A Sleep Guide for the Mature Adult

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By

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Dedication

To my children: Ken and daughter-in-law Chris, Linda, Kraig, daughter-in-law Carolynn, and grandchildren Connor and Kersten. Thanks always for your constant care and support.

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SECTION ONE

Introduction

Similar to my first book, "A Woman's Guide to Sleep", this book is being written to answer questions many people my age ask about their sleep issues and importantly those of their parents or older relatives for whom they now care. I will be using the pronoun WE a lot since I have probably experienced the same issues as you.

I see my reader as someone who has reached retirement age, whether you have taken advantage of that opportunity or not. Perhaps you are a happily retired baby boomer looking forward to a new lifestyle but wondering why you can't sleep longer. You may be still caught in a sandwich situation of taking care of older relatives, watching grandchildren, and catching sleep when you can. Many may have health related changes in sleep ability. According to Vitiello, by 2030 older adults will comprise 20% of the US population and an estimated 50% will complain of poor sleep. I hope at least to be able to explain changes which actually start in middle age in hope of reducing your frustration.

By now I hope you have learned what's best for your body: what schedules help or hurt, how much activity you can take, and what your best and worse sleep habits are. I am not going to start by telling you to change those. I'm asking that you just be aware of them and see how they can be incorporated into something that can improve your sleep, be it technique or

schedule. The same will be true for the issues of your loved ones and the illnesses to which they, or we, may succumb.

As we age, we may find ourselves in the position of a caregiver, taking responsibility for someone else's sleep and comfort. How will we be able to create changes which may be needed? Or, we may need to be cared for ourselves! How then will we communicate what is best for us?

My children, will ultimately take care of me if needed and have suggested that I now list things I like: how I want to live and be treated by others, what comforts me most. I thought, well what difference can that make? I will take what I get. Then I realized the more I tell them the less energy they have to use guessing about what to do for me. So, I listed things I like: I like to lie flat in bed. I like to have my sheets really tight and wrinkle free. I like flannel sheets even in the summer. I like westward facing light in the day but sleep in the dark. I added things like the quality and type of mattress, sheets, pillow etc. These are really important to my comfort so why not share that information?

Comfort is one of the most important aspects of sleeping well. We'll see that comfort can be physical or mental, or both! Comfort comes in pain free bodies and clear thoughts.... sometimes hard to come by at this age, in this time. I will approach those aspects of sleep as well.

There are two ways to think about sleep. First is that it's one third of your 24-hour day so focus on how important it is. Second, it's ONLY one third of your 24-hour day so, don't get hung up on it. The first approach is for those folks who don't allow enough time or preparation to sleep. The second is for those folks who find they have trouble sleeping. I am sure you know that the last thing you can do well is wish yourself to sleep or plan on a really good night.

Like all sleep books, this one will take you through how and why sleep happens. It's important for our discussions that this information can be referred to as we delve into other aspects of sleep. I don't plan to go into detail on common sleep issues that have been covered elsewhere. I want to highlight what happens to sleep as we age, and give information on some likely sleep problems that may occur. We, or those we love, may also experience situations such as strokes, or other brain changes such as dementia. We may have to deal with general health issues and their effect on sleep. I will give you information that you may find helpful in those situations. My hope is to always find a way to make sleep better. But first I would like to share my global view of sleep.

I like to think of sleep in terms of music, specifically an orchestra. We expect to hear wonderful melodies flowing across the room, sometimes in varying speeds or rhythm, sometimes louder or softer. We may suddenly hear the drums or another section like the soft violins. To be sure, there can be many sections of instruments in larger orchestras such as trumpets, and a variety of violins or horns.

The organization of the orchestra relies on a good conductor who understands the parts and the meaning of the musical piece as well as the rhythm in which it should be played. He or she directs the sections so that the music flows. The orchestra also needs to practice so that the musicians and the conductor are communicating with each other.

If all goes well, we, the audience will have a pleasant time and seldom give thought to what it takes to maintain that group. If one section is off, however, it may affect the entire musical piece. The audience may be unhappy and worry about the quality of the next performance of that orchestra.

In return, the audience may also upset the orchestra if they are talking or laughing. If the room or area in which the orchestra is playing is too hot, too cold or too wet, that will affect the instruments as well as the musicians and the music may not sound as good.

Sleep is similar. Our brains are the orchestra, filled with sections that must play in harmony. The rhythm of our sleep and where it fits into our life, is key. The audience would be our bodies, how healthy they are, how well they function. Our overriding circadian rhythm is the conductor. The room in which we play is our home or more specifically our sleep place. Is it comfortable, quiet and safe?

There is no perfect way to sleep. You usually get to decide what works best for you, and by now, you may have perfected it, or expected it to be perfect. Are you an owl, enjoying quiet, dark, more private late hours of wakefulness, or a lark, jumping up at the first light of the day? Where does sleep fit into your 24-hour day? How consistent are the hours in which you sleep? Are they in one long block or broken up into smaller blocks? Are you actually sleeping when everyone else is awake?

If you've been a good sleeper, your ability to continue as you age will depend on your general health and peaceful mindset. Even so, things will not be the same. There will be a diminishing of response to signals such as light and dark. Sleep will be less efficient. You may wake more frequently. Unfortunately, illness may interfere, and family or world issues may add stress.

Yet, I think you can be surprised at your ability to overcome these issues. My general impression has been that my peers and I do sleep well. About 8 years ago I began an informal questionnaire about sleep in older people. I used my Bellevue Nurse's classmate email group to disperse the questionnaire. While it was blinded as to who responded, it did cover a wide

area: 8 from the west coast; 23 from the east coast and 1 from the center of the country. I expected to get a batch of complaints of poor sleep, yet in this group and their friends, I was amazed to find that, overall, people over 65 were doing quite well. Here are the results of this snapshot.

Thirty-two people returned the questionnaire; seven men and 25 women. The mean age was 74; the range 65-83. The mean number of hours of sleep was 6.6 per night with a range of 8+ - 4+. Two slept the longest; one the least. Nineteen reported napping occasionally across the week. One person napped daily. Naps were within the 20-30-minute range except for some who slept the least at night. They napped up to 45 minutes. Only one person complained of insomnia, although three noted awakenings during the sleep period. One seemed to have a bi-phasic pattern of sleep totaling 7 hours. Fifteen awakened feeling very refreshed. Eighteen said they sometimes felt refreshed. Twelve folks said they snored now and nine reported they snored in their 30-40s also. Eleven reported leg pain. Only one took a sleep medication but 12 took Tylenol (3 with Tylenol PM). Nineteen folks drank 1-2 glasses of wine at least a few times a week but usually at dinner time. Two sought professional sleep care but neither found it helpful. Twenty-five said they exercised weekly at least three times. Ten found it improved their sleep; eight reported it did not. Overall, they group had typical health issues for their age with 19 reporting the following problems. Some reported more than one problem: hypertension (11), atrial fibrillation (2), diabetes (1), arthritis (20), GERD (2), pain (2) IBS (1), mitral value prolapse (1) bladder and prostate issues (2), fibromyalgia (1), Chrons (1) and thyroid (2).

So, if they can do it, you can too. There may be a reorganizing of expectations but you can go forth with power to improve and refresh!

How Sleep Happens

We spend our lives in one of three reversible States: wake, non-rapid eye movement sleep (NREM) and rapid eye movement sleep (REM). Within NREM there are three stages of sleep reflecting the depth. Hopefully each one is isolated from the other but we will discuss how they interact and unfortunately for some, overlap.

Wakefulness, driven by our alerting circadian rhythm, is a combination of neural activity across the brain. Signals, stimulated by neurotransmitters such as norepinephrine and acetylcholine, in the brain stem travel upward eventually stimulating other neurons in the forebrain. The system also combines with exciting peptides which help to produce wake.

A quieting of these systems occurs in the shift to sleep promoting areas in the forebrain preoptic area, inhibiting some of the wakeful activation. A simple way to view this is to think of a seesaw. When one end is up, the other must be down. Wake cells and related neurotransmitters are active for a period of time and the sleep cells are quiet. The reverse happens when sleep occurs. Then the wake system is quiet.

We spoke of sleep resembling an orchestra. In fact, sleep and wake need to be in balance to keep us comfortable. That balance involves the organization of multiple hormones, cells groups and other chemicals like neurotransmitters which act to relay messages across different cell groups within our brains and body. To say it's a complicated affair is an understatement. I'll attempt to keep it simple.

There are two major opposing drives to our sleep/wake cycle. One, called the homeostatic drive, builds or deepens as our time awake increases. Therefore, the longer we are awake, the more sleep drive we accumulate across the day. The other,

called the circadian drive, refers to the 24-hour clock in our brain which is increasingly alerting during the day, dipping to lower points in the evening, reaching its lowest around 4 AM. The two drives tend to oppose each other across the 24-hour cycle except in the midafternoon period when the circadian drive dips briefly. Someone who is sleep deprived may have collected a deep homeostatic drive at that point and find it hard not to fall asleep because the strength of their circadian alertness drive has lessened. People attribute this to post lunch sleepiness. While a full stomach may add to your comfort and be relaxing, it's really the interaction of the two drives at this time.

In the proper setting, the homeostatic drive helps us fall asleep and is lessened or paid back during our sleep period. We should be starting our day at the lowest point of this drive, depending on how well we have slept. Adenosine deepens the homeostat, increasing during our wake time and causing us to be sleepy. Did you know that caffeine fights off, or inhibits, adenosine? Do you have coffee or tea, first thing in the morning? And who continues to add caffeine into the day hours and even into the night? As adenosine is blocked in this way by caffeine, it is less able to do its job helping us get to sleep. Hence the recommendation to stop caffeine use after noontime if you find yourself having problems getting to sleep at night. Caffeine can remain active in your system for 6 hours.

The second important drive in our sleep/wake cycle is the circadian drive or 24-hour clock, generally maintaining our alertness. For typical nighttime sleepers, alertness begins to rise early in the morning and increases across the day. Light is a major stimulus for wakefulness and for keeping our sleep/wake rhythm in sync. As I said, there is a slight dip in our levels of alertness around 2-4 pm, just after lunchtime, but the drive rises to a peak around 6pm. That's a time called the 'forbidden zone'

since it is really hard to fall asleep then if your typical sleep schedule is 10 or 11pm to 7 am. The chemical or hormone that encourages the onset of sleep is melatonin. An important sleep supportive hormone, melatonin begins to be excreted around 9 pm in dim light or darkness and acts to shut down the alerting circadian drive. This alertness drive is at its lowest around 4 am. That's when our body temperature is also the lowest but begins to rise on its 24-hour cycle, usually linked to the circadian cycle, as our brains and bodies prepare to awaken for the day. A chemical called hypocretin or orexin is responsible for maintaining our alertness and stabilizing the sleep wake cycle. We will hear more about our circadian drive later.

A fun way to visualize this is to picture your upper eyelid as the homeostat and the circadian system as a series of daytime emojis reflecting the activities you usually do. The eyelid is trying to close as the day progresses because the need for sleep is deepening and the emojis are trying to hold the eyelid up. Once the sun goes down and melatonin starts to flow, the emojis are less active and the eyelid eventually wins and closes. Sleep occurs. The next morning as the sun comes up, our body temperature begins to rise and the eyelid is less sleepy and opens. Melatonin is shut off and the alertness emojis become active again as another day blooms.

For instance, if you go to sleep at 11 pm, you slowly burn off some of the homeostatic drive by sleeping. But melatonin continues to flow and helps sleep be maintained. If you arouse at 4 AM, put on the light to check the time or go to the bathroom, the game can be over! The otherwise normal arousal is built into an awakening, our sleep drive has been lessened, and the light inhibits the flow of melatonin, and our body temperature is beginning to rise. "I always wake up at 4 am and can't go back to sleep!" Yup. We'll see what to do about that later.

Why did I say “an otherwise normal arousal”? Well, we normally arouse briefly, maybe for 4-10 seconds or so, 12-15 times an hour! We arouse or awaken briefly as we change sleep cycles every 70-90 minutes across the night. Most of us don’t remember the earlier arousals because our sleep drive is so strong, but by 4 AM on this schedule we may notice it. If we check the clock, we only reinforce the awakening. Seldom do we think “Oh goodie, its 4 AM, I have 3 more hours to sleep!” More likely, our first thought is “Ugh, awake again? No way am I falling back to sleep!”. That’s sort of self-defeating, no? It’s amazing how easily bad habits are cemented. More about that later.

If we are arousing that many times across the night, what kind of sleep as we getting? Typically, we fall into a transitional stage of sleep called Stage One or N1. During this stage we may even think we are awake but we may not remember too much. Some researchers don’t consider this full sleep. This stage usually only lasts a few minutes before we fall into Stage Two or N2. About half the night is spent in Stage Two. We may stay in Stage Two an hour or so before moving into rapid eye movement sleep, also called REM sleep. REM is the sleep stage during which we can have vivid dreams. There are about four cycles like this across the night, occurring every 70-90 minutes with the first REM cycle being short and the last being the longest.

In REM sleep we are essentially paralyzed. All muscles are inactive or atonic, except the diaphragm and our eye muscles. In fact, seeing eye movements is one of the clues to REM sleep on the polygraph during a sleep study. Our eyes roll around and are thought to be ‘watching’ the dream activity. We will discuss other aspects of REM sleep later. Because of the limited muscle activity, REM sleep can have negative effects on our breathing and heart as we age.

The drives for sleep and wake are very strong and typically set in a tight rhythm, somewhat by genetics and otherwise by consistency. You may be genetically a lark who rises and shines early in the day, pooping out in the later evening, or an owl who is at their best later in the day and late into the night. Depending on your lifestyle, you may be lucky and live in sync with your biological rhythm, or unlucky and fight to live against it. Eventually in that case things can change to be more synchronized but maybe not as comfortable as we would like. Picture suffering jet lag every time your work shift changes. Shift workers can be very uncomfortable, yet some are flexible enough to be able to rotate sleep hours. Overall, we lose this flexibility as we age and even seasonal time changes of one hour can be a more difficult adjustment.

Along with these two major drives an entire orchestration of hormones and neurotransmitters also regulate our sleep. Sleep related neurotransmitters include serotonin and acetylcholine. Conversely, alerting neurotransmitters are dopamine and norepinephrine. Acetylcholine is also a major neurotransmitter for REM sleep while also known to be alerting and wake promoting. You shouldn't be surprised that all this orchestration is affected by things like illness, medication, life styles, environment, diet, sleep deprivation and, of course, aging.

What changes in aging? Aging causes changes in the opacity of our eye lenses, limiting how much light gets through. So, a major stimulus for our alertness drive is weakened. Aging is usually linked with some measure of physical pain; maybe pain we are so used to we no longer recognize and can ignore during the day. Yet it may disrupt our sleep. Aging may be linked to lack of consistent schedules due to the 'freedom' of retirement. We may decide to eat differently during retirement, perhaps less protein and more sweets, fewer vegetables and fruits and more bread and pasta. Aging may also be linked to depression,

the loss of ourselves as we knew it and the loss of loved ones. We will discuss these other issues as well. Aging may also lessen our ability to flow with changes in our rhythm. There may be less melatonin available or we may be less responsive to changes in our neurotransmitters. We may then be more vulnerable to misalignment of our circadian rhythms.

But, hey! Aging is also proof that you have excelled in living! You are a survivor. You have learned to cope. You have wisdom! And, if I have anything to say about it, you will have better sleep and help older loved ones to improve theirs as well.

Circadian rhythm

Our circadian system is one of the two major sleep regulatory systems. It is timed to the onset and offset of light via a nucleus in the forebrain called the Suprachiasmatic Nucleus (SCN) which acts as a master 24-hour clock and interacts with our retina. Light can shift the timing of our sleep. For example, exposure to early morning light shifts nighttime sleep onset earlier. Evening light exposure can shift sleep onset later.

The circadian rhythm is also closely linked to our core body temperature, rising across the day and falling at night. To be at its most efficient, sleep timing is in synchrony with the temperature phase, which falls to its lowest point around 4AM in nighttime sleepers. We begin to wake in the morning as our core body temperature rises for the day.

We can estimate our core body temperature or our melatonin levels, both of which are partly regulated by our 24-hour rhythm. These parameters are also measured scientifically in laboratory settings where interference of everyday life is limited. The studies have shown that the peaks and valleys of Core Body Temperature (CBT) and onsets of melatonin have moved earlier in a large percentage of the elderly causing many of us to retire to bed earlier and rise earlier in the morning. This change has been noted to begin in middle age and affects 1-7% of the public regardless of lighting. It has also been noted that there is a dampening of the signals in older folks.

As we know now the circadian system also interacts with the homeostatic system to regulate our sleep and wake. The cycle is reinforced or interrupted by environmental signals called ‘zeitgeber’. Along with light, these signals include external influences such as food and meal times, medication, exercise and other daily schedules we manage. Other metabolic

functions, such as insulin action and secretion of other hormones, intestinal activity, cardiac function all have schedules linked to circadian timing as well. When all the schedules are tracking in their respective order, we call them entrained. Research shows that the basic circadian rhythm can be disengaged from its entrained cycles by isolating animals or humans from their usual schedules of light and activity. Think about jetlag or even nights caring for young children. When this happens at its extreme, we call the cycles 'free-running'. Few humans 'free run' unless they are totally blind with no light cues to the retina.

Researchers have long seen other changes related to circadian rhythms in folks as they age. There is less resiliency and responsiveness to the cycles. In fact, many of the changes we see as older adults have begun during middle age and may actually increase only minimally after 60. This sounds like good news and it is in some ways, except that most of us didn't know it when we were burning the candles at both ends, disrupting these cycles. We were more than just tired, we were affecting our future health! Today a lot of research is looking at these phenomena, such that we almost want to warn our grandchildren or even children to pay attention to their sleep time. Other changes that occur may be exacerbated by illness.

As we age, there is less neural activity in the SCN. We see less total sleep time, and poorer sleep efficiency in many folks. There is also less deep (slow wave) sleep seen, especially in men. Women do seem to hold on to this stage longer. Our circadian system is less flexible and therefore more sensitive to cycle changes and more vulnerable to a loss of synchrony. That may be obvious in worsening jetlag, but is also found as increasing discomfort even as the seasons change and the clocks are moved one hour in spring and fall.

There are changes in the timing and coordination among other entrained aspects of our rhythms. For instance, besides the earlier timing of our body temperature cycles, resulting in a change of sleepiness and early morning arousals, we also see increased nightly levels of cortisol which acts as excitation to our nervous system. This occurs just when we want to sleep and results in an elevation in its twenty-four-hour levels. This can also be related to decreased cognition and increased waking.

Our circadian rhythm can affect our metabolic system as well as our cardiac system. For instance, studies on shift workers demonstrate increased cardiac diseases such as hypertension, rhythm changes and vascular diseases in folks who work part or all of the night shifts. They also note increased levels of Type 2 diabetes. These findings are seen with people who have EVER worked shifts and are worse the longer one has been a shift worker. The findings are also seen more frequently in men as compared to women workers.

Part of the cause for this is thought to be increases in risk factors such as increased body weight, perhaps related to misalignment of meals and related changes in digestive factors. With sleep loss, there are changes in the function of cells within our pancreas which control insulin and hormones in the stomach such that there is less of our satiety hormone leptin and an increase in our hunger hormone ghrelin.

Remember meals are one of the major zeitgebers or markers of circadian rhythm. Researchers have noted that even a shift of two hours for mealtimes as would be seen in mild jet lag, or in a worker who sleeps in on the weekends, could be linked to increased heart rates, less sleep, less energy consumption as well as increased obesity, cardiovascular risk and hypertension and diabetes. Similar findings are seen in those who skip

breakfast. Granted this research shows associations, not actual causes, related to timing changes and there are a few conflicting studies. I think it's enough to consider enjoying meals on at least a modified Mediterranean schedule; largest meal at midday...smaller meal at night. That's how we can take advantage of those lunch prices and meal sizes as well as early bird specials!

There is also the issue of nighttime light exposure, which shuts off our melatonin and may result in less melatonin being excreted overall, particularly in shift workers. There are clear studies in both animals and humans which show less melatonin is related to increased reports of breast and prostate cancers perhaps due to less melatonin and increases in inflammatory markers.

Disruption of the circadian system is also associated with degenerative diseases like Parkinsonism and Alzheimer's diseases. As we will see later, there may be a bidirectional nature to that association. Sleep deprivation may act to increase the likelihood of degenerative disease which then acts to further disrupt sleep. Yet, circadian misalignment either with or without sleep loss still can increase inflammatory factors which can influence cardiac and diabetic risk.

Once we realize how important schedules are, we can work to reinforce them within our comfort zone. I know as a phase delayed sleeper I love winter light which dawns later in the morning. Once spring and summer come the earlier lighting is problematic for me. So, I have a collection of eye masks! I have found they even help in the winter by keeping any ambient light out. Many folks consider taking additional melatonin. It does sound like a wonder drug at times but like all drugs it needs to be approved by your physician as it may interact with others you are taking. We will discuss this later.

Does food matter?

Many people have asked me if food matters to sleep. The short answer is yes! It matters on the basis of too little or too much or the wrong timing. Too much and we have obesity, which for sleep generally means sleep apnea. Too little and we have hungry people without adequate building blocks for necessary neurotransmitters and other neurochemical processes. Wrong timing and the system get confused.

While I worked in New York City, I met a number of women from ages 20-50 who were busy workers and permanent dieters. Sleep wasn't happening. Once I encouraged them to have a late evening protein snack, sleep went much better. The snack was yogurt or cheese and a little cracker, maybe a banana taken two hours or so before bedtime, and it worked! I think it worked for two reasons. One, it provided some additional protein building blocks for necessary neurotransmitters and two, it set a bedtime routine!

The foods were important and so was the timing. We need to allow time to have the nutritional process work. We also need to allow our circadian rhythm of digestion to work. For instance, a spicy late meal on a stomach which has settled down for the night only wreaks havoc. There is now work looking at the total time span over which we eat. Recommendations are that the period be less than 10 hours. So, breakfast around 9 AM, dinner by 7 PM. Another reason to enjoy those early bird specials! Actually, eating earlier would be helpful for aging digestion.

Like most things in our complicated bodies, the interaction of food and sleep is not simple. Food choice brings required nutrients, or not, to supply the building blocks of the neurotransmitters produced by nerve cells in the central nervous system (CNS). These building blocks are called amino acids. There are 20 amino acids but nine are called 'essential'. Dietary

proteins are the only source of essential amino acids. We will see that some food sources are better than others.

Turns out the gut is very important to neurotransmitters. It allows absorption of the nutrient and programs part of our immune system, housing 70% of our immune cells. There are also millions of beneficial microbes in the gut, some of which influence the brain via the vagal and other nerves. So, it may be true about those gut feelings! The gut is also a first line of defense for inflammation and healing.

Neurotransmitters are vital because they carry signals from nerve groups and allow communication for the function of all cellular activity. Many of the neurotransmitters work together in building chains. For instance, L-tryptophan builds to serotonin which becomes melatonin. Foods high in L-tryptophan include: nuts, seeds, tofu, cheese, red meat, chicken, turkey, fish oats, beans and lentils. L-phenylalanine processes to L-tyrosine, then to L-dopa, to dopamine to norepinephrine and eventually to ephedrine. Foods high in L-phenylalanine include soybeans, cheeses, nuts, seeds eggs, dairy pork, lamb, and fish. Seems as though we have covered the entire range of possible products! But variety is always better.

It's important to remember that sleep and mood both use the same neurotransmitters. The neurotransmitter norepinephrine (NE) is alerting. It can increase our ability to concentrate and is a source of energy. However, overactivity of NE is linked to anxiety, impulsivity and obsessive-compulsive disorder (OCD). It is also known as the fight or flight neurotransmitter.

The neurotransmitter serotonin (SE) is positively linked to sleep, wellbeing, mood, cognition and also reduces anxiety, OCD and impulse control. It is produced in the gut and an area toward the back of the brain called the Raphe nucleus. It is stored in the central nervous system (CNS) and blood platelets.

The major enzyme which processes it in its production is L-tryptophan. Wheat and rye breads are known to lessen levels of SE. Serotonin is also the source of melatonin after additional enzyme activity breaks it down.

Dopamine (DA) is linked to pleasure, rewards and motivation. Tyrosine and phenylalanine are enzymes involved in its production. Lower levels of DA are strongly associated with Parkinson's disease and other movement disorders. Dopamine is also linked to attention deficit hyperactivity disorder (ADHD), depression and addiction. Too high a level is linked to mania and psychosis. Foods known to contain dopamine are chicken, turkey, fish, almonds, pumpkin seeds, cheese and yogurt.

If you read the ingredients in supplements meant to increase alertness and vigor, you will probably see it contains phenylalanine. The hope is that it will cross the blood brain barrier (BBB) and increase DA which will act as an alerting factor.

Gamma amino butyric acid (GABA) inhibits neurotransmitters while glutamate stimulates them and encourages neuroplasticity. Foods known to have more glutamate are probiotic: yogurt, pickled, cheese, soy and MSG.

Acetylcholine (Ach) is associated with REM sleep, short term memory and learning. Vitamin B6 and B5 are important to the manufacture of Ach. Eggs are also an important staple in the production of Ach.

Inflammation is an important consideration to our health. Inflammation affects pain, metabolic syndromes such as diabetes, cardiovascular disease, chronic fatigue syndromes, periodontal disease, neurodegenerative disease as well as mood, stress and of course, sleep. Interestingly, loneliness and

depression are also related to inflammation. So, eliminating as much inflammation as possible is a good thing.

Foods that are anti-inflammatory include colorful vegetables and fruits with polyphenols and vitamins C and E. Nuts and seeds are also good as are spices such as chilies, ginger, black pepper, sage, wheat germ, flax, green tea, red wine and dark chocolate.

Food choices can also impact levels of and reaction to inflammation. Probiotic foods are those which are fermented such as yogurt, wine and beer. They are also anti-inflammatory, releasing the neurotransmitter GABA. Sauerkraut, pickles, miso and sourdough are good examples of fermented foods. Lactobacillus, found in yogurt, is excellent for dental health. Are you adding this up to see the value of red wine? It's fermented, colorful and contains resveratrol. Just remember all things in moderation! It's true that different doses of the same substance can have very different effects.

Cytokines such as interleukin (IL-1, IL-6), and Tumor Necrosing Factor (TNF-alpha) are the major communicating proteins that regulate our inflammatory processes and are also linked to fatigue, depression, asthma and diabetes. Cortisol (CTL) is linked to our immune system and associated with post-traumatic stress (PTSD) and other stressors. There is a circadian rhythm of CTL such that is tends to be elevated in the early morning hours. Excessive production is seen with physical activity and stress. CTL may cause subjects to crave sweets, salt and fatty foods. Omega 3 can reduce CTL. Omega 3 is a fatty acid found in wild fish, seaweed and flaxseed and may help to stabilize blood sugar.

Magnesium (Mg) is one of the most common chemical elements on earth like iron, oxygen and nitrogen. (Now we may have to skip to our chemistry classes). Magnesium has many uses

and forms in society and our bodies. It is important for all cells and enzymes. In general, it is a relaxant. Too little of it is linked to fatigue, muscle weakness, and insulin resistance. Mg has been shown to increase slow wave sleep and delta sigma signals. It can also lower cortisol. Mg is found in a variety of foods: bran, pumpkin seeds, buckwheat, soy, spinach and other green veggies, garbanzo and lima beans, trail mix, and halibut. Overdoses are linked to low blood pressure and diarrhea. It's common to see lower levels with significant alcohol use and diuretics. A typical USDA recommendation is 420 mg for older adults. Be careful though as it may also be found in a general vitamin pill and some generic-anti gastric reflux (GERD) medications.

We must also remember caffeine in our diets, either through food or drink. The following is a list of common items which have significant amounts of caffeine:

(the cup size reported here is only 5 oz)
drip coffee 115 mg;
percolator coffee 80 mg;
decaffeinated coffee 5 mg;
instant coffee 65 mg;
brewed tea 40 mg;
herbal teas 0 mg;

(the next are per 12 oz glass)
Coca Cola 45.6;
Jolt 71 mg;
Dr. Pepper 39.6 mg;
Sprite 0 mg;
7UP 0 mg;

semisweet chocolate chips ¼ C 33 mg;
Bakers chocolate 1 ounce 26 mg.

Medications for headaches also tend to contain caffeine or some stimulating ingredients. These include: Excedrin migraine, Dexatrim, Fiorinal, Fioricet. Significant caffeine is also found in weight control aids, alertness aids, allergy and cold remedies, pain relievers, some antihypertensives!

The lesson is to eat a well-rounded diet even as you age. Let your body have the ingredients it needs to remain in balance. Read labels to check ingredients. Don't overdo a good thing.

I would like to add a word of warning regarding supplements. I had a female patient who survived on vitamins and supplements but came in with a host of problems. No sleep was the least of them. Many issues were simply related to overdosing of her mail order supplements. She was experiencing overdoses based on the idea that if one scoop is good, two must be better. Not so! Similarly, it was not unusual for patients to empty their pockets or handbags of supplements, bought in Chinatown. Neither one of us knew what they contained.

Please don't misunderstand. That is not to say that I am opposed to Eastern medicine or herbal products. I use some myself but the key is to know what you are getting, what possible interactions may occur and to manage the dose properly.

Sometimes we can over do or misread some ingredients. A lot of 'energy' supplements have stimulating amino acids or actual thyroid stimulating ingredients that go unnoticed unless you are a chemist! At worst, they may be entirely unlabeled. They are not the way to go, especially as we age and may suffer heart arrhythmias. Don't be fooled.

Worse, many people combine supplements along with their prescription medications, never mentioning this to their physician. That's a bigger problem.

While we are considering what's for dinner tonight, let me also remind you that many older people cannot get out easily to shop or prepare their meals. Many others won't be able to afford their food. So, if you can keep them in mind or better yet, help, it may translate into your more relaxed sleep.