prolonged Exposure Therapy* are specialized forms of cognitive behavioral therapy that have been developed for PTSD. Cognitive Processing Therapy (CPT; Resick, Monson, & Chard, 2007) and Prolonged Exposure Therapy (PE; Foa, Rothbaum, & Hembree, 2007) and PE are recommended at the highest level in the VA and Department of Defense Clinical Practice Guideline for the Management of Post-Traumatic Stress (2010). Preliminary data suggest that these psychotherapies may improve both nightmares and insomnia. Unfortunately, a number of individuals who benefit from these treatments continue to report insomnia levels of sufficient clinical severity to warrant separate insomnia treatment (Zayfert & DeViva, 2004). A full discussion of each of these therapies is beyond the scope of this manual. If interested, refer to treatment manuals by Foa and colleagues (Foa, Rothbaum, & Hembree, 2007) and Resick and colleagues (Resick, Monson, & Chard, 2007). A few specific techniques to address sleep avoidance in Veterans with PTSD are demonstrated below.

**B1. The challenge of treating insomnia in PTSD.** Fear of loss of vigilance: Some Veterans with PTSD report avoiding sleep for fear of not being able to respond to urgent situations that might arise. These Veterans will instead become hypervigilant and engage in “safety behaviors.” For example, the Veteran may listen for noises outside while in bed, perform a “perimeter check” (checking locks on the doors and windows) at bedtime or upon awakening in the middle of the night, or keep a loaded weapon accessible. One Veteran who returned from deployment in Iraq reported that he was only able to sleep two hours per night on the couch, and that he slept with a gun close by in order to protect his family from potential intruders. During his tour in Iraq he was on guard duty as part of nighttime combat activity. During that time he slept during the day and his sleep was of poor quality.

To address fear of loss of vigilance, acknowledge the utility of hypervigilance at night in a combat zone, where survival needs superseded other needs, and contrast it with the negative consequences of hypervigilance in civilian life, where survival can be mostly taken for granted. To assist in the discrimination between contexts, use thought records and guided discovery to explore “fortune-telling” and catastrophic thoughts, as in the example below:

Pete: I need my gun close by in case someone breaks in – I need to protect my family.  
Therapist: Has anyone ever broken into your house before?  
Pete: No, but I don't trust my neighbor and you never know. It just takes one time.  
Therapist: It sounds like you stay on guard just to make sure everything is OK. You said that no one has ever broken into your house. In the time that you have been in your neighborhood, how many break-ins have occurred?  
Pete: Well, I remember when it happened to someone in our street. I do not remember other incidents since I moved to this area 5 years ago.  
Therapist: How many houses are there in your neighborhood?  
Pete: 100  
Therapist: So then I think that means that there might be one in a hundred (1%) chance of a break-in somewhere in your neighbor over the next 5 years.  
Pete: I guess that's pretty low.  
Therapist: Yes, I think it is pretty low. Let's talk about the personal price you pay when you feel you have to stay so alert and therefore are not able to sleep much at night. For example, how does having so little sleep impact your next-day mood? Do you think that it makes you irritable?  
Pete: Yes. I have a shorter fuse with the kids. I really don't like that.  
Therapist: Does sleeping on the sofa in the living room hurt your intimacy with your wife?  
Pete: Well, maybe you are right. My wife is always complaining that I'm not in bed with her.  
Therapist: To summarize, we saw that the likelihood of an intruder is very low and that the price you pay to guard against this pretty unlikely event is high, in that it has a negative impact on your family. Have I understood you correctly?  
Pete: When I think about it this way, I can see it doesn't make much sense to sleep on the sofa, but still it is hard to relax at night.  
Therapist: I understand. Let's think together of a plan that may help you.....

Help the Veteran realize that in civilian life, when safety is mostly taken for granted, the negative consequences of avoiding sleep tend to come to the fore. Heightened vigilance at night leads to an increase in arousal symptoms, shorter sleep, increased irritability, or less time spent in bed with the bed partner and may worsen PTSD symptoms. Because most Veterans place strong emphasis on the safety of their families, realizing the negative impact that hypervigilance at night has on their families, may be an important step in reducing hypervigilance at night. When the Veteran is ready, the discussion can turn to methods to reduce hypervigilance, such as using relaxation exercises prior to bedtime and not checking locks or the perimeter upon awaking. For patients who habitually perform safety checks before bedtime, refraining from doing so will initially produce anxiety that will lead to sleep loss, but over time, as anxiety attenuates and the checking behavior is eliminated, sleep will improve. This is another instance of the cost benefit of short versus long term outcomes, similar to the Chess analogy mentioned earlier.

A Note about Having Guns in Easy Access: It is dangerous for people to keep loaded guns in easy access. Patients may awaken in a confused or frightened state and accidentally discharge their gun. Family members may accidentally discharge weapons injuring themselves or others. Patients may be hesitant to lock up or unload their guns for fear of not being ready in case of emergency. Work with patients towards locking up or unloading weapons, even though, initially, it will most likely increase anxiety and insomnia.

Trauma-related avoidance of bed at night: A patient with PTSD may report avoiding bed or avoiding sleep because being in bed may be a reminder of a trauma. This may come about because: (a) lying in bed trying to sleep is more likely to be associated with memories of the trauma than when the individual is busy, (b) nightmares may be reminders of traumatic events, or (c) the trauma may have happened in bed or at night. One Vietnam Veteran reported that he did not retire to bed until 3 a.m. but consistently fell asleep in his recliner earlier in the evening. After further questioning, it became clear that when he retires to bed earlier in the evening he ruminates about combat experiences and previous nightmares. He also said that he often feared going to bed for fear of having another nightmare. To help patients with these issues, consider using a number of CBT-I techniques based on the patient's specific presentation.

1. When postponing bedtime, or avoiding bed, are related to fear of nightmares, a relevant CBT-I technique is to inform the patient that sleep deprivation increases the probability of a nightmare experience. This is because insufficient sleep *initially* reduces the amount of REM sleep (when dreaming most often happens). But, over time, REM suppression (caused by sleep avoidance) actually increases the pressure for REM sleep. With increased pressure more REM sleep ensues, which means the patient will experience more dreams, including nightmares. This is called REM rebound. In other words, the pattern of avoiding going to sleep at night for fear of nightmares increases the likelihood of experiencing nightmares and is, therefore, counterproductive.
2. When fear of sleep is related to rumination about trauma, choose a CBT-I tool designed to reduce rumination. These tools include: (a) the SC instruction to get out of bed when unable to sleep, because replaying traumatic or other negative memories are sleep-incompatible behaviors; and (b) scheduling a “worry time” during the day so that the Veteran can think or write about his combat experiences.

Aversion to silence: In some cases the Veteran may be averse to silence and may therefore keep the television on all night. However, the television’s changes in sound volume and light may be perceived during sleep and disrupt it. A better substitute for silence is white noise. White noise can be generated without cost by setting a television set between stations or by running a fan. White noise machines can also be purchased and are inexpensive. White noise may not be a good strategy for patients who are simultaneously receiving exposure therapy for PTSD because its use constitutes a “safety behavior”, which is discouraged in exposure therapy. As stated above, it is not recommended to use CBT-I in patients undergoing exposure therapy for PTSD. However, white noise may also be contraindicated for PTSD patients who have recently completed exposure therapy. For these patients, an alternative strategy is to modify SC instructions by allowing the Veteran to stay in bed for 20 minutes before getting out of bed. In other words, although clock watching is generally discouraged, it will be allowed in these cases. Experiencing the anxiety-provoking silence in bed may initially increase arousal in bed and exacerbate insomnia. In the long-term, however, the Veteran will learn to re-associate bed and silence with sleep. This modification to SC is useful whenever hypervigilance interferes with a Veteran’s ability to recognize signs of sleepiness, important for implementation of standard SC instructions.

Nightmares: A nightmare is a dream that elicits a strong emotional response (fear, horror), accompanied by an awakening. In other words, a nightmare involves negative feelings, negative images, and a behavioral response (awakening). Dreams can occur in any stage of sleep, although they are most frequent during REM sleep. As REM sleep is most predominant during the second half of the night, so are dreams and nightmares. Two therapies specifically for nightmares, prazosin (Raskind, Peskind, Hoff, Hart, Holmes, Warren, Shofer, O’Connell, Taylor, Gross, Rohde, & McFall, 2007; Raskind, Peskind, Kanter, Petrie, Radant, Thompson, Dobie, Hoff, Rein, Straits-Troster, Thomas, & McFall, 2003; Taylor, Freeman, & Cates, 2008), an alpha agonist, and Imagery Rehearsal Therapy (IRT) (Krakow, Hollifield, Johnston, Koss, Schrader, Warner, Tandberg, Lauriello, McBride, Cutchen, Cheng, Emmons, Germain, Melendrez, Sandoval, & Prince, 2001), have been shown to improve nightmares and decrease other PTSD symptoms. As stated above, cognitive behavioral therapies for PTSD (e.g., CPT and PE) have also been found to be effective in the reduction of nightmares (Zayfert et al., 2004).

Prazosin is thought to operate by increasing the amount of uninterrupted REM sleep (Taylor, Martin, Thompson, Williams, Mellman, Gross, Peskind, & Raskind, 2008). Its adverse effects include orthostatic dizziness, nasal congestion, and headache at initial low doses. Also, nightmares return upon termination of the medication. Preliminary work has shown that IRT may reduce nightmare frequency and intensity in patients who experienced recurrent trauma-related nightmares. Different groups have employed variants of IRT with differing degrees of success (Krakow et al., 2001). A common component of all forms of IRT is the instruction to change the content of a nightmare to include more acceptable features, and then to rehearse the revised dream through use of imagery during daytime practice sessions. Further research is necessary to determine whether IRT reduces the frequency and intensity of nightmares in Veterans. Until further research has been conducted, patients with a main complaint of PTSD-related nightmares may first be considered for evidence-based psychotherapy for PTSD (e.g., Cognitive Processing Therapy or Prolonged Exposure) or for treatment with prazosin. These concomitant therapies do not preclude use of CBT-I to help patients with nightmares consolidate their sleep.

Dealing with awakenings from nightmares: Sometimes nightmare awakenings are associated with confusion. In such cases, suggest using grounding techniques to reconnect with reality. Grounding techniques are simple exercises to assist in reconnecting with the present moment. Some examples might include: looking at a calendar immediately upon awakening to reorient quickly to the present, holding a special object left by the side of the bed, and sitting up and using feet to feel the temperature, texture, and etc. of the floor. Commonly, waking up from a nightmare is immediately followed by replaying the nightmare or memories

it has triggered or by trying to figure out why the nightmare happened or what it might mean. According to Dr. Barry Krakow, a PTSD and sleep therapist and researcher, replaying and trying to understand the reason for or the meaning of a nightmare may create a habitual nightmare response that perpetuates the nightmare experience. This theory would suggest that it is important to help patients stop replaying the image or trying to figure out the meaning of a dream. This can be done by identifying the negative cognitive pattern and encouraging patients to get out of bed to engage in an alternative behavior that helps to quiet their mind (a component of SC). The following example demonstrates how to help patients stop trying to figure out the meaning of their nightmares.

Pete: I had the same dream last night. I was back in the jungle. I was carrying the ammo, but I was separated from my gunner. I woke up in a sweat and couldn't get back to sleep for hours.

Therapist: It sounds awful. Tell me, after you awoke from the nightmare, what did you do?

Pete: I tried to go back to sleep, but I couldn't. I just lay there and wondered why I keep having this dream.

Therapist: It sounds like it's important for you to answer that question – “why do I have this nightmare?”

Pete: If I could figure it out, maybe this nightmare would stop.

Therapist: How long have you been trying to figure out why you are having this jungle nightmare?

Pete: I've been having the nightmare for 30 years.

Therapist: Wow. My guess would be that if you haven't figured it out in 30 years the actual likelihood of figuring it out now by thinking it over in bed may be low. How would you know if you actually did figure it out?

Pete: Hmm. I don't know

Therapist: Those “why did I have this dream” questions are like a hall of mirrors... making it very difficult to ever really find the answer.

Pete: You're right. I've done therapy and thought about it a lot and I keep having this and similar nightmares.

Therapist: Ironically, the more you think about a nightmare, the more you replay it. The more you replay it, the more frequent the nightmare becomes. I'm wondering if it might be more helpful to switch tactics. Would you consider, after you awaken from a nightmare, getting out of bed and engaging in one of the mellow activities we discussed before, instead of trying to figure out the dream? I want to be really clear that I'm not talking about pushing the image out of your mind or telling yourself not to think about it. That would be counterproductive.

Pete: Yeah, I've tried pushing it away – when I tell myself not to think about it, I just think about it.

Therapist: Exactly. Instead, will you be willing to instead to get out of bed and do something else?

Pete: Yeah, I can try

Therapist: Here is something else you can try instead of trying to figure out or to analyze your nightmare. Will it be possible for you to acknowledge the image, notice how the image makes you feel, and instead of thinking about it or actively pushing it away, allow it to naturally fade? I had one patient who called this the mother-in-law approach.

Pete: [Laughs.] I'll give it a shot.

### C. Considerations for Patients with Chronic Pain

Chronic pain may be related to musculoskeletal pain from strain, injury or degenerative disease (e.g. arthritis), neuropathic pain from specific conditions like diabetes or from unknown origins, cancer-related pain, headache (head trauma, tension or migraine headache, or headache with no known causes), or diffuse pain that may occur in fibromyalgia or Gulf War Illness. The following statements are generally true across all chronic pain conditions:

1. A very high percentage of patients with chronic pain complain of sleep disturbances, particularly insomnia (Morin, Gibson, & Wade, 1998; Smith, Perlis, Smith, Giles, & Carmody, 2000).
2. On average, chronic pain does not respond robustly to any form of pain treatment, although pain relief and improved function have been demonstrated for a number of pharmacological (Noble, Treadwell, Tregear, Coates, Wiffen, Akafomo, & Schoelles, 2010; Roelofs, Deyo, Koes, Scholten, & van Tulder, 2008) and non-pharmacological approaches (Eccleston, Williams, & Morley, 2009).
3. Acute uncontrolled pain and bursts of increased pain, such as muscle spasms, may wake a sleeper. Chronic moderate pain does not usually cause full awakenings. It may however cause “mini-arousals” and importantly it may “lighten” sleep so that a person's waking threshold is lower (Harman, Pivik, D'Eon, Wilson, Swenson, & Matsunaga, 2002). Pain may also prolong returning to sleep following normal awakenings. For the chronic pain patient the subtle distinction between direct and indirect effects of pain on sleep may be therapeutic, as discussed next.

**C1. CBT for chronic pain.** The relationship between sleep and pain is complex. Disturbed and insufficient sleep may increase next day pain. Adapting pain management strategies, integral to CBT for chronic pain, can help reduce pain and importantly may also reduce the sleep effort related to trying to get “perfect sleep” in order to minimize next day pain. Therefore, familiarity with basic concepts of CBT for chronic pain can be helpful when treating insomnia in chronic pain patients. Although a full discussion of this topic is beyond the scope of this manual, some basic information about CBT for chronic pain that is relevant to sleep is provided. Specialized training in CBT for chronic pain is strongly recommended (Otis, 2007; Turk & Gatchel, 2002).

1. The “Gate Theory” of Pain: A cornerstone of CBT for chronic pain is psychoeducation about pain physiology, including the “Gate Theory” of pain (38-40). This conceptual model posits that pain signals that ascend from the pain location to the pain processing centers in the brain can be modulated as if a gate was controlling the flow of the pain signals. Accordingly, the experience of pain can be exacerbated by factors such as stress or focusing on the pain, and diminished by attending to stimuli other than the pain, and by physiologic processes such as the production of endorphins.
2. Increasing physical activities: Most pain management programs include some form of increased physical activity. The therapist and the patient identify a realistic activation goal that is measurable, matches the patient’s physical presentation, and is cleared by the pain physician. Encourages consistent daily practice and gradually increasing levels of activity over time (over weeks and months, not days). In the context of CBT-I, vigorous exercise should be avoided within the four hours before bedtime, but stretching exercises may be incorporated into the buffer zone routine.
3. Pacing: Pacing refers to the practice of setting an appropriate level (in terms of duration, frequency and intensity) of physical activity. The goal is to strike the right balance between under-activity, which leads to de-conditioning and associated sequelae, and over-activity, which leads to pain flare-ups. The pacing principle can be applied to daily activities that may be somewhat time-limited (e.g., washing the dishes) as well as less frequent activities (e.g., mowing the lawn). It can also be applied to longer duration activities such as a full workday. The pacing concept is important in the context of CBT-I because as their insomnia improves patients are at risk of doing too much too soon.

## **C2. Sleep issues relevant to chronic pain.**

1. Obstructive sleep apnea: OSA is slightly more prevalent in patients with chronic pain (Menefee, Cohen, Anderson, Doghramji, Frank, & Lee, 1998). This is believed to occur for two reasons. First, the longer the pain condition persists the higher the likelihood that the patient becomes more sedentary and gains weight, and therefore to be at increased risk for OSA. Second, pain medications, such as muscle relaxants, can cause or exacerbate OSA. Therefore, it is particularly important to assess OSA and refer to a sleep specialist when indicated.
2. Medications: Patients with chronic pain often take medications that impact sleep. These include, pain medications, antidepressants, hypnotics, anticonvulsants (such as neurontin), and atypical antipsychotic medications (such as quetiapine). Some of these medications (some SSRIs) may disrupt sleep by increasing arousal (Wilson & Argyropoulos, 2005), or by contributing to OSA (such as, opiate agonists and benzodiazepines) (Lu, Budhiraja, & Parthasarathy, 2005; Webster, Choi, Desai, Webster, & Grant, 2008). Atypical antipsychotic and long-acting hypnotics may cause carryover sedation during the day, which often leads to extended TIB and reduced sleep drive the following night. Some SSRIs may also contribute to insomnia by increasing periodic limb movements. Some patients have a paradoxical response to opiate medications whereby they feel more alert or agitated than sleepy or drowsy. These possibilities need to be assessed and discussed with the patient and the prescribing physician.
3. Traumatic brain injury: Chronic pain associated with traumatic brain injury is often accompanied with higher than normal comorbid sleep disorders, in addition to insomnia, such as OSA and narcolepsy, and therefore a full evaluation by a sleep specialist is indicated (Verma, Anand, & Verma, 2007).
4. The bed used for sleeping: Musculoskeletal pain may worsen in certain sleeping positions. A discussion of an adequate sleeping environment is therefore important when treating insomnia in chronic pain. These include a comfortable mattress, the right pillow for the head, extra pillows for correct propping (e.g., a pillow between the knees when sleeping on one’s side, or under the knees when supine). Check with patients to see if there are any issues related to implementing advice they have already received from their medical doctors or physical therapists regarding proper sleeping positions and props. Changes in the sleep environment alone rarely resolve insomnia.



**C3. The challenge of using CBT-I in chronic pain.** A handful of clinical trials have established the efficacy of CBT-I in at least some patients with chronic pain conditions, showing sleep improvements comparable to those seen among primary insomnia patients. The complex relationship between chronic pain and sleep has implications for the application of CBT-I. A few considerations for using CBT-I when treating the insomnia patient with chronic pain follow.

Hopelessness: The belief that sleep will not improve unless pain improves first, though erroneous, may lead to resignation and compromise adherence (i.e., a “why bother” attitude). In this instance, provide information about the efficacy of CBT-I in chronic pain conditions showing that many pain conditions have a less catastrophic impact on sleep than patients fear. Beyond that, explicitly shift the focus to what can be done after the patient is awakened from sleep by pain. In other words, address the thoughts underlying patients’ hopelessness and provide an action plan, which is likely to increase hope. Chronic pain patients with chronic insomnia who have completed CBT-I have reported that increased hope that their insomnia will improve is very helpful (Manber, Siebern, & Bernert, 2010).

Problems with SC: Chronic pain patients may be especially wedded to the idea that lying in bed awake is far more restful (and less painful) than getting up. They may even have received a physician’s “order” to rest, and therefore believe they are practicing good health behavior for managing their pain. Whatever version of this they present, the response should be some variation of “You may rest...you just need to do it somewhere other than the bed you sleep in at night.” A horizontal position may indeed provide comfort that is not available standing or sitting. At the same time, resting in the same bed used for sleeping at night increases the risk of developing an association between suffering from pain and the bed used for sleeping. This association can reduce the positive stimulus value of that bed. For this reason it is also a good idea to avoid using the night bed as a place for resting during the day. Patients will also benefit from making a clear distinction between resting and napping. Prolonged time in a horizontal position during the day, even if it is not in the bed used for sleep, increases the risk of dozing off and therefore weakens the sleep drive. At night, for some pain patients, it is physically difficult to get out of bed or transition to another room. In such cases the SC guidelines may need to be relaxed, allowing the patient to remain in bed reading, or listening to an audiobook, or just resting, but emphasizing the importance of NOT trying to sleep while in bed.

Problems with Progressive Muscle Relaxation: It is not uncommon for chronic pain patients (and older individuals with arthritis or related conditions) to experience muscle spasms or soreness during progressive muscle relaxation (PMR). This can be addressed by modifying the PMR instruction to avoid tightening muscles too much, and instead to tighten the muscles just enough so that variations in muscle tension can be noticed, and facilitate learning to relax the muscles. Alternatively, consider engaging in imaginary PMR, or choose a different relaxation technique.

Fear of sleeping too soundly: Consider the following statement expressed by some patients with chronic pain “If I sleep too well, I wake up more stiff and sore than usual.” Though it may sound odd to hear someone with insomnia complain of sleeping well, this sentiment stems from increased pain and stiffness when a person stays in one position for a long time. Cognitive therapy can be used to address this thought. For example, guide the patient to discover that he omitted a positive outcome of the situation – sleeping well also leads to feeling more alert and energetic. The script below demonstrates how a therapist helped the patient reframe his original statement.

Therapist: So, overall you had a slight improvement in total sleep time and your sleep efficiency is still holding in the zone we want it in; I see you got almost seven hours of sleep on Wednesday.

Patient: God, I felt awful the next morning. I could barely get out of bed. I remember this happening some of the times when I was taking trazodone. It was like I hadn’t moved all night.

Therapist: Wow. If feeling awful is the reward for sleeping well, then we’re in trouble.  
Maybe....

Patient: [interrupts] I didn’t quite say that. My back and legs hurt something awful, but overall I could tell that I slept better.

Therapist: Really, how?

Patient: Oh I think I felt a little sharper. You know, I almost felt rested.

Therapist: Oh, that’s different then. So, on the one hand, you slept better (in fact perhaps the best you have yet) and this resulted in both some increased soreness and feeling more rested or refreshed. On the whole, this seems to be two steps forward and one step back.

Patient: Better than the other way around, I guess.

Additional suggestions for fear of sleeping too soundly:

- Note that awakenings and position shifts are normal even for good sleepers.
- If the patient sleeps mostly in one position, suggest the use of pillows positioned to discourage sleeping in that position at least at the beginning of the night.
- Morning stretching, if not already practiced routinely, may be recommended for alleviating morning stiffness and soreness.

## D. Considerations for Patients with Comorbid Alcohol Use Disorders

Effects of alcohol on sleep in general were discussed earlier. Among individuals with alcohol abuse or dependence, tolerance to the initial sedative effects of alcohol develops, and as a result it no longer facilitates sleep onset. Alcohol use in this population continues to induce middle of the night awakenings, and as a result total time asleep is shorter when compared with controls. The negative effects of heavy alcohol use on sleep persist into sobriety. Moreover, insomnia increases the risk of alcohol relapse in individuals with a history of alcohol dependence.

Individuals with comorbid insomnia and alcohol dependence seem to have more mental health issues than individuals with alcohol dependence alone. They have increased use of alcohol, more depression, anxiety, and hostility, and more problems with concentration during the day. In addition, long-term alcohol use increases the risk of sleep apnea and periodic limb movements, even in patients who have sustained long-term periods of sobriety.

**D1. The challenge of treating insomnia in alcoholism.** CBT-I cannot reverse the negative impact that alcohol has on sleep. It is therefore recommended that Veterans with active alcohol use disorder (and for the same reason any other substance use disorder) be referred for specialized treatment for substance use prior to the initiation of CBT-I. The ideal timing of CBT-I relative to the start of sobriety is not known. However, since insomnia often precedes alcohol relapse, CBT-I may be an important part of substance use relapse prevention.

## E. Considerations for Patients Who Use Sleep Medications

Medications used for sleep include over-the-counter medications, sleep medications that are FDA-approved to treat insomnia, and those that have no approved indication for insomnia, but that are frequently prescribed (like anti-depressants and anti-psychotics that have sedation as a side effect). All these medications can facilitate falling asleep and some reduce wakefulness after sleep onset. At the same time, some of these medications can suppress REM sleep and/or slow wave sleep, produce a morning “hangover”, or lose their effectiveness over time. For patients who are able to implement cognitive and behavioral strategies for insomnia, sleep medications are probably best viewed as a short-term solution. Patients who take sleep medications can benefit from CBT-I, whether they continue taking the sleep medication or work with a prescriber to taper off and discontinue the sleep medication. Unless licensed to practice medicine, do not recommend that patients stop medications unless. If a patient expresses a wish to get off prescription sleep medications, advise him to do so only under the supervision of a physician. Nonetheless, understanding a few things about sleep medications will help avoid compromising patients’ safety and optimize outcome. Hypnotic medications may lead to tolerance. That is, as time passes increasingly larger doses are needed to achieve the same effect. Since these medications suppress the central nervous system (CNS), there is a limit to how much doses can be increased. When more than one sleep medication is taken they potentiate (increase) the sedating effects of each other.

Patients’ ambivalence about taking sleep a medication: Patients are often ambivalent about taking sleep medications and they fear tolerance and dependence. As a result they try to fall asleep without the medication and take it only if unable to sleep. Their doctor may have prescribed the medication to be taken “as needed.” However, over time the patient may find that every night he ends up taking the medication after trying in vain to fall asleep without it. Unfortunately, this pattern of use promotes psychological dependence as the medication serves as a “rescue”. When this happens, use of sleep medication as needed is not ideal. The contemplation and energy the patient puts into deciding if and when to take it becomes counterproductive. The best strategy at that time is to take a therapeutic dose prescribed every night. Educate the patient about the drawbacks of as needed use, and advise him to discuss the possibility of nightly use with his prescriber.

Abrupt discontinuation of sleep medication may disrupt sleep: Rebound insomnia is defined as a return of insomnia following discontinuation at a level that is more severe than before the medication was initiated. Worsening of insomnia following discontinuation, even at levels that are not worse than pre-medication levels, leads many patients to resume medication use and become psychologically dependent on sleep medication. The withdrawal symptoms may or may not represent the underlying insomnia, but fear of withdrawal symptoms is discouraging. This is why discontinuation of sleep medications needs to be gradual.

Protocols for discontinuations of sleep medications are not provided here. Instead, it is advised to refer the patient to a prescriber and provide support during the process, encouraging the patient to use the cognitive and behavior strategies they learned for dealing with insomnia.

Taking half-life into account: Implications for SRT and SC: Sleep medications vary in the time they start exerting their effect and in their half-life (the time it takes for the body to eliminate half of the medication). For example, zolpidem (Ambien) works quickly (usually within 15 minutes) and has a short half-life (2 to 3 hours). Medications with a long half-life may be associated with carryover effects during the day, and medications with a short half-life may not be effective for end of night sleep disruptions. There are also individual differences in the rate of metabolism of sleep medications. For example, older people tend to metabolize sleep medications slower than younger people. As discussed earlier in this manual, sleepiness requires special considerations when applying SRT. Sleep medications with a long half-life is one reason for sleepiness in the morning that may require adaptation of SRT as described in Chapter 3. Some sleep medications may increase risk for falls in the middle of the night, particularly in older adults, or may cause confusional arousals. These risks need to be considered when implementing SC. Consultation with a physician is essential for safe administration of CBT-I in patients who take sleep medications.

## F. Fitting CBT-I into Treatment for Other Problems

This manual has aimed to teach use of CBT-I as a standalone therapy for insomnia. At times, there may be a desire to use CBT-I with a patient whose sleep complaints emerge during the course of receiving treatment for other problems. In such cases, it is recommended to set aside two complete sessions to fully evaluate the insomnia problem, and to provide initial recommendations and the rationales behind them. In subsequent sessions, set aside 10 to 20 minutes to evaluate progress and treatment adherence, alter the recommended TIB, *troubleshoot* problems the patient encountered in following previous recommendations; adding treatment components as needed. *Continued follow up*, even for just 10 to 20 minutes in each session, could improve the resolution of the sleep complaint. When the sleep problem is substantially improved, discuss relapse prevention strategies. It is also recommended to periodically check the status of the patient's sleep, even after the sleep problem has resolved, because worsening of sleep may be an early sign of worsening of overall mental wellbeing. Indeed, Perlis (2007) has shown that in patients whose depression remitted, subsequent worsening of sleep predicted depression relapse (Perlis, Giles, Buysee, Tu, & Kupfer, 1997).

# Conclusion

This manual has presented a case-formulation-based, flexible, and brief treatment protocol to improve sleep of Veterans using individual CBT-I. The CBT-I approach is anchored in the sciences of sleep regulation, which was the focus of the first chapter. Individual behavioral components of CBT-I are empirically-supported among individuals without comorbidities, as are protocols that combine its behavioral components and add cognitive therapy techniques. Emerging data support its use for individuals with a variety of comorbidities, including depression, PTSD, and chronic pain conditions. Program evaluation data for the VA CBT-I Training Program support the effectiveness of the CBT-I protocol described in this manual provided to Veterans by non-sleep specialists, with results revealing overall large reductions in insomnia severity and improvements in depression and quality of life among Veterans (Karlin et al., 2013). Program evaluation results also reveal that mental health clinicians with very limited, or no background in CBT-I or sleep medicine, can be trained to full competency in CBT-I, with more than 90% of mental health clinicians participating in the VA CBT-I Training Program reaching competency (Karlin et al., 2013; Trockel et al., 2014).

This manual was organized in a sequential manner, beginning with scientific background (Chapter 1), followed by in-depth discussion of an initial sleep assessment (Chapter 2), that provides information essential for case conceptualization and treatment planning. The third chapter presents individual components of CBT-I. The fourth chapter describes how to combine and sequence the components in a manner consistent with case conceptualization. In most cases Session 2 consists of the five essential guidelines that combine SC and SRT instructions, and subsequent sessions provide alterations to the initial TIB recommendation and introduce techniques for reducing hyperarousal and addressing obstacles to adherence, as clinically indicated (including relaxation and cognitive therapy, among others). The last session includes a focus on relapse prevention. The last chapter described special sleep and adherence issues relevant to Veterans who experience insomnia in the context of depression, PTSD, and chronic pain conditions. To facilitate learning, six clinical cases of Veterans of varied backgrounds and military experiences were included, as well as multiple clinical vignettes demonstrating key skills. “Veteran Alerts” were included to highlight salient sleep related issues that support delivery of CBT-I to Veterans. To help the reader use this treatment manual, important points were highlighted under “Clinical Essence,” and included in the margins references to terms that are defined in the text and the glossary. The hope is that this serves as a useful resource to new and seasoned CBT-I clinicians working with Veterans to improve their insomnia and overall quality of life.

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# Glossary

## **Advanced sleep phase syndrome**

A circadian sleep disorder characterized by a chronic or recurrent complaint of inability to remain asleep until a desired conventional wake time, together with difficulty staying awake until a desired and socially acceptable nocturnal bedtime. However, when allowed to choose their preferred schedule, patients exhibit normal sleep quality and duration for their age and maintain an advanced but stable sleep-wake pattern.

## **Apnea**

Transient cessation of breathing.

## **Apnea-hypopnea index (AHI)**

The average number of breathing events (apneas and hypopneas) per hour of sleep.

## **Bedtime (BT)**

Time of entry into the sleep environment.

## **Behavioral experiments**

These are experiments designed by the therapist in collaboration with the patient to test sleep-interfering beliefs between sessions.

## **Circadian rhythm**

One of two processes involved in the regulation of sleep. It reflects a person's internal biological clock. It is a cyclic process that helps maintain alertness during the day and sleep at night.

## **Catastrophizing**

A cognitive error defined by a tendency to over-focus on the worst or catastrophic outcome.

## **Circadian rhythm sleep disorder**

A sleep disorder that emerges when a person's internal circadian clock is misaligned or otherwise not congruent with the desired sleep period.

## **Conditioned arousal**

A learned association between the bed and a state of alertness.

## **Coping cards**

Written reminders of statements that were developed in the course of cognitive restructuring as alternatives to sleep incompatible thoughts or to enhance adherence with behavioral changes.

## **Cost benefit analysis**

A guided discovery process that examines the utility, rather than accuracy, of thought and belief. It consists of listing the advantages and disadvantages of holding a belief.

## **Counter control**

A modified version of stimulus control, in which the recommendation to get out of bed when unable to sleep is replaced with the recommendation to sit up in bed and read, watch TV, or similar activity other than sleep. The aim is to reduce the association between sleep effort and the bed.

## **Delayed sleep phase syndrome**

A circadian sleep disorder characterized by a chronic or recurrent complaint of inability to fall asleep at a desired conventional clock time and difficulty waking at desired and socially acceptable times. When allowed to choose their preferred schedule, patients with this syndrome exhibit normal sleep quality and duration for their age and maintain a delayed but stable sleep-wake pattern.

## **Downward arrow technique**

A cognitive restructuring tool consisting of a series of questions that explore underlying catastrophic predictions and low probability feared consequences.

**Eveningness tendency**

A lifelong preference for a later than normative sleep schedule and a preference for a late wake up time. Experience difficulty waking up at a conventional wake-time.

**Hypopnea**

Abnormally slow or shallow respiration.

**Morningness tendency**

A lifelong preference for an earlier than normative sleep schedule and preference for an early rise-time.

**Motivational enhancement**

A cognitive therapy technique designed to mobilize the patient's own change resources and support intrinsic motivation for change.

**Nightmare**

A dream that elicits a strong negative emotional response (fear, horror), accompanied by an awakening and full recall of the dream content.

**Non-REM sleep**

A sleep state consisting of three distinct sleep stages, N1, N2 and N3, that differ in their characteristic brain-wave activity patterns, as well as the ease of being awakened and the perception of having been asleep when awakened.

**Obstructive sleep apnea (OSA)**

A sleep disorder characterized by the presence of full or partial obstructions of the airways leading to complete or partial cessation of breathing, followed by a decrease in oxygen saturation of the blood and arousal from sleep.

**PRN**

PRN has a Latin route (pro re nata) and it means take as needed.

**Probability over-estimation**

A cognitive error defined by a tendency to assign feared consequences a higher probability than is warranted by evidence.

**Relapse-prevention**

A plan for addressing symptom recurrence to prevent relapse.

**REM sleep**

Rapid eye movement sleep. REM sleep is characterized by the occurrence of dreams and relative paralysis of the body's skeletal muscles.

**Restless Legs Syndrome (RLS)**

RLS is a sleep disorder characterized by the presence of periodic twitching or disagreeable sensation of the leg muscles, associated with an urge to move the leg and relief of sensation with movement.

**Scheduled worry time**

A method for addressing intrusive worries. Patients are instructed to set aside a daily time dedicated to worrying and limit worries about things not in their control to this scheduled worry time.

**Sleep compression therapy –**

A variant of sleep restriction therapy, consisting of gradually restricting the time spent in bed at night.

**Sleep cycle**

The period between the end of one REM episode (or, for the first cycle, the beginning of sleep) and the end of the next REM episode. Each sleep cycle lasts approximately 90 minutes.

**Sleep drive**

One of two processes involved in the regulation of sleep. It reflects the normal accumulation of sleep debt as the day goes on so that the longer an individual is awake the greater the sleep drive at bedtime and the easier it is to fall and stay asleep.

**Sleep effort**

Overt and covert cognitions and behaviors that may be manifestations of increased sleep effort. These include behaviors and cognitions that reflect rigid sleep-related behaviors and rituals and excessive concern about sleep.

**Sleep efficiency**

The percent of time in bed that is spent being asleep.

**Sleep Onset Latency (SOL)**

The time it took to fall asleep.

**Sleep restriction therapy (SRT)**

A behavioral technique to first improve sleep quality by restricting the time spent in bed at night and then gradually increasing the time spent in bed.

**Sleepiness**

The propensity to fall asleep if given the opportunity. Sleepiness reflects need for sleep. Sleepiness is distinct from tiredness and fatigue, which refer to a low energy level that does not necessarily reflect a need for sleep.

**Stimulus control (SC)**

A behavioral technique aimed at strengthening the bed as a cue for sleep.

**Thought record**

A tool to help identify thoughts that interfere with sleep. Some variants of thought record also encourage examining the validity of sleep interfering thoughts and coming up with alternative more accurate thoughts.

**Time in bed (TIB)**

Time between turning off the lights to start sleep and getting out of bed to start the day.

**Total sleep time (TST)**

Total time asleep at night.

**Wake time (WT)**

Time of last awakening after which no more sleep took place.

**Wakefulness after sleep onset (WASO)**

Total time awake after initially falling asleep and before WT.

# Appendix

## Appendix A: Case Specific Sleep Diaries

Sleep Diary Name: Chris (Baseline)

Sample	4/5/08	4/2	4/3	4/4	4/5	4/6	4/7	4/8
Today's date	4/5/08	4/2	4/3	4/4	4/5	4/6	4/7	4/8
In total, how long did you nap or doze yesterday?	n/a	None	None	None	None	None	None	None
1. What time did you get into bed?	10:15 p.m.	10:30 p.m.	11:30 p.m.	10:00 p.m.	11:00 p.m.	2:20 a.m.	2:45 a.m.	10:00 p.m.
2. What time did you try to go to sleep?	11:30 p.m.	10:30 p.m.	11:30 p.m.	10:00 p.m.	11:00 p.m.	2:20 a.m.	2:45 a.m.	10:00 p.m.
3. How long did it take you to fall asleep?	1 hr 15 min	2 hrs	1 hr	3 hrs	1 hr	5 min	5 min	3 hrs
4. How many times did you wake up, not counting your final awakening?	3 times	1	1	2	1	1	1	1
5. In total, how long did these awakenings last?	1 hr 10 min	60 min	30 min	40 min 30 min	90 min	45 min	5 min	60 min
6a. What time was your final awakening?	6:35 a.m.	8:05 a.m.	7:30 a.m.	9:00 a.m.	6:40 a.m.	9:15 a.m.	9:00 a.m.	7:30 a.m.
6b. Did you wake up earlier than you desired?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	No	No	No	No	No	No	No
6c. If yes, how many minutes earlier?	30 min							
7. What time did you get out of bed for the day?	7:20 a.m.	8:30 a.m.	7:40 a.m.	9:05 a.m.	7:00 a.m.	9:30 a.m.	9:00 a.m.	7:40 a.m.
8. How would you rate the quality of your sleep?	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor Poor <input checked="" type="checkbox"/> Fair Good Very good	<input checked="" type="checkbox"/> Very poor Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor Poor <input checked="" type="checkbox"/> Fair Good Very good	Very poor Poor <input checked="" type="checkbox"/> Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good
9. Comments (if applicable)	I have a cold							

Averages: TIB=8.62; TST=6.11 ; SE=72.97%

## Appendix A: Case Specific Sleep Diaries

Sleep Diary Name: Chris (Follow Up)

Sample	4/5/08	4/9	4/10	4/11	4/12	4/13	4/14	4/15
Today's date	4/5/08	4/9	4/10	4/11	4/12	4/13	4/14	4/15
In total, how long did you nap or doze yesterday?	n/a	None	None	None	None	None	None	None
1. What time did you get into bed?	10:15 p.m.	1:30 a.m.	1:45 a.m.	1:20 a.m.	1:30 a.m.	12:45 a.m.	12:30 a.m.	1:00 a.m.
2. What time did you try to go to sleep?	11:30 p.m.	1:30 a.m.	1:45 a.m.	1:20 a.m.	1:30 a.m.	12:45 a.m.	12:30 a.m.	1:00 a.m.
3. How long did it take you to fall asleep?	1 hr 15 min	1 hr	40 min	10 min	5 min	5 min	10 min	5 min
4. How many times did you wake up, not counting your final awakening?	3 times	1	0	1	0	0	0	0
5. In total, how long did these awakenings last?	1 hr 10 min	5 min	0 min	5 min	0 min	0 min	0 min	0 min
6a. What time was your final awakening?	6:35 a.m.	7:05 a.m.	7:00 a.m.	7:00 a.m.	7:00 a.m.	7:00 a.m.	7:00 a.m.	7:00 a.m.
6b. Did you wake up earlier than you desired?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	No	No	No	No	No	No	No
6c. If yes, how many minutes earlier?	30 min							
7. What time did you get out of bed for the day?	7:20 a.m.	7:30 a.m.	7:20 a.m.	7:05 a.m.	7:00 a.m.	7:00 a.m.	7:00 a.m.	7:00 a.m.
8. How would you rate the quality of your sleep?	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good
9. Comments (if applicable)	I have a cold							

Averages: TIB=5.94; TST=5.49; SE=92.26%

## Appendix A: Case Specific Sleep Diaries

Sleep Diary Name: Mike (Baseline)

Sample

Today's date	7/1	7/2	7/3	7/4	7/5	7/6	7/7
In total, how long did you nap or doze yesterday?	30 min.	60 min.	45 min.	60 min.	60 min.	40 min.	50 min.
1. What time did you get into bed?	7:00 p.m.	7:15 p.m.	7:00 p.m.	7:00 p.m.	7:30 p.m.	6:30 p.m.	8:00 p.m.
2. What time did you try to go to sleep?	7:00 p.m.	8:00 p.m.	7:15 p.m.	8:00 p.m.	8:00 p.m.	7:00 p.m.	8:00 p.m.
3. How long did it take you to fall asleep?	15 min	10 min	10 min	10 min	10 min	15 min	10 min
4. How many times did you wake up, not counting your final awakening?	2	1	3	2	1	2	1
5. In total, how long did these awakenings last?	120 min	120 min	180 min	120 min	120 min	180 min	120 min
6a. What time was your final awakening?	6:35 a.m.	4:00 a.m.	4:30 a.m.	4:40 a.m.	4:00 a.m.	4:50 a.m.	4:00 a.m.
6b. Did you wake up earlier than you desired?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes	Yes	Yes	Yes	Yes	Yes
6c. If yes, how many minutes earlier?	30 min	90 min	30 min	30 min	60 min	40 min	90 min
7. What time did you get out of bed for the day?	7:20 a.m.	5:30 a.m.	5:00 a.m.	5:00 a.m.	5:00 a.m.	5:30 a.m.	5:30 a.m.
8. How would you rate the quality of your sleep?	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good
9. Comments (if applicable)	I have a cold						

Averages: TIB=9.68; TST=6.06; SE=62.81%

## Appendix A: Case Specific Sleep Diaries

Sleep Diary Name: Mike (Follow Up)

Sample	4/5/08	7/8	7/9	7/10	7/11	7/12	7/13	7/14
Today's date	4/5/08	7/8	7/9	7/10	7/11	7/12	7/13	7/14
In total, how long did you nap or doze yesterday?	n/a	30 min.	60 min.	45 min.	60 min.	60 min.	40 min.	50 min.
1. What time did you get into bed?	10:15 p.m.	10:00 p.m.	10:00 p.m.	10:00 p.m.	10:00 p.m.	9:30 p.m.	9:30 p.m.	10:00 p.m.
2. What time did you try to go to sleep?	11:30 p.m.	10:00 p.m.	10:00 p.m.	10:00 p.m.	10:00 p.m.	9:30 p.m.	9:30 p.m.	10:00 p.m.
3. How long did it take you to fall asleep?	1 hr 15 min	5 min	5 min	5 min	0 min	0 min	5 min	5 min
4. How many times did you wake up, not counting your final awakening?	3 times	2	1	3	2	1	1	2
5. In total, how long did these awakenings last?	1 hr 10 min	100 min	60 min	60 min	30 min	45 min	30 min	45 min
6a. What time was your final awakening?	6:35 a.m.	4:00 a.m.	4:30 a.m.	4:30 a.m.	4:40 a.m.	440 a.m.	4:50 a.m.	4:10 a.m.
6b. Did you wake up earlier than you desired?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6c. If yes, how many minutes earlier?	30 min	90 min	60 min	60 min	50 min	50 min	40 min	80 min
7. What time did you get out of bed for the day?	7:20 a.m.	4:30 a.m.	5:00 a.m.	5:00 a.m.	5:00 a.m.	5:30 a.m.	5:30 a.m.	5:30 a.m.
8. How would you rate the quality of your sleep?	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	<input checked="" type="checkbox"/> Very poor Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor Poor <input checked="" type="checkbox"/> Fair Good Very good	<input checked="" type="checkbox"/> Very poor Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good	Very poor <input checked="" type="checkbox"/> Poor Fair Good Very good
9. Comments (if applicable)	I have a cold							

Averages: TIB=7.29; TT=5.71; SE=78.2%

## Appendix A: Case Specific Sleep Diaries

Sleep Diary Name: Donna (Initial)

Sample

Today's date	4/5/08	10/11	10/12	10/13 Sat	10/14 Sun	10/15	10/16	10/17
In total, how long did you nap or doze yesterday?	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1. What time did you get into bed?	10:15 p.m.	8:30 p.m.	9:15 p.m.	10:00 p.m.	9:00 p.m.	9:00 p.m.	8:15 p.m.	9:00 p.m.
2. What time did you try to go to sleep?	11:30 p.m.	9:00 p.m.	9:15 p.m.	10:00 p.m.	10:00 p.m.	9:00 p.m.	9:30 p.m.	10:00 p.m.
3. How long did it take you to fall asleep?	1 hr 15 min	1.5 hrs	1 hr	1 hr	2 hrs	1.5 hrs	2 hrs	1.5 hrs
4. How many times did you wake up, not counting your final awakening?	3 times	2	1	3	2	1	1	2
5. In total, how long did these awakenings last?	1 hr 10 min	1hr	30 min	1hr	1hr 30min	1hr	30 min	1 hr
6a. What time was your final awakening?	6:35 a.m.	6:00 a.m.	5:30 a.m.	6:00 a.m.	5:30 a.m.	6:00 a.m.	6:00 a.m.	6:30 a.m.
6b. Did you wake up earlier than you desired?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6c. If yes, how many minutes earlier?	30 min	0 min	30 min	0 min	30 min	0 min	120 min	150 min
7. What time did you get out of bed for the day?	7:20 a.m.	6:00 a.m.	6:00 a.m.	6:00 a.m.	6:00 a.m.	6:00 a.m.	8:00 a.m.	9:00 a.m.
8. How would you rate the quality of your sleep?	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good
9. Comments (if applicable)	I have a cold							

Averages: TIB=9.04; TST=5.82; SE=64.97%



## Appendix A: Case Specific Sleep Diaries

Sleep Diary Name: Pete (Follow Up)

Sample	4/5/08	7/6	7/7	7/8 Sat	7/9 Sun	7/10	7/11	7/12
Today's date								
In total, how long did you nap or doze yesterday?	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1. What time did you get into bed?	10:15 p.m.	1:00 a.m.	12:30 a.m.	3:00 a.m.	3:00 a.m.	12:30 a.m.	12:15 a.m.	1:00 a.m.
2. What time did you try to go to sleep?	11:30 p.m.	1:00 a.m.	1:00 a.m.	3:00 a.m.	3:00 a.m.	1:30 a.m.	1:00 a.m.	1:00 a.m.
3. How long did it take you to fall asleep?	1 hr 15 min	60 min	60 min	0 min	0 min	0 min	60 min	30 min
4. How many times did you wake up, not counting your final awakening?	3 times	2	1	3	2	3	1	2
5. In total, how long did these awakenings last?	1 hr 10 min	60 min	60 min	30 min	30 min	30 min	60 min	45 min
6a. What time was your final awakening?	6:35 a.m.	6:30 a.m.	7:00 a.m.	8:30 a.m.	9:30 a.m.	7:30 a.m.	7:30 a.m.	7:30 a.m.
6b. Did you wake up earlier than you desired?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No	Yes <input checked="" type="checkbox"/> No
6c. If yes, how many minutes earlier?	30 min	0 min	0 min	0 min	0 min	0 min	0 min	0 min
7. What time did you get out of bed for the day?	7:20 a.m.	6:30 a.m.	7:00 a.m.	9:00 a.m.	9:30 a.m.	7:30 a.m.	7:30 a.m.	7:30 a.m.
8. How would you rate the quality of your sleep?	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input type="checkbox"/> Very poor <input checked="" type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input type="checkbox"/> Very poor <input type="checkbox"/> Poor <input checked="" type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input type="checkbox"/> Very poor <input type="checkbox"/> Poor <input checked="" type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input type="checkbox"/> Very poor <input type="checkbox"/> Poor <input checked="" type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good
9. Comments (if applicable)	I have a cold	Nightmare	Nightmare	Nightmare	Nightmare	Nightmare	Nightmare	Nightmare

Averages: TIB=6.29; TST=4.39; SE=69.24%

## Appendix A: Case Specific Sleep Diaries

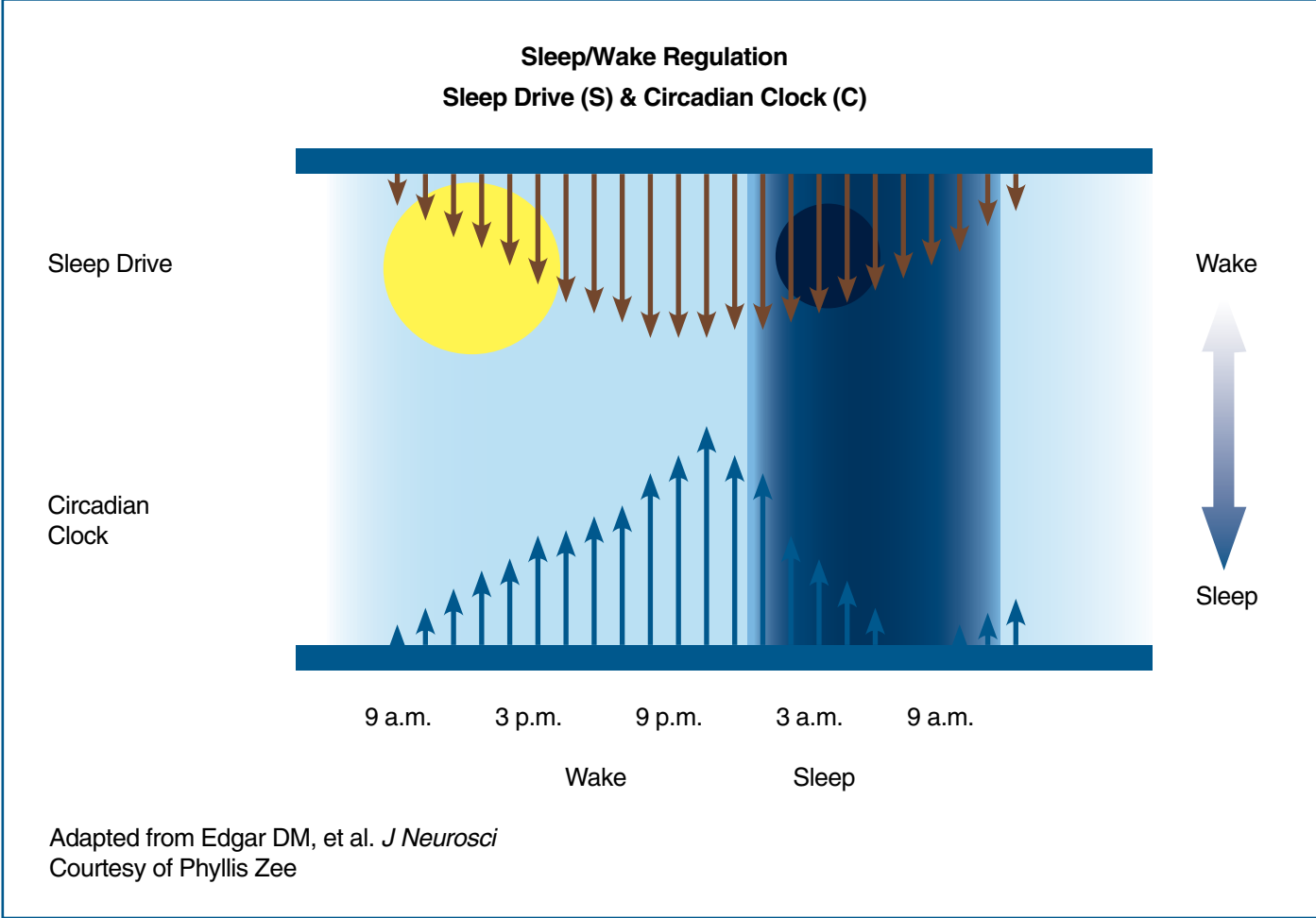
Sleep Diary Name: Rosa (Baseline)

Sample

Today's date	4/5/08	3/17	3/18	3/19	3/20	3/21	3/22	3/23
In total, how long did you nap or doze yesterday?	n/a	None	None	None	None	None	None	None
1. What time did you get into bed?	10:15 p.m.	9:30 p.m.	9:00 p.m.	9:30 p.m.	10:00 p.m.	9:00 p.m.	9:30 p.m.	10:00 p.m.
2. What time did you try to go to sleep?	11:30 p.m.	9:30 pm	9 p.m.	9:30 pm	10 p.m.	9 p.m.	9:30 pm	10 p.m.
3. How long did it take you to fall asleep?	1 hr 15 min	2 hrs	3.5 hrs	2 hrs	2 hrs	1 hr	2 hrs	2 hrs
4. How many times did you wake up, not counting your final awakening?	3 times	2 hrs	3	2	2	2	2	1
5. In total, how long did these awakenings last?	1 hr 10 min	60 min 10 min	20 min 20 min 20 min	10 min 60 min	60 min 60 min	60 min 30 min	60 min 60 min	30 min
6a. What time was your final awakening?	6:35 a.m.	7:00 a.m.	8:00 a.m.	7:00 a.m.	8:00 a.m.	6:30 a.m.	8:00 a.m.	7:00 a.m.
6b. Did you wake up earlier than you desired?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6c. If yes, how many minutes earlier?	30 min	1 hr	1 hr	1 hr	1 hr	1.5 hrs	1 hr	1.5 hrs
7. What time did you get out of bed for the day?	7:20 a.m.	8:00 a.m.	9:00 a.m.	8:00 a.m.	9:00 a.m.	8:00 a.m.	9:00 a.m.	8:30am
8. How would you rate the quality of your sleep?	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input checked="" type="checkbox"/> Very poor <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good	<input type="checkbox"/> Very poor <input type="checkbox"/> Poor <input checked="" type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Very good
9. Comments (if applicable)	I have a cold							

Averages: TIB=11.0; TST=6.45; SE=58.8%

Appendix B: Sleep Regulation



## Appendix C: CBTI VA Intake Form

Patient name: \_\_\_\_\_ Date: \_\_\_\_\_ Marital status: \_\_\_\_\_

Gender: \_\_\_\_\_ Last 4 SSN #: \_\_\_\_\_ Children: \_\_\_\_\_

Date of birth: \_\_\_\_\_ Occupation: \_\_\_\_\_

---

Presenting problem: What is most distressing/disturbing about current sleep?

\_\_\_\_ Difficulty initiating sleep

\_\_\_\_ Difficulty maintaining sleep

\_\_\_\_ Early morning awakening

\_\_\_\_ Difficulties waking at intended time

Comments: \_\_\_\_\_

---

### Sleep habits (focus on a recent typical week):

#### Beginning of Sleep Period:

If different:

Weekend

Time to bed (obtain range and weekday/weekend times):

\_\_\_\_\_

Time of lights out:

\_\_\_\_\_

Average time to fall asleep:

\_\_\_\_\_

What you do when you cannot sleep? \_\_\_\_\_

---

Pre-bedtime activities: \_\_\_\_\_

---

Pre-sleep arousal:      Rumination      worry      physical tension      fears

---

What happens when you cannot get to sleep (thoughts/behaviors)? \_\_\_\_\_

---

#### Middle of the night:

If different:

Weekend

Number of awakenings after sleep onset:

\_\_\_\_\_

Total time awake after sleep onset:

\_\_\_\_\_

(Average/worst/timing of prolonged wakefulness): \_\_\_\_\_

---

What happens when awake in the middle of the night (thoughts/behaviors): \_\_\_\_\_  
\_\_\_\_\_

End of the night:

Final wake time: \_\_\_\_\_

Time out of bed: \_\_\_\_\_

Early morning awakenings (within 1 to 3 hours of intended wake time): \_\_\_\_\_

How much earlier than intended? \_\_\_\_\_

Number of days a week: \_\_\_\_\_

Difficulties waking up at intended time: \_\_\_\_\_

Estimated average total sleep time: \_\_\_\_\_

**Naps**

Ability to nap if given an opportunity: Yes / No

If napping: Frequency \_\_\_\_\_ duration \_\_\_\_\_ timing \_\_\_\_\_

**Daytime effects:**

Energy/fatigue: \_\_\_\_\_ Concentration/functioning: \_\_\_\_\_ Mood: \_\_\_\_\_

Other \_\_\_\_\_

Daytime activity levels: \_\_\_\_\_

**History:**

When did the problem start? \_\_\_\_\_  
\_\_\_\_\_

Identifiable precipitating factor: \_\_\_\_\_  
\_\_\_\_\_

Family history of insomnia and other sleep disorders: \_\_\_\_\_  
\_\_\_\_\_

**Circadian tendencies** (circadian rhythm questionnaire and interview):

\_\_\_\_\_ Morning type \_\_\_\_\_ Neither type \_\_\_\_\_ Evening type Evidence: \_\_\_\_\_  
\_\_\_\_\_

**Sleep medication(s)/aids:**

Name	Dose	Manner used (@ BT, Middle of night; PRN)	How long?	Helpful?

**Obstructive sleep apnea (OSA) symptoms:** STOP questionnaire score \_\_\_\_\_

\_\_\_ Snoring \_\_\_ Gasping/snorting \_\_\_ Witnessed apnea \_\_\_ Daytime sleepiness

**PLM/RLS symptoms:** \_\_\_ Leg jerks, twitches (witnessed) \_\_\_ Aching, tingling creeping \_\_\_ Moving for relief

RLS questionnaire score (if administered): \_\_\_

**Parasomnia symptoms:** Recent frequency

Nightmares: \_\_\_\_\_

Other unusual behaviors during sleep: \_\_\_\_\_

\_\_\_\_\_

**Substances**

Caffeine \_\_\_\_\_ Nicotine \_\_\_\_\_

Alcohol \_\_\_\_\_ Recreational drugs \_\_\_\_\_

\_\_\_\_\_

**Unhealthy sleep practices:**

Nocturnal eating \_\_\_\_\_ Timing of exercise \_\_\_\_\_

Unusual aspects of sleep environment (bed partner, childcare, pets, comfort, sound, lights, safety, temperature): \_\_\_\_\_

\_\_\_\_\_

**Medical comorbidities:** \_\_\_\_\_

\_\_\_\_\_

**Psychiatric comorbidities:** \_\_\_\_\_

\_\_\_\_\_

**Other medications (non-VA):**

Name	Reason prescribed	Dosage	How long?

**Goal:** \_\_\_\_\_

\_\_\_\_\_

**Suggested citation:** Adapted from the “Insomnia Intake Form” created by Rachel Manber for the Insomnia & Behavioral Sleep Medicine Program at Stanford University (unpublished); reprinted with her permission to the VA Cognitive Behavioral Therapy for Insomnia Training Program.

## Appendix D: Case Conceptualization Form

Answer each question in the space provided, and provide a plan to address each case factor described. Write N/A if no plan is necessary.

	Answer	Plan
1. What factors weaken the sleep drive (i.e. napping)?		
2. Is there a mismatch between circadian tendency and sleep schedule?		
3. What are manifestations of hyper-arousal?		
4. What role, if any, do substances play in the presentation?		
5. What co-morbidities affect the patient presentation and how? (Consider sleep, medical and psychiatric comorbidities)		
6. Are there any predisposing factors? If so, what are they?		
7. Is there a clear precipitating event?		
8. What factors are maintaining the insomnia?		
9. What other factors are relevant to the patient's presentation?		

**Suggested citation:** Developed by Rachel Manber, Ph.D. and the VA CBT-I Training Development Team (2010). *Cognitive Behavioral Therapy for Insomnia Case Conceptualization Form*. Washington, DC: U.S. Department of Veterans Affairs.

**Treatment plan**

Please list the top three issues, in order of relevance, to this patient’s case conceptualization.

Top issues:

1. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please describe your treatment plan for the next session. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## Appendix E: Things to Do if You are Awake

### In the evening:

- Choose clothes that you can wear for work or school the next day
- Make your lunch
- Marinate or start to prepare food for dinner the following day and store it in the refrigerator
- Take a bath or long shower
- Write thank you notes or short emails to friends
- Surf the internet (non-stressful topics only), do research for major purchases (cars, appliances, vacations)
- Watch movies or episodes of television shows that you haven't seen in a long time (no action films)
- Take the dog for a long walk
- Groom your pets
- Listen to slow, relaxing or instrumental music
- Gather old bills and statements and shred them
- Organize collections- photos, old letters, wine, books, or other items
- Catch up on laundry or folding clothes
- Polish your shoes
- Iron or mend clothing
- Write in your journal
- Do some stretches to relax your muscles
- Give yourself a pedicure, manicure or facial
- Sweep or mop the kitchen floor while no one else is there to walk on it
- Floss
- Knit
- Quilt

### During the night:

- Look through catalogs
- Update your address books or start one online or on paper
- Sort out junk mail and bills (but don't pay bills)
- Play solitaire online or with cards at home
- Catch up on your reading
- Call friends who live in other time zones
- Clean out the refrigerator
- Make a grocery shopping list for the week
- Create a detailed menu for dinners
- De-clutter your coffee table, dining room table, kitchen countertops or desk
- Create a list of activities that you'd enjoy doing on weekends and vacations
- Work on photo albums or scrapbooks
- Fold clothes, put away clothes
- Shop for holiday, wedding or birthday gifts online
- Read magazines or other light material
- Make a materials list for a project around the house
- Choose one or two drawers to clean out (in your desk, kitchen, bathroom)
- Watch infomercials, C-SPAN, The Weather Channel, or other repetitive television shows
- Organize collections of CDs or DVDs and choose some to donate or sell if you no longer enjoy them
- Jot down thoughts on a notepad for an assigned period of time, if you are using this exercise to help decrease nighttime and bedtime thinking and worrying
- Knit or do other crafts that you can stop working on when you feel sleepy
- Read your kids' books- these are often very comforting and positive in their messages

### Early in the morning:

- Meditate or pray
- Watch the sunrise
- Take the dog for a walk
- Read the newspaper or read the news online
- Go to your gym or workout at home
- Go to the grocery store or other stores that open early
- Make lunch for yourself and for everyone else in the house
- Enjoy being able to get ready for work and kids ready for school without having to rush
- Sort out some kids' toys and choose things for donation to charity or a yard sale
- Sort and start your laundry, iron shirts or other clothes for work
- Start a budget for your family on a spreadsheet or in a notebook
- Send emails to friends or check your work email
- Shred or erase old computer disks and DVDs, etc.
- Organize all of your bills, receipts, coupons and warranty information in a filing cabinet or folders
- Get some of the preparation started for dinner dishes (marinating, chopping vegetables, and so on)
- Make the bed and tidy up your bedroom
- Open the curtains and blinds in the house
- Sweep your sidewalk or steps, or shovel snow
- Do some light gardening or water houseplants or those around your porch
- Review your to-do list for the day or the week

Adapted from an unpublished work from Anne Germaine, PhD, University of Pittsburgh and reprinted with her permission to the VA Cognitive Behavioral Therapy for Insomnia Training Program.

## Appendix F: Sleep Need Questionnaire

### Sleep Need Questionnaire

Please answer these questions based on your experience during the previous week:

- 1) Did you feel tired or fatigued during the day or evening?  
NEVER \_\_ RARELY \_\_, SOMETIMES \_\_, FREQUENTLY \_\_, ALWAYS \_\_
- 2) Were you sleepy or drowsy during the day or evening?  
NEVER \_\_ RARELY \_\_, SOMETIMES \_\_, FREQUENTLY \_\_, ALWAYS \_\_
- 3) Did you take any naps or fall asleep briefly during the day or evening?  
NEVER \_\_ RARELY \_\_, SOMETIMES \_\_, FREQUENTLY \_\_, ALWAYS \_\_
- 4) Did you feel you had been getting an adequate amount of sleep?  
NEVER \_\_ RARELY \_\_, SOMETIMES \_\_, FREQUENTLY \_\_, ALWAYS \_\_

### Scoring

Values assigned to each answer are below. The total score is the sum of all response values.

Q 1, 2, 3:

NEVER = 1  
RARELY = 2  
SOMETIMES = 3  
FREQUENTLY = 4  
ALWAYS = 5

Q 4:

NEVER = 5  
RARELY = 4  
SOMETIMES = 3  
FREQUENTLY = 2  
ALWAYS = 1

To determine what the next week's TIB should be first calculate sleep efficiency (SE)

**If SE  $\geq$  85%** – modify TIB according to the following scores on the Sleep Need Questionnaire:

- (a) Score 9 or less → no change in TIB
- (b) Score 10 to 12 → TIB is increased by 15 minutes for that week (and another 15 minutes for the following week, if you see the patient biweekly).
- (c) Score 13 or more → TIB is increased by 30 minutes for that week (and another 30 minutes the following week, if you see the patient biweekly).

**If SE < 80%** – reduce TIB but only if the score on the Sleep Need Questionnaire: is 9 or less.

**Otherwise** do not change TIB

### Permission

Adapted from an unpublished work from Arthur J. Spielman, PhD, The City College of New York and reprinted with his permission to the VA Cognitive Behavioral Therapy for Insomnia Training Program.

**Citation:** unpublished work from Arthur J. Spielman, PhD, The City College of New York

## Appendix G: A Guide to Overcoming Your Insomnia

### Sleep Guidelines

- 1 Wake-up at \_\_\_\_\_** every day whether you have a good or poor sleep on any particular night.
- 2 Go to bed when you are sleepy, but not before \_\_\_\_\_.** Long periods of time in bed will lead to shallow, broken sleep. You should spend only the amount of time in bed that you actually need for sleep. Sticking to the suggested bedtime and waketime will help you overcome your sleep problem.
- 3 Get up when you can't sleep.** When you are unable to sleep, get up and go to another room until you feel sleepy enough to fall asleep quickly before returning to bed. Get up again if sleep does not come on quickly.
- 4 Use the bed only for sleeping.** Do not read, eat, watch TV, etc. in bed. Sex is the only exception.
- 5 Avoid daytime napping.** Napping, particularly in the late afternoon or early evening may interfere with your night's sleep.
- 6 Create a buffer zone.** The "buffer zone" is a quiet time prior to bed time. During this time, you should do things that are enjoyable on their own rather than activities that are taken as a means to an end.
- 7 Don't worry, plan, and etc., in bed.** If you are worrying, planning or can't shut off your thoughts, get up and stay up until you can return to bed without these mental activities interfering with your sleep.

My standard rising time is \_\_\_\_\_ My earliest bedtime is \_\_\_\_\_

### Other helpful practices:

1. Turn the clock around
2. Limit caffeine and consume before noon
3. Limit alcohol and do not consume within 3 hours of bedtime
4. Exercise regularly but not close to bedtime
5. Keep bedroom quiet, dark, and cool
6. Do not eat a heavy meal close to bedtime (a light bedtime snack such as milk, peanut butter, or cheese is OK)

### Do not try too hard to sleep

#### Just let sleep unfold

Above all, **be patient!** Your sleep problem developed over time so it will take some time to return to a more normal sleep pattern. By following the suggestions in this pamphlet, you should see gradual sleep improvements.

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

This information outlines a simple, sensible, and highly effective approach for eliminating insomnia. By following these few simple rules, you should be able to get the sleep of your dreams.

Developed by Rachel Manber, Ph.D. and the VA CBT-I Training Development Team (2010). *Cognitive Behavioral Therapy for Insomnia Guide to Overcoming Your Insomnia*. Washington, DC: U.S. Department of Veterans Affairs.

## Appendix H: Questions and Answers about “the Guidelines”

### Do I have to get up at the same time every day?

- Yes. The best way to set your body clock is to stick to your fixed rise time every day no matter how much sleep you actually get on a given night. A changing schedule, particularly if you get up at different times each morning, can make your sleep problem worse. Getting up at different times each morning can create the type of sleep problem that occurs in jetlag.
- Using an alarm clock to wake you is a good idea.
- It is very important to get out of bed within five to ten minutes after your alarm rings.

### Why can't I read or watch TV in bed?

- While in bed, you should not do things that you do when you are awake (such as reading, watching TV, eating, studying, using the phone, or doing other activities in bed during the day). By doing these things you actually train yourself to stay awake in bed. Sexual activity is the only exception to this rule. *The most important thing to avoid is “trying to sleep” because it blocks you from getting the sleep that you want.*

### What should I do if I can't sleep?

- If you are unable to sleep, stop trying to sleep. Get out of bed and do something that is pleasant but does not make you feel too awake.
- Long periods of being awake in bed often lead to tossing and turning, becoming frustrated and worrying about not sleeping. Tossing and turning, becoming frustrated and worrying about not sleeping, make it harder to fall asleep. The longer you lie in bed awake trying to sleep, wanting and hoping to go back to sleep, the more you will be awake in bed.
- If you feel you are awake for 15 to 20 minutes or so and you do not feel as though you are about to go to sleep, *you should leave the bed and, if possible, leave the bedroom.*
- *Try not to use a clock to decide when to get out of bed, because looking at the clock can lead to worrying about not sleeping, which will make it harder to fall asleep.* Do not dwell on this decision. If it is obvious to you that you will not immediately fall asleep, get up.

- *What if I never feel sleepy?* Getting out of bed when you can't sleep, will teach you the difference between feeling sleepy and feeling tired and eventually you will feel sleepy. Going to bed when you are truly sleepy makes it more likely you will fall asleep quickly.
- *What do I do when I am out of bed?* Sleep naturally happens when you are calm and content. So the activities you choose to do when you get out of bed should make you feel calm and content.
- If you only follow this rule sometimes (and other times you do not follow the rule), this can undo the benefits of this recommendation.
- *The most important thing you can do to improve your sleep is to STOP trying harder.*

### What do I do when I can't shut off my thinking?

- Thinking about small and big worries, thinking about problems, or planning future events while in bed, can make you feel tense or irritated and this will hurt your sleep. If you can't seem to shut off your thoughts, get up and go to another room. Stay there until you feel sleepy again. If you continue to have trouble shutting off your thoughts, you may find it helpful to set aside time each day to do the thinking, worrying, problem-solving, and planning you need to do. Then, if intrusive thoughts occur during your sleep period, put them off to the “thinking and worrying time” on the next day. The time you set aside for this should not be close to bedtime and the place where you do this activity should not be your bedroom.
- During the time you set aside you can list your problems and then decide what steps you can take to deal with each problem. Don't try to deal with more than one problem at a time.

### Can I nap?

- Try not to nap. Sleeping at any time other than your scheduled time lessens the quality of your nighttime sleep. *However, if you find yourself very sleepy (not just tired, but actually sleepy) and you are doing something for which you need to be alert, such as driving or using machines, take a short (15 to 30 minutes) nap to make sure you are safe.*

**Do I have to go to bed at the same time every night?**

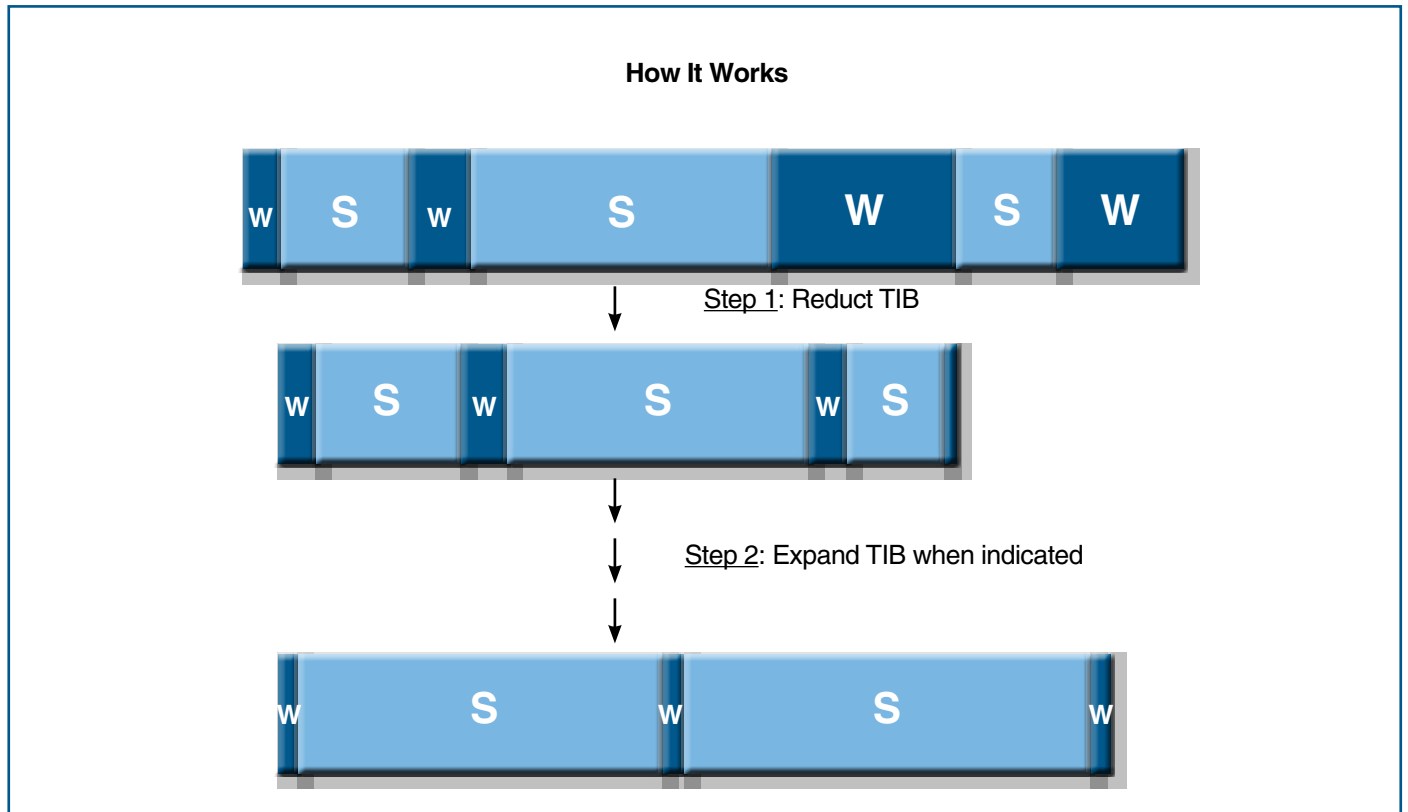
- Your ideal bedtime is set by your fixed rise time and the fixed number of hours you can be in bed that we decided upon earlier.
- However, it is important that you consider this recommended bedtime as your earliest time that you can go to bed. *Do not go to bed before you are sleepy. Sleep cannot be forced.*
- If you do not feel sleepy at your set time, wait until you do feel sleepy. When you are very sleepy it is as if you have to almost struggle to stay awake. When you feel like this, you are sleepy.

**What is a “buffer zone”?**

- The “buffer zone” is a quiet time prior to bedtime. A time to wind down from the activities of the day. During the buffer zone time, you should do things that are enjoyable on their own.

Adapted from a patient handout entitled “Reasons for the Guidelines for Improving Sleep” created by Rachel Manber, Ph.D., for the Insomnia & Behavioral Sleep Medicine Program at Stanford University; reprinted with her permission to the VA Cognitive Behavioral Therapy for Insomnia Training Program.

## Appendix I: How Sleep Restriction Works



Adapted from a patient handout created by Rachel Manber, Ph.D., for the Insomnia & Behavioral Sleep Medicine Program at Stanford University; reprinted with her permission to the VA Cognitive Behavioral Therapy for Insomnia Training Program.

## Appendix J: Changing Your Thinking about Sleep

Situation	Mood	Thoughts	Evidence that the thought is true	Evidence that the thought is not true	Alternative thought	Rate mood now
What was the situation in which you were started thinking about sleep?	Describe mood in one word and rate the intensity (0-100%).	What were you thinking about? Circle the thought that bothers you the most.	Write why you think the circled thought is true, but stick to factual evidence only.	Write down why the circled thought might not be true.	Considering the evidence for and against the thought, write an alternative, more helpful thought.	What is your mood now and how intense is the mood?

Developed by Rachel Manber, Ph.D. and the VA CBT-I Training Development Team (2010). *Cognitive Behavioral Therapy for Insomnia: Changing Your Thinking About Sleep*. Washington, DC: U.S. Department of Veterans Affairs.

Material adapted from: Beck AT, Rush AJ, Shaw BF, et al: *Cognitive Therapy of Depression*. New York, Guilford, 1979.

## Appendix K: Action Plan for Addressing Insomnia in the Future

Insomnia can return but now that you know how to address it, you need not worry about whether it returns. What parts of this program seemed to work well for you? Please check all that apply.

- Keeping the same wake-up time every day (no matter you much sleep you get)
- Not trying too hard to sleep
- Going to bed when you are sleepy but never before your regular bedtime
- Getting out of bed when you are unable to sleep
- Creating a buffer zone before bed
- Getting out of bed if you find yourself worrying or you cannot shut off your thoughts
- Engage in worrying or problem-solving earlier in the evening
- Limiting the amount of time you spend in bed each night
- Using the bed for sleeping only
- No napping (except for short safety naps)
- Try not to have caffeine or alcohol, smoke cigarettes or engage in exercise within a few hours of your bedtime

Are you currently doing all of the checked recommendations? If yes, and you continue to have problems, please call your therapist and schedule a refresher session.

If you notice new sleep-related problems, please contact your doctor and schedule an appointment. Such problems can include:

- loud snoring
- stopping breathing, breathing pauses, gasping or snorting during sleep
- falling asleep unintentionally/dozing during the day
- a creepy-crawly sensation in your lower legs in the evening along with an irresistible urge to move your legs to get rid of the sensation
- very frequent leg jerking during your sleep
- any other unusual new sleep experiences

**Remember, you mastered the insomnia before, and you'll master it again.**

Adapted from: Carney, CE, Manber, R. *Quiet Your Mind and Get to Sleep: Solutions for Insomnia in Those with Depression, Anxiety, or Chronic Pain*. Oakland, CA: New Harbinger; 2009. Reprinted with permission to the VA CBT-I Training Program from Dr. Rachel Manber, Stanford University.





