

Integrative Medicine: Treatment Options that Put Holistic Back in Whole- Person Health Care

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LECOM Integrative Medicine



Objectives:

- ▶ Define Integrative Medicine
- ▶ Create a framework of understanding as to how integrative medicine may provide non-surgical and non-medication based options for common pain patterns, sleep disturbances, nutritional concerns and stress.
- ▶ Appreciate the connectedness of osteopathic and integrative principles.



Definition

- ▶ Integrative Medicine is healing-oriented medicine that honors the whole person (body, mind, spirit, and interconnection), including all aspects of lifestyle. It emphasizes the therapeutic relationship and makes use of all appropriate therapies, both conventional and alternative.



Sir William Osler (1840-1919)

- ▶ "It is much more important to know what sort of patient has the disease than what sort of disease the patient has."

The principles of integrative medicine:

- ▶ A partnership between patient and practitioner in the healing process.
- ▶ Appropriate use of conventional and alternative methods to facilitate the body's innate healing response.
- ▶ Consideration of all factors that influence health, wellness and disease, including mind, spirit and community as well as body.
- ▶ A philosophy that neither rejects conventional medicine nor accepts alternative therapies uncritically.

The principles of integrative medicine:

- ▶ Recognition that good medicine should be based in good science, be inquiry driven, and be open to new paradigms.
- ▶ Use of natural, effective, less-invasive interventions whenever possible.
- ▶ Use of the broader concepts of promotion of health and the prevention of illness as well as the treatment of disease.
- ▶ Training of practitioners to be models of health and healing, committed to the process of self-exploration and self-development.

Optimal Healing Environments



- ▶ Holistic non-surgical and non-medication focused treatments.
- ▶ Osteopathic Assessment & Manual Medicine Treatment
- ▶ Home exercise programs (including Functional Movement Screens -FMS)
- ▶ MSK US diagnosis and needle guided injections.
- ▶ Injection therapies: Joint injections, trigger point, hydrodissections and regenerative biomedicine: (prolotherapy, autologous blood, platelet rich plasma, amnion fluid-based)
- ▶ Foot and Ankle (running shoe evaluation)
- ▶ Mindfulness based stress reduction (MBSR)
- ▶ Movement Therapies
- ▶ Biofeedback (HeartMath)
- ▶ Therapeutic and Walking exercise programs
- ▶ Marathon training programs
- ▶ Nutritional and Supplement Counseling
- ▶ Medical and Sports Acupuncture

What do we see most often in the clinic?

- ▶ Sleep disturbances (issues of noise-chronic cognitive emotional hyper-arousal)
- ▶ Trying to exercise despite pain patterns (issues of functionality)
- ▶ Appreciating the limitations of the aging process (issues of acceptance)
- ▶ Willingness to change relationship with food (issues of inflammation)
- ▶ Coming to grips with the chaos of life (issues of stress)



Some of the questions common to our Integrative clinic.....

- ▶ What about the patient who still hurts after neck or back surgery?
- ▶ What about the pain patterns that radiate pain down the arm or legs but x-rays and MRIs are negative?
- ▶ What about the patient that still hurts after 16 sessions of physical therapy and can't exercise to lose weight?
- ▶ How can we help patients with partial rotator cuff tears?
- ▶ How can we help patients with partial ligament tears?
- ▶ What about the patient who is struggling with mild to moderate depression and isn't responding to counseling and SSRIs?

We are clear to our patients.....

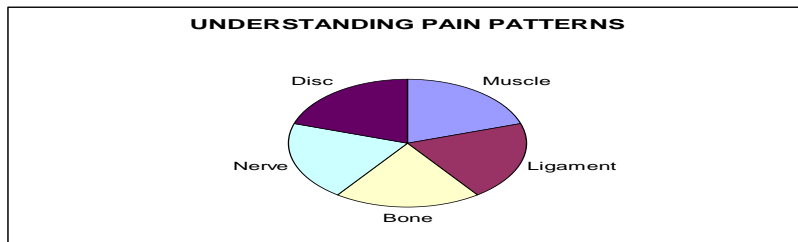
- ▶ We don't prescribe narcotics.
- ▶ Many of the treatment options we use are not paid for—very symbolic that patients are literally invested in their own health.
- ▶ Supplements may have as beneficial an effect as prescription medications and with less side effects---we understand most of these and can help you know what brand to take and how much to take.
- ▶ Give us 3-5 sessions of working with you to see if you begin feeling better or have less pain. (the onion effect)
- ▶ If we can't help you we probably know someone with a skill set that can.

Insomnia Prevalence

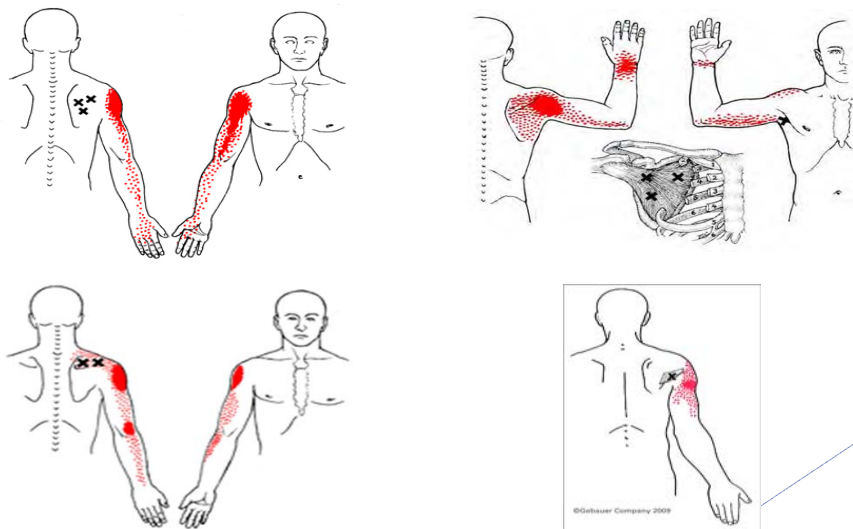
- ▶ The National Institutes of Health reports that 60 million adults in the United States struggle with insomnia annually^[2]
- ▶ The prevalence of insomnia among adults ranges from 10% to 30% and increases with age and female gender, as well as with a broad range of medical and psychiatric comorbidities^[3]

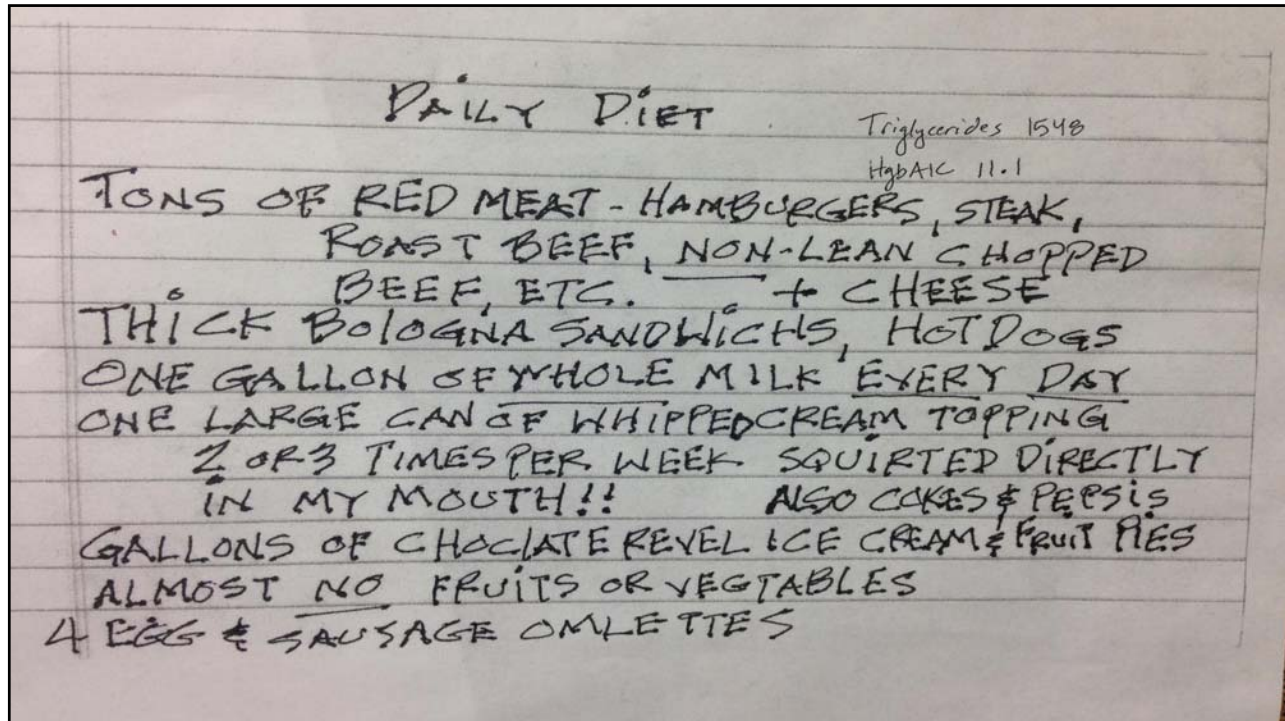


What is your main pain generator?



Myofascial Trigger Points





Mediterranean-style diet

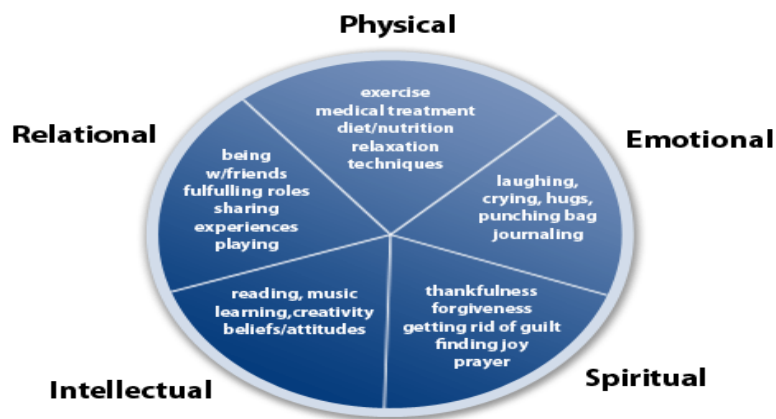
- The Mediterranean-style diet first came to light in the 1950s when Ancel Keys, a physician living in Salerno, Italy, initiated the Seven Countries Study ([Keys et al., 1986](#)).
- Primarily plant-based: high intake of vegetables, fruits, bread and cereals, beans, nuts and seeds
- Olive oil as the primary source of fat
- Moderate to high intake of fish
- Low intake of dairy products, poultry, and red meat
- Low to moderate consumption of wine
- This study demonstrated that individuals residing in Crete, who consumed a Mediterranean-style diet, typically consumed lower amounts of saturated and hydrogenated fats, and higher amounts of monounsaturated fats, natural antioxidants, and fiber and had lower rates of heart disease and increased life expectancies.

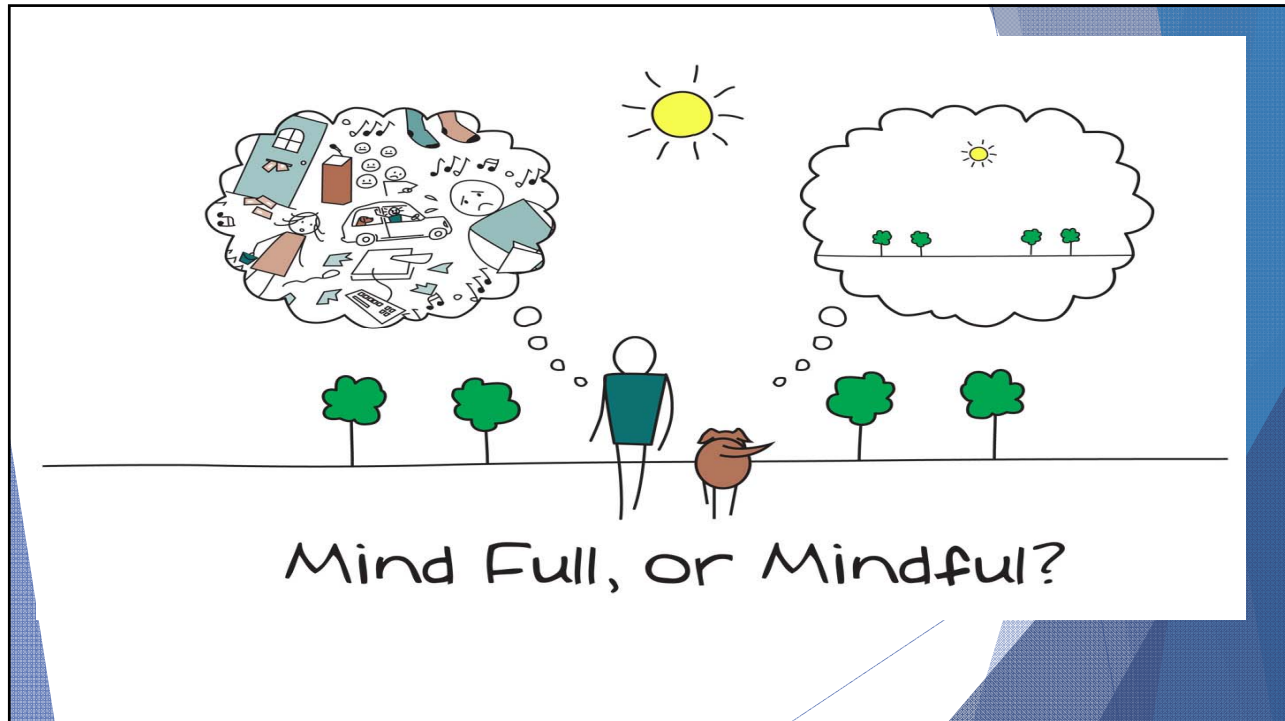


Anti-inflammatory Pyramid



Whole Person Care





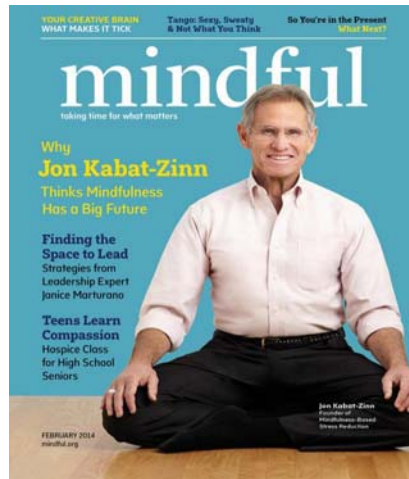
Mindfulness Improves Well Being

- ▶ Increasing your capacity for mindfulness supports many attitudes that contribute to a satisfied life.
- ▶ Being mindful makes it easier to savor the pleasures in life as they occur, helps you become fully engaged in activities, and creates a greater capacity to deal with adverse events.
- ▶ By focusing on the here and now, many people who practice mindfulness find that they are less likely to get caught up in worries about the future or regrets over the past, are less preoccupied with concerns about success and self-esteem, and are better able to form deep connections with others.



Dr. Jon Kabat-Zinn

- ▶ “Instead, we befriend ourselves as we are. We learn how to drop in on ourselves, visit, and hang out in awareness.”
- ▶ “There are tremendous benefits that arise from mindfulness practice, but it works precisely because we don’t try to attain benefit.”



Mindfulness improves physical health

- ▶ help relieve stress
- ▶ treat heart disease
- ▶ lower blood pressure
- ▶ reduce chronic pain
- ▶ improve sleep
- ▶ alleviate gastrointestinal difficulties

How do you become mindful?

- ▶ **Basic mindfulness meditation** - Sit quietly and focus on your natural breathing or on a word or "mantra" that you repeat silently. Allow thoughts to come and go without judgment and return to your focus on breath or mantra.



Mindfulness Techniques:

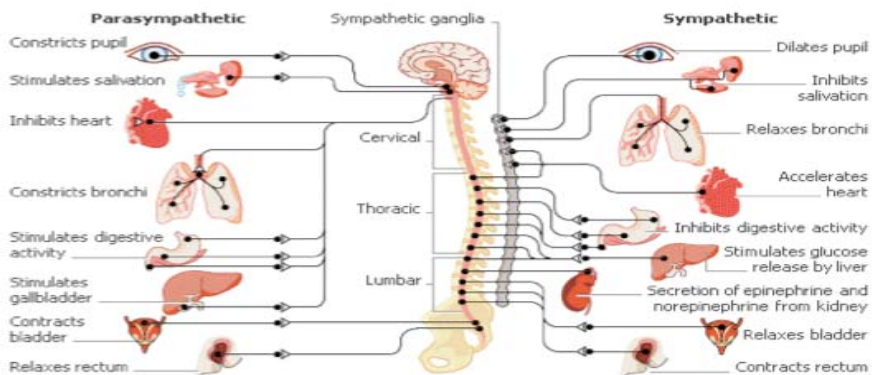
Body sensations – Notice subtle body sensations such as an itch or tingling without judgment and let them pass. Notice each part of your body in succession from head to toe.

Sensory – Notice sights, sounds, smells, tastes, and touches. Name them "sight," "sound," "smell," "taste," or "touch" without judgment and let them go.

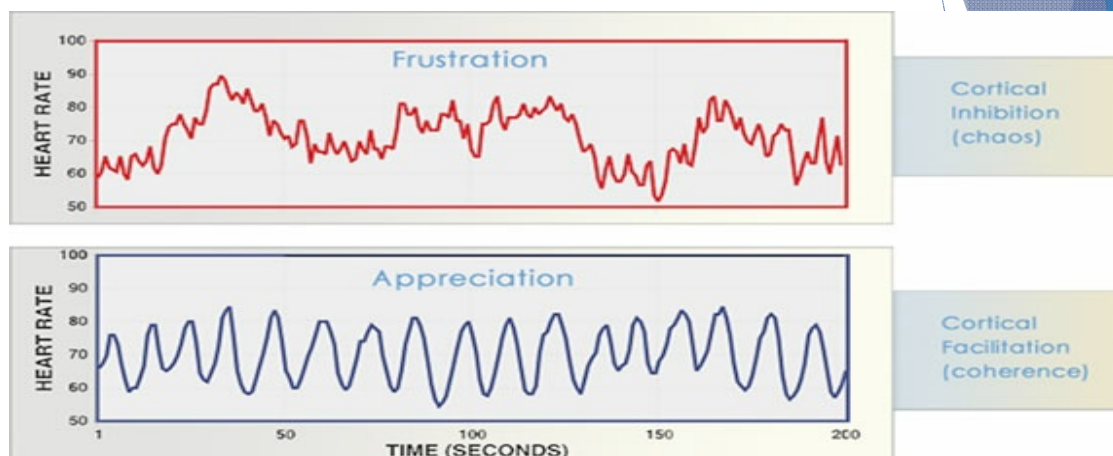
Emotions – Allow emotions to be present without judgment. Practice a steady and relaxed naming of emotions: "joy," "anger," "frustration." Accept the presence of the emotions without judgment and let them go.

Urge surfing – Cope with cravings (for addictive substances or behaviors) and allow them to pass. Notice how your body feels as the craving enters. Replace the wish for the craving to go away with the certain knowledge that it will subside.

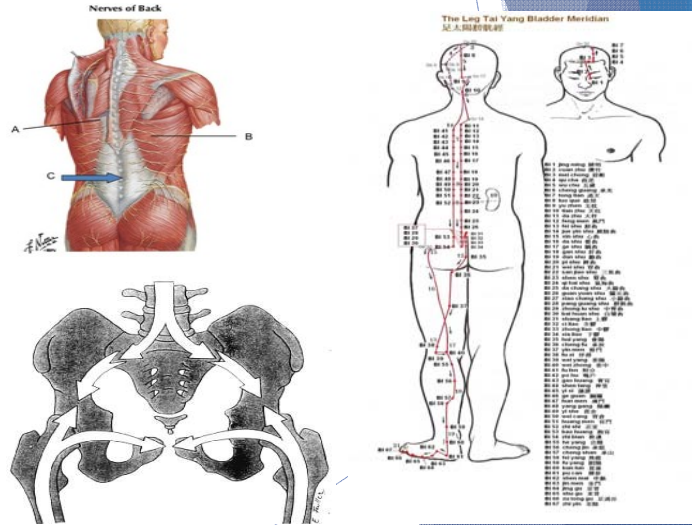
Autonomic Nervous System



Heart Rate Variability



Realities of Running



Battlefield Acupuncture

- ▶ Developed by Richard Niemtow, MD in 2001
- ▶ Treatment for pain
- ▶ Acupoints:
 - ▶ Cingulate gyrus
 - ▶ Thalamus
 - ▶ Omega 2
 - ▶ Point Zero
 - ▶ Shenmen



Utility: Broad Scope

- ▶ The use of acupuncture has been studied in regards to:
 - ▶ Pain management
 - ▶ Dyspnea in acute and chronic asthma
 - ▶ Postoperative nausea
 - ▶ Chemotherapy-induced nausea
 - ▶ Sequelae of cerebral vascular accidents and head trauma
 - ▶ Tinnitus
 - ▶ Depression
 - ▶ Ob/Gyn: amenorrhea, dysfunctional uterine bleeding, infertility
 - ▶ Substance abuse

Why Acupuncture?

- ▶ >100,000 Americans die each year from drug related issues.
- ▶ Most patients want non-medication and nonsurgical options.
- ▶ Influences the ANS
- ▶ Cost effective
- ▶ Minimal side effects
- ▶ Professionally rewarding

Meditation

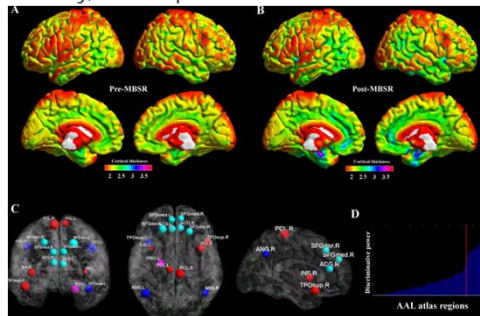
- ▶ In meditation, one's attention is directed toward a word, sound, image, prayer, or the breath, allowing the mind to settle into the present moment, thereby becoming still and receptive.
- ▶ An analogy can be made with a radio dial. The static represents the countless daily thoughts and sensations that preoccupy the mind. Meditation is the tool that fine-tunes the dial (the mind) so that one may become receptive and experience balance and harmony in the midst of the ever-changing conditions of the present moment.

Meditation

- ▶ In a 1985 study conducted by Kabat-Zinn, patients with chronic pain showed a statistically significant reduction in various measures of pain symptoms when trained in mindfulness based stress reduction (MBSR).
- ▶ Meditation practices have also shown beneficial effects in the treatment of tension headaches, psoriasis, blood pressure, serum cholesterol, smoking cessation, carotid atherosclerosis, coronary artery disease, longevity and cognitive function in the elderly, psychiatric disorders use of medical care, and medical costs in treating chronic pain.
- ▶ A 2004 meta-analysis found MBSR training useful for a broad range of chronic disorders such as depression, anxiety, fibromyalgia, mixed cancer diagnoses, coronary artery disease, chronic pain, obesity, and eating disorders.

Meditation

- ▶ Research conducted at the University of Wisconsin-Madison suggests a positive correlation between meditation practice and left-sided prefrontal cortex activity, which is associated with positive affective mental states. In this study, meditation was associated with increases in antibody titers to influenza vaccine suggesting correlation among meditation, positive emotional states, localized brain activity, and improved immune function.



What is Mindfulness?

- ▶ What if there was a way that you could regain your sense of balance, reduce your anxiety and instill more purpose and happiness into your life, even while not having to change much?
- ▶ Originally conceived as a way to ease suffering and cultivate compassion.
- ▶ In many ways it is as relevant today as it was thousands of years ago.
- ▶ It can apply to anyone, no particular religious or cultural belief system is required to practice it.



What is Insomnia?

- ▶ Insomnia refers to difficulties with initiating or maintaining sleep, as well as nonrestorative sleep that is associated with excessive sleepiness or fatigue and with functional decrements for at least 4 weeks^[1]
- ▶ Insomnia is strongly linked to lifestyle and body-mind dynamics and is resistant to conventional medical treatment^[1]

Insomnia Complications

- ▶ Most patients with insomnia are at increased risk for comorbid medical disorders
- ▶ Conditions associated with insomnia:
 - ▶ Chronic pain
 - ▶ Cardiovascular disease
 - ▶ Cancer
 - ▶ Neurologic disorders
 - ▶ Gastrointestinal disorders^[4,5]
 - ▶ Obesity^[6]
 - ▶ Diabetes^[7, 8, 9]
 - ▶ Insulin dysregulation^[8,9]
 - ▶ Disruptions of cortisol rhythms^[10,11]
 - ▶ Immune dysfunction^[12-15]
 - ▶ Increased inflammatory markers^[12-15]

Insomnia Complications

- ▶ Psychiatric illness, especially depression or anxiety,^[17] is the most common comorbidity linked to insomnia^[18,19]
- ▶ Approximately 40% of adults with insomnia have a psychiatric illness—most commonly depression^[18,19]
- ▶ Persistent insomnia significantly raises the risk of clinical depression, anxiety disorders, and substance abuse^[20,21]

Insomnia Etiology

- ▶ Etiology for insomnia can be explained by the '3P' model^[37,38]
 - ▶ Predisposing, precipitating, and perpetuating factors
- ▶ Predisposing Factors:^[37,38]
 - ▶ 1. Dependence on substances such as alcohol, caffeine, nicotine, and other drugs
 - ▶ 2. Long-term use of stimulant, sedating, or circadian rhythm-disrupting medications
 - ▶ 3. Illnesses associated with nocturnal pain or discomfort
 - ▶ 4. Primary sleep disorders such as restless legs syndrome, periodic limb movements in sleep, gastroesophageal reflux disease, and obstructive sleep apnea
 - ▶ 5. Circadian rhythm disorders associated with shift work, jet lag, and advanced or delayed sleep-phase syndromes

Insomnia Etiology

- ▶ Precipitating Factors:^[37,38]
 - ▶ Stress associated with family, occupation, or health challenges
- ▶ Perpetuating Factors:^[37,38]
 - ▶ 1. Excessive waking time spent in bed
 - ▶ 2. An irregular sleep-wake schedule including napping and dozing
 - ▶ 3. Excessive use of caffeine, alcohol, and other drugs
 - ▶ 4. Anxiety associated with attempts at controlling sleep, as well as the daytime consequences of sleeplessness

Insomnia Etiology

- ▶ Although psychiatric illness,^[18] medical disorders,^[26] and shift work^[27] significantly increase the risk for insomnia, they are not causal but precipitating factors in patients already predisposed to the disorder^[28]
- ▶ Certain primary sleep and circadian rhythm disorders such as restless legs syndrome,^[29] periodic limb movement disorders, delayed sleep phase, and sleep-related breathing disorders are also frequently associated with insomnia^[30]

Insomnia Etiology

- ▶ Comorbid Primary Sleep Disorders^[1]
 - ▶ Restless legs syndrome (RLS)
 - ▶ Periodic limb movements in sleep (PLMS)
 - ▶ Gastroesophageal reflux disease (GERD)
 - ▶ Sleep-phase disorders
 - ▶ Narcolepsy
 - ▶ Obstructive sleep apnea (OSA)
 - ▶ Nocturia

Insomnia Etiology

- ▶ Medications That Can Interfere With Deep or Rapid Eye Movement Sleep^[1]
 - ▶ Alcohol
 - ▶ Antiarrhythmics
 - ▶ Anticonvulsants
 - ▶ Antihistamines
 - ▶ Appetite suppressants
 - ▶ Benzodiazepines
 - ▶ Bronchodilators
 - ▶ Caffeine
 - ▶ Carbidopa/levodopa
 - ▶ Corticosteroids
 - ▶ Diuretics
 - ▶ Decongestants
 - ▶ Estrogen
 - ▶ Lipophilic beta blockers
 - ▶ Monoamine oxidase inhibitors
 - ▶ Nicotine
 - ▶ Pseudoephedrine
 - ▶ Selective serotonin reuptake inhibitors
 - ▶ Sedatives
 - ▶ Statins
 - ▶ Sympathomimetics
 - ▶ Tetrahydrozoline
 - ▶ Thyroid hormones
 - ▶ Tricyclics

Pathophysiology

- ▶ The most compelling pathophysiologic model for insomnia suggests a strong association with chronic cognitive-emotional hyperarousal, which may be a premorbid characteristic of the disorder^[40-42]
- ▶ Compared with controls, patients with insomnia have elevated heart rates,^[43,44] increased body and brain metabolic rates,^[45,46] elevated core body temperature,^[47] increased beta and gamma electroencephalographic features, and neuroendocrine dysregulation including elevated nighttime cortisol and decreased serum MT^[48-51]
- ▶ Insomnia has also been linked to nocturnal sympathetic activation and overactivation of the hypothalamic-pituitary-adrenal axis^[52,53]

Pathophysiology

- ▶ Insomnia appears to be bidirectionally associated with chronic inflammation^[1]
- ▶ A single night of sleep deprivation in humans can alter cellular immune responses^[54] and increase levels of inflammatory markers^[55-58]
- ▶ In contrast, inflammatory conditions have been shown to disrupt sleep by increasing pain, anxiety, and depression^[59,60]
- ▶ Chronic inflammation is fundamentally a process of immune system overactivation, which can be viewed as another expression of hyperarousal^[1]

Pathophysiology

- ▶ Sleepiness and sleep propensity appear to be strongly influenced by circadian core body temperature rhythms^[1]
- ▶ Specific types of insomnia have been linked to specific patterns of body temperature rhythm disruption^[1]
- ▶ Sleep onset difficulties have been associated with a delayed circadian temperature rhythm, early morning awakenings with an advanced circadian temperature rhythm, sleep maintenance insomnia with a nocturnally elevated core body temperature, and mixed insomnia with a 24-hour elevation of core body temperature, consistent with the hyperarousal model^[61]

Evaluating Insomnia

- ▶ Subjective measures, including the clinical interview and history, are the most critical components of the evaluation of insomnia^[1]
- ▶ **Clinical Interview and History**
 - ▶ 1. The presenting complaint
 - ▶ 2. The sleep-wake routine
 - ▶ 3. Daytime functioning and symptoms
 - ▶ 4. Sleep conditions and routines
 - ▶ 5. Previous treatment effects
 - ▶ 6. Other sleep disorder symptoms
 - ▶ 7. Comorbid medical conditions
 - ▶ 8. Psychiatric conditions and stressors
 - ▶ 9. Medication and substance use
 - ▶ 10. Relevant family history
- ▶ Adapted from Mai E, Buysse DJ. Insomnia: prevalence, impact, pathogenesis, differential diagnosis, and evaluation. *Sleep Med Clin.* 2008;3:167-174.

Integrative Medicine & Insomnia

- ▶ Integrative medicine takes the following approach to understanding and managing insomnia^[1]
 - ▶ 1. Emphasizes the restoration of sleep health, as opposed to suppression of symptoms
 - ▶ 2. Acknowledges the important social and relational context of sleep
 - ▶ 3. Acknowledges the important role of natural rhythmic processes in life and health
 - ▶ 4. Strongly emphasizes the role of lifestyle. An integrated approach to insomnia also calls for sensitive personalization of treatment based on a thorough evaluation

Integrative Medicine & Insomnia

- ▶ From the patient's perspective, interventions for insomnia can be classified in terms of two basic approaches^[1]:
 - ▶ 1. Taking something to sleep
 - ▶ 2. Letting go of something to sleep
- ▶ *Letting go of something to sleep* refers to an approach concerned with reducing the noise of this excessive wakefulness^[1]

Pharmaceuticals

- ▶ Epidemiologic studies suggest that over-the-counter antihistamines, alcohol, and prescription medications are the most common treatments used by patients with insomnia^[1]
- ▶ Data suggesting that sedative-hypnotics can be effective in ameliorating insomnia raise serious questions about pharmaceutical industry influence and bias^[1]
- ▶ At best, positive outcomes found are negligible, and harmful side effects are substantial^[76]

Pharmaceuticals

- ▶ In the end, most sleep medications do little more than temporarily suppress the neurophysiologic symptoms of hyperarousal—and they do so with risk^[1]
- ▶ Studies raised concerns that the use of hypnotic agents may increase the risk of cancer^[77,78]
- ▶ Additional findings revealed a 10% to 15% increase in mortality among occasional users of sleeping pills and a 25% increase in mortality among nightly users of these drugs^[79]

Pharmaceuticals

- ▶ **Common Medications for Insomnia^[1]**
 - ▶ **Over-the-Counter Agents**
 - ▶ Diphenhydramine
 - ▶ Doxylamine
 - ▶ Benzodiazepines
 - ▶ Estazolam
 - ▶ Flurazepam
 - ▶ Quazepam
 - ▶ Temazepam
 - ▶ Triazolam
 - ▶ **Nonbenzodiazepine Hypnotics**
 - ▶ Eszopiclone
 - ▶ Zaleplon
 - ▶ Zolpidem
 - ▶ **Melatonin Receptor Agonists**
 - ▶ Ramelteon
- ▶ **Antidepressants (Tricyclic or Tetracyclic Antidepressants)**
 - ▶ Amitriptyline
 - ▶ Doxepin
 - ▶ Trazodone
 - ▶ Mirtazapine
- ▶ **Other Agents**
 - ▶ Clonidine
 - ▶ Gabapentin
 - ▶ Quetiapine
 - ▶ Sodium oxybate (gamma-hydroxybutyric acid sodium salt [GHB])

Pharmaceuticals

- ▶ **Common Side Effects of Sedative-Hypnotics^[1]**
 - ▶ Dependence
 - ▶ Tolerance
 - ▶ Damaged sleep architecture
 - ▶ Diminished deep sleep
 - ▶ Rapid eye movement suppression
 - ▶ Parasomnias
 - ▶ Anterograde amnesia
 - ▶ Morning hangover
 - ▶ Undermined self-efficacy
 - ▶ Rebound insomnia with discontinuation
 - ▶ Increased risk of falls
 - ▶ Cognitive impairment
 - ▶ Symptom suppression
 - ▶ Increased mortality

Pharmaceuticals

- ▶ Despite these concerns, an unprecedented surge has occurred in the use of sleeping medications since 2000^[80]
- ▶ Why is this the case?
- ▶ This approach is driven by two faulty presumptions:
 - ▶ 1. The common belief that insomnia is primarily the result of insufficient sleepiness, rather than excessive noise
 - ▶ 2. A culture-wide, naive conceptualization of healthy sleep that equates it with a knockout

Supplements

- ▶ Numerous botanical sleep aids have been in use around the globe for centuries^[1]
- ▶ In contrast to conventional sleep medications, CAM sleep aids, including botanical medicines as well as nutraceuticals, provide less of a knockout and more of a gentle assist to sleep with significantly fewer adverse effects^[1]
- ▶ Kava has empirical support for use with insomnia, but findings have raised serious questions about its safety^[82]
- ▶ L-tryptophan & 5-HTP, the precursors to serotonin & melatonin, have shown mixed results^[1]
- ▶ Of the many alternatives to conventional sleep medications available, MT, valerian, and hops, reviewed in greater detail, are in common use and are generally regarded as safe^[1]

Melatonin (MT)

- ▶ Synthesized from tryptophan via 5-HTP and serotonin, MT is a neurohormone found in most living organisms^[1]
- ▶ MT production is normally inhibited during the day by exposure to the blue wavelength of light and is disinhibited by dim light and darkness^[83]
- ▶ In addition to regulating circadian rhythms, MT mediates sleep and dreaming, decreases nocturnal body temperature, and has antiinflammatory, immunomodulating, and free-radical scavenging effects^[84]
- ▶ The suppression of endogenous MT through overexposure to light at night,^[85-87] in advancing age,^[88] and by common substances and medications (e.g., caffeine, nicotine, alcohol, beta blockers, diuretics, calcium channel blockers, and over-the-counter analgesics^[89])

Melatonin (MT)

- ▶ Doses as high as 50 mg can dramatically increase REM sleep and dreams^[1]
- ▶ The dose is 0.3 to 0.5 mg for adults^[96]
- ▶ MT is available in oral, sublingual, and transdermal immediate or sustained-release formulations^[1]
- ▶ Sublingual MT can avoid first-pass liver metabolism, thereby likely resulting in more reliable serum levels^[1]
- ▶ Given its short half-life (approximately 0.5 to 2 hours) sustained-release forms are more likely to maintain effective levels throughout the sleep period^[1]
- ▶ MT generally has a good safety profile^[1]
- ▶ One meta-analysis found adverse effects uncommon and more likely with high doses^[97,98]

Valerian Root (*Valeriana officinalis*)

- ▶ Valerian is a sedating botanical with purported anxiolytic and hypnotic properties^[1]
- ▶ In contrast to prescription sedative-hypnotics, valerian does not impair psychomotor or cognitive performance^[99,100]
- ▶ One review concluded that valerian was safe but did not have significant effects on sleep^[101]
- ▶ A second study concluded that valerian appeared effective for mild to moderate insomnia^[102]
- ▶ Valerian is nonaddictive, resulting in no withdrawal symptoms on discontinuation^[1]
- ▶ Valerian may sometimes require weeks of nightly use before producing an effect^[103]

Valerian Root (*Valeriana officinalis*)

- ▶ Valerian is available as whole powdered root and an aqueous or ethanolic extract standardized to 0.8% valerenic acids^[1]
- ▶ High-quality products have an unpleasant odor, which confirms potency^[1]
- ▶ For adults, 300 to 900 mg standardized extract of 0.8% valerenic acid or as a tea of 2 to 3 g of dried root steeped for 10 to 15 minutes and taken 30 to 120 minutes before bedtime for 2 to 4 weeks^[1]
- ▶ Valerian has a good safety profile^[101]
- ▶ Caution should be exercised during pregnancy or in patients with a history of liver disease^[1]

Hops (*Humulus lupulus*)

- ▶ Hops refers to the flower clusters atop the *Humulus lupulus*^[1]
- ▶ Best known for its use in beer, hops has also been used in traditional preparations to treat a broad range of conditions, including insomnia^[1]
- ▶ Hops is believed to have antispasmodic properties that can help reduce muscle tension and promote relaxation^[105]
- ▶ Additional evidence suggests that hops may be beneficial in alleviating hot flashes and other menopausal symptoms^[106]
- ▶ Prescribe 5:1 ethanolic extract, one-half to one dropper full, 30 to 60 minutes before bedtime^[1]
- ▶ Although no evidence indicates toxicity in medicinal dosages, avoiding the use of hops in pregnancy may be advisable^[1]

Noise Reduction Approach to Insomnia

- ▶ The Noise Reduction Approach for Insomnia (NRAI)^[107] provides a comprehensive framework for patients by organizing complex and numerous etiologic and therapeutic recommendations
- ▶ The NRAI uses a body, mind, and bed framework in which body refers to biomedical factors, mind refers to psychological factors, and bed refers to sleep environmental factors^[1]
- ▶ The NRAI conceptualizes healthy sleep in terms of a *sleepiness-to-noise ratio*, in which *sleepiness* refers to the propensity to sleep and *noise* refers to any kind of stimulation that interferes with sleep^[1]
- ▶ Noise is used to denote the subjective experience of hyperarousal^[1]

Noise Reduction Approach to Insomnia

- ▶ Insomnia results from excessive noise^[1]
- ▶ Noise resulting from body, mind, or bed factors is cumulative^[1]
- ▶ For example, the stimulating effects of ordinary work stress or of 2 cups of coffee or minor reflux alone may not interfere with sleep, but their cumulative effect could well reach a threshold that does^[1]
- ▶ Insomnia occurs when a person's noise levels exceed his or her sleepiness, whereas sleep occurs when noise levels fall to less than the threshold of sleepiness^[1]
- ▶ NRAI is less concerned with promoting sleepiness and more concerned with the identification and management of factors that produce noise^[1]

Reducing Body Noise

- ▶ The essential focus of body noise reduction is decreasing physiologic manifestations of hyperarousal^[1]
- ▶ **Reducing Body Noise^[1]**
 - ▶ Manage all comorbid conditions, especially other sleep disorders, depression, and chronic pain.
 - ▶ Manage the sleep side effects of medications.
 - ▶ Manage alcohol and caffeine use.
 - ▶ Manage symptoms of women's health issues (e.g., premenstrual dysphoric disorder, menopause)

Reducing Body Noise

- ▶ Simultaneously addressing all comorbid disorders is essential^[1]
- ▶ This is especially true for depression, primary sleep disorders, and disorders characterized by pain and discomfort^[1]
- ▶ For example, reducing pain will obviously improve sleep, but improving deep and REM sleep can raise pain thresholds by 60% and 200%, respectively^[108]
- ▶ Managing the sleep disruptive side effects of medications discussed earlier will help reduce body noise, as will managing caffeine and alcohol^[1]

Reducing Body Noise

- ▶ Common women's health concerns, including premenstrual syndrome and premenstrual dysphoric disorder,^[110] pregnancy,^[111] and menopause,^[112] are strongly linked to insomnia
- ▶ These conditions and any associated insomnia are most effectively addressed independently^[1]
- ▶ Additionally, MT may be helpful in managing premenstrual syndrome and premenstrual dysphoric disorder,^[113,114] possibly through regulating rhythmic features of the disorder
- ▶ Menopausal symptoms, particularly hot flashes, are commonly blamed for repeated awakenings^[1]
- ▶ Disrupted sleep, however, is not an inevitable consequence of hot flashes^[115]

Reducing Mind Noise

- ▶ The essential focus of mind noise reduction is decreasing psychological and behavioral expressions of hyperarousal^[1]
- ▶ This approach is largely centered on the cognitive behavioral therapy for insomnia (CBT-I) set of strategies^[1]
- ▶ CBT-I combines cognitive restructuring, which addresses insomnia-related dysfunctional thoughts and beliefs, with behavioral interventions including sleep hygiene education, stimulus control therapy (SCT), sleep restriction therapy (SRT), and relaxation practices^[1]
- ▶ CBT-I also addresses common maladaptive coping reactions to insomnia that function as perpetuating factors^[1]

Reducing Mind Noise

- ▶ **Mind Noise Reduction (Cognitive-Behavioral Therapy for Insomnia)**^[1]
 - ▶ Sleep hygiene education
 - ▶ Cognitive restructuring
 - ▶ Stimulus control therapy
 - ▶ Sleep restriction therapy
 - ▶ Relaxation practices
 - ▶ Restoring dream health

Reducing Mind Noise

- ▶ Compelling evidence indicates the effectiveness of CBT-I for primary insomnia,^[5,116,117]
- ▶ CBT-I was shown to be at least as effective as prescription medications in the short-term treatment of chronic insomnia with beneficial effects that extended well beyond the completion of treatment and no evidence of adverse effects^[118]

Reducing Mind Noise

- ▶ Patients with insomnia who were treated with CBT-I experienced greater increases in deep sleep and decreases in wake time than those treated with zopiclone (Canadian hypnotic similar to eszopiclone)^[11]
- ▶ These benefits were still present at a 6-month follow-up, in contrast to patients treated with zopiclone, who showed no ongoing benefits of treatment^[119]
- ▶ CBT-I alone was also found to be no less effective than CBT-I paired with zolpidem^[120]
- ▶ CBT-I has also been shown to enhance depression outcomes for patients with comorbid insomnia^[121]

Relaxation Practices

- ▶ Relaxation Practices^[1]
 - ▶ Breathing exercises
 - ▶ Mindfulness meditation
 - ▶ Progressive muscular relaxation
 - ▶ Gentle yoga/yoga nidra
 - ▶ Self-hypnosis
 - ▶ Guided imagery
 - ▶ Biofeedback and neurofeedback
 - ▶ Transcranial stimulation

Regulating Circadian Rhythms

- ▶ Circadian Rhythm Regulation^[1]
 - ▶ Use phototherapy, with timed exposure to light and darkness
 - ▶ Maintain a regular sleep-wake pattern
 - ▶ Simulate dusk by dimming the lights or using blue blocker technology 1 to 2 hours before sleep
 - ▶ Supplement with melatonin
 - ▶ Sleep in total darkness

Prevention

- ▶ The Prescription for Insomnia^[1]
 - ▶ Recognize the value & joy of sleep
 - ▶ Engage in relaxation practices daily
 - ▶ Obtain adequate & regular exercise
 - ▶ Obtain daily exposure to morning light
 - ▶ Limit the use of sedatives & stimulants
 - ▶ Maintain a regular sleep-wake cycle
 - ▶ Dim lights or use blue blocker tools 1-2 hours before sleep
 - ▶ Sleep in total darkness or use a sleep mask
 - ▶ Consider low dose MT

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