

Chapter 14: Sleep

Addressing sleep was inadvertently the beginning of the DOC project. Years ago, I happened to read *The Promise of Sleep*, an autobiography by William Dement, who was a physician at Stanford. (1) Dement pioneered the science of sleep; his groundbreaking work included the development of the sleep lab. Because of this systematic study, we now know that there are over a hundred verified diagnoses of sleep disorders. He drew attention to the fact that sleep is an often overlooked variable in healthcare, pointing out that less than 5 percent of physicians routinely address sleep issues. Unfortunately, fifty years later, sleep is still undertreated.

I read his book shortly after I moved to Sun Valley, Idaho and was caring for all aspects of my patients' spine problems. I noticed that most patients in chronic pain were not sleeping. I took an aggressive approach with medications and had them do frequent follow-up appointments until they were sleeping reasonably well. This usually was accomplished within three to six weeks. Until I started doing this, I didn't have any idea how much sleep affected chronic pain. I was surprised to see how much patients' moods improved even before there was a decrease in pain. Sleep continues to be the one variable that must be addressed before there is any meaningful improvement in pain. Lack of sleep not only increases the perception of pain; it decreases coping skills. Once pain begins to improve, patients can begin to reduce their sleep medication dosage pretty quickly, and then go off them completely.

A large population-sampling study from Turkey demonstrated that patients in chronic pain had almost double the problems with insomnia compared to those without pain. (2) Insomnia also seemed to be associated with a higher intensity of pain.

The Turkish study didn't look at whether lack of sleep caused the chronic pain or the pain interfered with sleep, but other research has been shown that insomnia does induce chronic pain.

Sleep is critical for processing the information fed into your brain during the day and lack of it is disruptive to this process. One study followed more than 1,500 patients for almost four years. They discovered that there was almost a 50 percent higher chance of suffering from chronic pain with insomnia. They looked carefully at the possibility that chronic pain was the cause of insomnia but did not find it to be true. (3)

Many adults think they can get by on less than seven to eight hours of sleep, but that is simply not correct. Consider seven to eight hours a minimum. An estimated 35 to 40 percent of adults don't get enough sleep, which translates into some type of sleep disturbance in over sixty million Americans. (4) You must be pro-active in getting a full eight hours of sleep – allowing yourself to just lie in bed not sleeping night after night is unacceptable. You may not initially see any results from your efforts, but your persistence will be rewarded in the end.

In the medical culture, especially surgical, it's somewhat of a perverse badge of honor to see how hard you can work with only five or six hours of sleep a night. This can and does become a way of life. However, by the time you no longer know what it's like to function normally (that is, with enough sleep), you are unaware how much your quality of life is being affected.

It has been demonstrated in multiple studies that chronic insomnia significantly compromises both cognitive and psychomotor performance. (5) This has troubling implications in the medical arena, as it can affect your surgeon's performance of surgery or cause your doctor to miss an important point of your history (that might influence your care) because they are tired. Physicians' culturally influenced attitudes toward sleep may be the reason they so often neglect to address sleep in their patients. (6)

Addressing sleep is the first step – and an absolute necessity – in solving either chronic mental pain (anxiety) or chronic physical pain. A recent study demonstrated that there is a higher correlation between disability and lack of sleep than there is between disability and pain. (7) The DOC program cannot be effective without adequate rest.

Here is a list of treatments for insomnia that should be implemented in a step-by-step manner:

- Sleep hygiene
- Bedtime stress management
 - Expressive writing
- Exercise
- Over-the-counter medications
- Prescription medications
- Cognitive behavioral therapy
 - Depression
 - Anxiety
 - Sleep
- Childhood trauma implications
- Underlying sleep disorder treatment

Sleep Hygiene

Sleep hygiene is a term for a group of strategies used to improve the consistency of your sleep.

Initially, in the context of chronic pain, these strategies usually need to be supplemented with medications, but they are the foundation of the long-term solution for insomnia. It does not make

sense to use other methods without incorporating basic sleep principles into your bedtime routine.

Some of the sleep hygiene (8) concepts are:

- Do not get into bed until you are ready to fall asleep.
- Watch TV, read, etc., in another room.
- Do not drink any caffeine after noon.
- Minimize alcohol intake in the evening – alcohol helps you to fall asleep but not stay asleep.
- Avoid heavy exercise in the evenings.
- Remove any clocks from the room. (If you need an alarm clock, place it out of sight.)
- Do something relaxing just before going to bed.
- Have a light snack if you're hungry.
- Concentrate on relaxing each muscle group in your body from head to toe. It is a form of mindfulness that switches your attention away from your swirling thoughts.

The older you are, the more important it may become to practice good sleep hygiene. The ability to get a good night's sleep takes a definite downturn around age twenty-five and a larger downturn at age forty-five. (9)

Stress Management at Bedtime

When you are under stress from either mental or physical pain, your brain is on a Formula One racetrack. It may feel hard to slow down your racing thoughts during the day, and next to impossible at night in the quiet of your bedroom. A good part of this book is focused on stress

management. As you more effectively process your stress, your sleep will definitely improve. However, as lack of sleep is, in and of itself, a major stress, this is a little tricky. Keep in mind that the combination of good sleep hygiene and medications can help you get better sleep, but understanding the role of stress in disrupting your sleep is important. Here are some suggestions:

- Don't read your emails within an hour of bedtime.
- Leave smartphones and laptop devices in another room and don't bring them to bed.
- Don't discuss controversial issues with your partner within a couple of hours of bedtime.
- Read a good book (in any room except the bedroom). A hard copy of a book is best, as the glow of an electronic device's screen keeps your nervous system stimulated. If you prefer e-books, there are devices that can block the screen's blue light.

A 2003 research project assigned three different treatments to insomnia patients. One group was instructed to write how they felt in detail and to be really honest. The second group was told to write about activities that interested them or things they would like to do. The exercise was done for a few minutes just before going to bed. The third group was just observed without any specific instructions. It turned out that both of the writing groups had similar outcomes, with a significant decrease in the time it took to fall asleep. (10)

Doing the writing exercises outlined in Chapter 10 is personally one of my most effective tools for falling asleep, whether at bedtime or if I wake up at 2:30 a.m. Keep a writing pad next to your bed so you can write if you wake up in the middle of the night; this will help you fall back asleep. It's remarkable how effective writing is in interrupting whirlpools of racing thoughts.

Exercise

Regular exercise has been shown to have a modest effect on improving sleep. It can be aerobic, resistance training, or both. (Per the sleep hygiene principles, it should not be done in the evening.)

A systematic review paper from Taiwan demonstrated that exercise shortened the length of time needed to fall asleep, improved the quality of sleep, and decreased the usage of sleep medications. (11) It is complementary to the other modalities for improving sleep.

Over-the-Counter Sleep Medications

Medications are often needed for sleep when there's chronic pain. The first step is to try over-the-counter (OTC) sleep medications. These drugs are not primarily intended to induce sleep; instead, they usually have a side effect of drowsiness. For those with mild sleep issues this can be enough to solve the problem with minimal downside risk. Here are some examples of OTC sleep medications:

- Melatonin: a chemical in your body that induces sleep. Rozeram is an example of melatonin in pill form that can gently induce sleep. It may be helpful in addition to the above-mentioned approaches.
- Antihistamines: this category of meds has drowsiness as a side effect.
- Over-the-counter sleep aids: these are also mild with little downside risk.

With the exception of melatonin, the effect of these meds on the sleep cycle is unpredictable, but it usually takes about a week to find out if a given sleep aid is helpful. There may be side effects; for instance, some people who take them experience sleepiness the following day. If the drowsiness is problematic, it's best to switch to a different medication. A final note: OTC sleep aids can usually be safely combined with prescription sleeping meds. However, your doctor must be aware of all the medications you are taking.

Prescription Sleep Medications

If sleep hygiene, over-the-counter medications, and stress management have not been successful in helping you experience restful sleep, then it's time to work closely with your doctor to figure out which combination of prescription medications is best for you. Once you've started taking them, check with your doctor every five to seven days – either at follow-up appointments or via phone – to report back on how things are going. If the first treatment plan isn't working, adjustments should be made promptly so that you're sleeping well within three to four weeks. This is the kind of aggressive, solution-oriented approach that I've found to be most effective.

If your doctor resists this kind of follow-up, don't back down. Calmly explain that getting sleep is a central part of your recovery program, one that you're taking seriously. Of course, if they still resist, don't be afraid to find another physician. (Note that some physicians, when dealing with sleep problems, opt for treating depression first, which does improve sleep. However, in my opinion it takes far too long.)

There are several categories of prescription sleep medications and two basic strategies in terms of how they work. I am including them here to give you an idea of the wealth of options available.

One group has a direct effect in that the medications will simply induce sleep. The other group includes medications that are intended for other problems but have drowsiness as a side effect. Sleep can be obtained by taking advantage of this side effect. Here they are:

- Sedative-hypnotics – intended to directly induce sleep
 - With anti-anxiety properties: Valium, Klonopin, Xanax, Halcion, etc.
 - Without anti-anxiety properties: Ambien, Lunesta, Sonata

The sedative hypnotic drugs with anti-anxiety properties shorten REM (the dream phase of sleep) whereas drugs such as Ambien and Lunesta preserve the normal sleep cycle. This category of drugs, with or without anti-anxiety properties, should be considered a short-term solution, as they can be habit forming and will eventually increase your perception of pain.

- Drowsiness as a side effect
 - Non-SSRI antidepressants
 - Remeron, Trazodone
 - Tricyclic antidepressants
 - Amitriptyline (Elavil), Nortriptyline (Pamelor)
 - Anti-psychotics
 - Seroquel, Risperdol

In addition to sleep medication, it can be helpful to take a slow-release narcotic, which will last for eight to twelve hours, to help with pain. I don't like using narcotics specifically to

get a patient to sleep, but they may lessen the pain enough to allow the sleep medications to work. (I will cover narcotics later.)

Another strategy for addressing sleep is to use anti-seizure drugs such as Neurontin and Lyrica, which stabilize the membranes of nerve cells. They seem to have a calming effect on the nervous system, and may improve burning nerve pain.

I won't go into the pros and cons of each medication – that is something to discuss with your doctor. Each physician will have a set of medications that they're comfortable with. Rest assured, you will be able to find a combination that works. Pain is not a reason to lose a night's sleep.

Prescription sleep medication can be extremely helpful in getting a good night's rest; almost all of them help calm down the nervous system, which will improve sleep. It's not a good idea, however, to take them without engaging in the rest of the DOC project. Long-term use of these drugs has been clearly documented to cause problems such as increased tolerance, dependency, more falls, injuries, traffic accidents, decreased cognition, and altered sleep physiology. (12) The intent is to provide you with some early relief so you can more fully engage in your healing and begin to break the insomnia/pain cycle.

Cognitive Behavioral Therapy

Cognitive behavioral therapy (CBT) is a “family” of treatments that addresses maladaptive belief systems and helps redirect your behavior to be more functional and appropriate to the situation. It will always be focused on a specific problem. It may be directed at some of the contributing factors to insomnia, such as anxiety and depression or can address maladaptive belief systems around sleep. (13)

CBT-I (CBT-Insomnia) is problem-focused therapy intended specifically to improve sleep. It can be accessed through the internet or a book. A mental health professional can also help you with this therapy individually or in a group setting.

Bibliotherapy is learning about CBT and treating yourself with it by using a book. David Burns' book, *Feeling Good*, turned out to be the key to breaking me out of a fifteen-year tailspin of depression and chronic pain. (14) I happened to pick up his book in 2001 and ended up using it as a guide; his methods helped me to self-direct my CBT treatment.

CBT is effective through individual or group sessions. It can be taught by professionals other than psychologists, such as teachers, nurses, physical therapists, and many others. (15, 16) It is important to realize that there is no standard CBT protocol, and indeed many different techniques are used to administer it. In other words, CBT is readily available to you without having to seek out a mental health professional.

Addressing Childhood Trauma

Your past experiences have an effect on your day-to-day reactions in a way that may increase your anxiety and disrupt your sleep. Therefore, it's important to become aware of these experiences. (CBT addresses present-day beliefs that are disruptive to your basic well-being; it doesn't dwell on past events. Looking at the past and CBT are complementary approaches to calming down your nervous system.)

A landmark study performed on 17,337 members of the Kaiser Health Care System in 1998 divided childhood trauma into eight variables. They were termed "**Adverse Childhood Experiences**" or "**ACE's**" The categories were:

- Emotional abuse
- Physical abuse
- Sexual abuse
- Household substance abuse
- Household mental illness
- Witnessed domestic violence
- Incarcerated family member
- Parental separation or divorce

Only 33 percent of respondents had an ACE score of zero and 26 percent had an ACE score of 3 or more. People with elevated ACE scores, especially with three or more, had a higher incidence of depression, anxiety, severe obesity, suicide attempts, being a victim of domestic violence, substance abuse, being smokers, and having increased risk of cardiac disease, among many other health problems. (17)

A difficult childhood has long-lasting mental and physical consequences that will affect a person's entire life, including sleep. It has been shown that insomnia correlates with an elevated ACE score and the higher the score, the more severe the sleep disturbance. (18)

Addressing these adverse experiences is critical as they have an impact on brain development during critical formative years. This early programming is permanent, powerful, and solvable only by using strategies that stimulate neuroplasticity.

It is important to become aware of ACEs because they determine your automatic reactions to stress. One term that for this phenomenon is "being triggered." When a current situation has a

resemblance to a past trauma, your nervous system will react in the way it did when you were a child. You can't get rid of these triggers, but awareness will allow you to give yourself the space to substitute a more reasonable reaction. This process is best done with the help of a trained mental health professional, as you will need wisdom and support as you "de-energize" your triggers. One of the rewards will be a restful night's sleep.

Many people are afraid of addressing past traumas because they do not want to re-activate these feelings. But it takes far more energy to avoid them than to process them. I had an elevated ACE score of 5 and my experience was that dealing with my patterns was much easier than running from them. In retrospect, not knowing about triggers led to a pretty chaotic life in that many of my reactions to adversity were out of proportion to the situation.

The penalty for avoiding these triggers is high; the above list of potential devastating effects is only a sampling. And there are other difficulties: one study showed that suppressing thoughts or memories damages the hippocampus, the part of your brain that is responsible for sorting and retrieving memories. (19)

Sleep Disorders

If the strategies in this chapter do not help your sleep within a reasonable period of time, you should get further testing by a sleep specialist to establish a firm diagnosis. There are over one hundred sleep disorders; two major ones are restless leg syndrome and sleep apnea.

Many of these disorders are treatable with a specific plan based on a given sleep diagnosis. For example, anti-Parkinson's drugs can be effective for restless leg syndrome. Sleep apnea is approached in a step-by-step manner but often requires a CPAP machine. It is a life-

threatening problem in that if left untreated, it will adversely affect your cardiovascular system since your body is fighting for adequate oxygenation.

Summary

I am frequently asked to evaluate a patient with chronic insomnia for surgery. I always tell patients that insomnia has a major impact on their life, especially if they've had it for many years.

Patients often tell me they've tried everything and still cannot sleep. Keep in mind that just as with solving chronic pain, there is rarely a single answer for inducing sleep. Every sleep problem is solvable with persistence and a combination of the methods presented in this chapter.

Restful sleep is the highest initial priority in your healing journey. The effectiveness of the DOC principles will be compromised if you are not getting seven or eight hours of restful sleep each night.

Pursue the above-mentioned steps until your sleep issues are resolved. Make it your responsibility to work with your primary care physician or rehabilitation physician to get a restful night's sleep regularly. Not one major decision regarding your spine care should be made until you feel rested during the day.

References:

1. Dement, William C, and Christopher Vaughan. *The Promise of Sleep*. Dell Publishing, 2000.
2. Karaman S, et al. "Prevalence of sleep disturbance in chronic pain." *European Review for Medical and Pharmacological Sciences* (2014); 18: 2475-2481.

3. Agmon M and Galit Armon. "Increased insomnia symptoms predict the onset of back pain among employed adults." *PLOS One* (2014); 9: 1-7.
4. Hossain J, and CM Shapiro. "The Prevalence, Cost Implications, and Management of Sleep Disorders: An Overview." *Sleep and Breathing* (2002); 6: 85-102.
5. Kahol K, et al. "Effect of fatigue on psychomotor and cognitive skills." *Am Jn Surg* (2008); 195: 195-204.
6. Papp KK, et al. "The effects of sleep loss and fatigue on resident-physicians: a multi-institutional, mixed method study." *Academic Medicine* (2004); 79: 394-406.
7. Zarrabian MM, et al. "Relationship between sleep, pain, and disability in patients with spinal pathology." *Archives of Physical Medicine and Rehabilitation* (2014); 95:1504-1509.
8. Van der Heijden KB, et al. "Sleep hygiene and actigraphically evaluated sleep characteristics in children with ADHD and chronic sleep onset insomnia." *Journal of Sleep Research* (2006); 15, 55-62.
9. Kryger MH, et al. *Principles and Practice of Sleep Medicine*. Saunders, Philadelphia, 2000, 1994, 1989.
10. Harvey A and C Farrell. "The efficacy of a Pennebaker-like writing intervention for poor sleepers." *Behavioral Sleep Medicine* (2003); 2: 115-124.
11. Yang P, et al. "Exercise training improves sleep quality in middle-aged and older adults with sleep problems: a systematic review." *Journal of Physiotherapy* (2012); 58: 157-163.
12. Gould RL, et al. "Interventions for reducing benzodiazepine use in older people: Meta-analysis of randomized controlled trials." *The British Journal of Psychiatry* (2014); 204: 98-107.

13. Manber R, et al. "Cognitive behavioral therapy for insomnia enhances depression outcome in patients with comorbid major depressive disorder and insomnia." *Sleep* (2008); 3: 489-495.
14. Burns, David. *Feeling Good*. Avon Books, 1999
15. Bruflat AK, et al. "Stress management as an adjunct to physical therapy for chronic neck pain." *Phys Ther* (2012); 92:1348-1359.
16. Hunt MA, et al. "A physiotherapist-delivered, combined exercise and pain coping skills training intervention for individuals with knee osteoarthritis: a pilot study." *Knee* (2013); 20:106-112.
17. Felitti VJ, et al. "The relationship of adult health status to childhood abuse and family dysfunction." *American Journal of Preventive Medicine* (1998), 14: 245-258.
18. Chapman, D, et al. "Adverse childhood experiences and sleep disturbances in adults." *Sleep Medicine* (2011); 12: 773-779
19. Hulbert JC, et al. "Inducing amnesia through systemic suppression." *Nature Communications* (2016); 11:1-9.