Slide 1
A good night sleep is an essential component of a healthy lifestyle. It affects all aspects of your day...from how you feel, to your relationships, productivity, safety and ultimately, your overall quality of life.

Slide 2
SLEEP, a period of rest and recovery from the demands of wakefulness, is essential for normal human functioning. We spend about one-third of our lives sleeping, a fact that in itself indicates how important sleep is.
Sleep is necessary for normal human functioning and is essential for good health. Why?

Slide 3
While you sleep you're actually hard at work restoring your body. During the deepest stages of sleep, proteins and hormones that repair tissues are released, blood supply to the muscles is increased, metabolic activity slows to facilitate tissue growth and repair, and the release of growth hormone reaches its peak. Growth hormone stimulates the growth and repair of the body's tissues and helps to prevent certain types of cancer.
Natural immune system moderators also increase to promote resistance to viral infections. But what happens if your body is deprived of this important growth and repair time?

Slide 4
Video: How Do You Feel When You Don’t Get Enough Sleep?

Slide 5
Before Thomas Edison's invention of the light bulb, people slept an average of 10 hours a night; today Americans average 6.9 hours of sleep on weeknights and 7.5 hours per night on weekends.
Are modern Americans sleep deprived? Many experts think so. And research shows that SLEEP DEPRIVATION, a lack of sufficient time asleep, impairs physical, emotional and cognitive functioning.

Slide 6
Many of us have experienced some of the emotional effects of sleep deprivation: lower anger threshold, increased irritability, frustration, nervousness and difficulty in handling stress.

Slide 7
The brain's frontal cortex relies on sleep to function effectively and sleep deprivation affects the frontal cortex's ability to control speech, access memory, and solve problems. Recent research has revealed an association between sleep deprivation and poorer grades. This may be because insufficient rest reduces the brain's ability to learn new material.

Slide 8
Studies show that those with severe sleep deprivation score worse on performance and alertness tests that those with a blood alcohol content of .01—legally too drunk to drive. Reaction time, coordination, and judgment are all impaired. Individuals who are sleep deprived may also experience MICROSLEPS, brief episodes of sleep lasting a few seconds at a time, which increase their risk of being involved in accidents. The National Highway Traffic Safety Administration conservatively estimates that 100,000 police-reported crashes are caused by drowsy drivers each year. These crashes result in more than 1,500 fatalities and 71,000 injuries. According to National Sleep Foundation's Sleep in America poll, 51% of Americans said they drove while feeling drowsy in the past year; 17% said they actually dozed off behind the wheel.

Slide 9
Physical health is also negatively affected by sleep deprivation. Adequate rest and a properly functioning immune system are closely related. Sleep deprivation appears to compromise the immune system by altering the blood levels of specialized immune cells, resulting in a greater than normal chance of infections.

Slide 10
More and more scientific studies are showing correlations between insufficient sleep and disease. Recent research has indicated that people who sleep less than 8 hours a night have a higher incidence of hormone-mediated conditions, including diabetes and thyroid disorders.

Blood pressure usually falls during the sleep cycle, however, interrupted sleep can adversely affect this normal decline, leading to hypertension and cardiovascular problems.

Slide 11
A recent study from the University of Bristol in England found that the fewer hours people sleep, the higher their body mass index, a measure of obesity. Researchers found that when compared with study participants who said they sleep 7 to 8 hours a night, people who reported sleeping 5 hours had blood hormone levels of 15% more GHRELIN (which increases feelings of hunger) and 15% less LEPTIN (which suppresses appetite). The study concluded that 8 hours of sleep can help you maintain and even lose weight.

Slide 12
Video: Mike McCammon on exercise and weight

Slide 13
You require different amounts of sleep at different ages. While the majority of adults should spend between eight to nine hours asleep, a small number of people function perfectly well on less.

Slide 14
Do you think you are getting enough sleep? If you feel alert during the day, then you probably are. However, if you often experience daytime drowsiness or if you are sleepy
in sedentary situations such as reading, sitting in class, or watching television, you may be sleep deprived.

Slide 15
Another indicator of sleep deprivation is how long it takes you to fall asleep at night. A well-rested person will need fifteen to twenty minutes to fall asleep. If you fall asleep the instant your head hits the pillow, there is a good chance that you are sleep deprived.

Slide 16
The Epworth Sleepiness Scale is an informal sleep latency test that can help you evaluate how sleepy you are during the day, a key symptom of many sleep disorders.

Slide 17
To evaluate your daytime sleepiness, rate how likely you would be to doze off in the situations listed below
- 0 = would never doze
- 1 = slight chance of dozing
- 2 = moderate chance of dozing
- 3 = high chance of dozing

slide 18
Sleep experts say most adults need approximately 8 hours of sleep each night for optimum performance, health and safety. When we don't get adequate sleep, we accumulate a sleep debt that can be difficult to pay back if it becomes too big. Think of your sleep routine as a piggy bank...for every 16 waking hours you withdraw, you must deposit 8 hours of sleep. Deposits of less than eight hours add to your sleep debt.

Slide 19
Your sleep debt accumulates over time. So if you sleep just 1 hour less than you need every night for a week, you've accumulated a 7 hour sleep debt and may feel like you've been up all night. What if you actually do pull an all-nighter to study for a big exam? Well, you've just built-up an 8-hour sleep debt!

Slide 20
So how do you address this sleep debt? Many college students try to cancel the debt they've built up during the week by sleeping more on the weekends. Experts believe that this course of action can actually worsen sleep deprivation during the week by disrupting sleep structure. A better plan is trying to get the same, sufficient amount of sleep each night and avoid the sleep debt in the first place.

Slide 21
Have you ever considered just why we sleep? What goes on in your body that causes you to enter into this unusual state of consciousness?

Slide 22
Sleep and waking generally occur in accordance with CIRCADIAN RYTHMS, daily 24-hour cycles of physiological and behavioral functioning. Over the course of this daily period, your body undergoes rhythmic changes that help you move from waking to sleep and back to waking.

Slide 23
Circadian rhythms are maintained primarily by two tiny structures in the brain, the SUPRACHIASMATIC NUCLEI (SCN). The SCN is like an internal "biological clock" controlling body temperature and levels of alertness and activity. They also signal the PINEAL GLAND to release MELATONIN, a hormone that increases relaxation and sleepiness, and they signal the pituitary gland to release human growth hormone during sleep, to help repair damaged body tissues.

Slide 24
There are 5 distinct stages of sleep.

Slide 25
The body rests during sleep; however, the brain remains active, gets "recharged," and still controls many body functions including breathing. When we sleep, we typically drift between two sleep states, REM (rapid eye movement) and non-REM. Non-REM sleep is divided into four stages with distinct features, ranging from stage one drowsiness, when one can be easily awakened, to "deep sleep" stages three and four, when awakenings are more difficult and where the most positive and restorative effects of sleep occur. However, even in the deepest non-REM sleep, our minds can still process information. REM sleep is an active sleep where dreams occur, breathing and heart rate increase and become irregular, muscles relax and eyes move back and forth under the eyelids.

Slide 26
During Stage One, you are falling asleep and may actually experience a sensation of falling. Stage One sleep is very light and you can be easily awakened from it. This stage may last from ten seconds to ten minutes.

Slide 27
By Stage Two, both our eye movements and brain waves have slowed. You stop moving in bed. Stage Two lasts about ten to twenty minutes and represents the beginning of actual sleep.

Slide 28
In Stages Three and Four you enter a state of deep sleep. Your blood pressure, heart rate and respiration rate fall. Slow brain waves known as delta waves appear in Stage Three, and dominate brain activity throughout Stage Four. You usually spend about 20 to 40 minutes at a time in deep sleep. After Stage Four, the stages are reversed and the cycle begins again. At the end of the second cycle REM, sleep is added.
Slide 29
During REM sleep, the eyes can be observed darting back and forth under the closed lids. The limbs are temporarily paralyzed, heart rate increases, and blood pressure rises. Your brain wave activity is more like that of a waking state. Once REM sleep ends, we go back through the stages to Stage One, and another cycle that includes REM sleep begins. The entire cycle of stages takes between 90 and 110 minutes. Over the course of the night, stages Three and Four shorten, and rapid eye movement periods lengthen. Before we wake, the cycle is almost entirely composed of stages One, Two and REM sleep.

Slide 30
It is during the REM state that we dream. When you dream, there are periods when you have no muscle tone and except for your eyes, diaphragm, nasal membranes, and erectile tissue, your body cannot move. This state is referred to as REM sleep paralysis. Scientists believe that this temporary paralysis occurs because if you were not immobilized, there is a danger that you would act on-or act out-your dreams.

Slide 31
REM sleep appears to be very important to cognitive functioning. One reason is that it gives the brain the opportunity to "file" important ideas and thoughts in long-term memory. Sleep experts also theorize that creative thinking is more likely to flourish during REM sleep, because we have easier access to memories and emotions.

Slide 32
Once REM sleep ends, we go back through the stages to Stage One, and another cycle that includes REM sleep begins. The entire cycle of stages takes 90 to 110 minutes and typically we experience four or five complete sleep cycles each night. Over the course of the night, deep sleep stages Three and Four shorten, and the REM periods lengthen. Before we wake, the cycle is almost entirely composed of stage Two and REM sleep.
So, typically, we spend almost 50% of our total sleep time in stage 2 sleep, about 20% in REM sleep and the remaining 30% in the other stages.

Slide 33
The sleep cycle changes across the lifespan. Children and young adolescents experience larger quantities of Stage 3 and 4 deep sleep. Older adults experience less deep sleep and REM sleep. They also report more light sleep and wakefulness.

Slide 34
There also gender differences in the sleep cycle. Women experience more deep sleep and men more REM periods.
Approximately 70 million people in the United States are affected by a sleep problem. About 40 million Americans suffer from chronic sleep disorders, and an additional 20-30 million are affected by intermittent sleep-related problems. However, an overwhelming majority of sleep disorders remain undiagnosed and untreated. Sleep deprivation and sleep disorders are estimated to cost Americans over $100 billion annually in lost productivity, medical expenses, sick leave, and property and environmental damage. Sleep problems can interfere with school, work, driving and social activities.

There are more than 70 different sleep disorders. Most of them can be managed successfully once they are diagnosed. Sleep experts divide these disorders into two groups: DYSOMNIAS and PARASOMNIAS.

Dysomnias are sleep disorders associated with difficulty in falling asleep or staying asleep or with excessive sleepiness—the timing, quality, and quantity of sleep. Some of the more common dysomnias are: INSOMNIA, SLEEP APNEA, NARCOLEPSY and RESTLESS LEG SYNDROME.

In a poll conducted by the National Sleep Foundation, 58% of adults reported experiencing one or more clinical symptoms of insomnia including: taking longer than 30 minutes to fall asleep, experiencing five or more awakenings per night, sleeping less than a total of six and a half hours as a result of these awakenings, and/or experiencing less than 15 minutes of deep/slow-wave sleep.

According to the National Sleep Foundation, insomnia can have a variety of causes including stress, medical problems, poor sleep environment, noisy or restless partners, and schedule changes due to travel across time zones or working shifts. Anxiety can also cause insomnia. Often once a person has experienced insomnia he or she may become so distressed by the inability to fall sleep, that sleep itself becomes associated with anxiety and frustration instead of relaxation.

And if you are looking for another good reason not to smoke...heavy smokers often sleep very lightly and have less REM sleep. They also tend to wake up after three or four hours of sleep due to nicotine withdrawal.
Many people who suffer from insomnia try to solve the problem with alcohol. While alcohol may help people fall into light sleep, it also keeps them from having adequate amounts of REM and deep stage sleep.

Slide 43
If you occasionally suffer from insomnia, try these strategies for dealing with it:
- Improve your sleep habits and your sleeping environment. We will be discussing some specific suggestions for doing both later in the presentation.
- You could also try practicing relaxation techniques.

Slide 44
Sleep APNEA is a condition characterized by episodes of non-breathing during sleep. Experts estimate that close to 40% of Americans have some form of sleep apnea and that half of those may have a severe condition. So, millions stop breathing while they are asleep most every night.

Slide 45
In the most common type of sleep apnea, OBSTRUCTIVE SLEEP APNEA, the upper airway becomes blocked during sleep. Those that suffer from this condition are usually overweight and have an excess of bulky soft tissue in the neck and throat. When their muscles relax during sleep, this tissue blocks the airway. The person's breathing pattern is characterized by periods of loud snoring alternating by periods of silence, when they are not breathing. Sometimes the person stops breathing for as long as 60 to 90 seconds at a time. This cycle may be repeated 100's of times a night. From waking up so many times, sleep apnea patients are always sleepy and may even experience personality changes, such as irritability or depression. While the person experiencing the apnea may not be aware of it, their bed partners usually complain about the loud snoring.

Slide 46
Video: Snore?

Slide 47
Obstructive sleep apnea can be a very dangerous condition... sometimes even fatal. It is associated with high blood pressure and can increase the risk of heart disease and stroke. When a person stops breathing, as with obstructive sleep apnea, carbon dioxide levels in the blood rise increasing the likelihood that heart and blood vessel abnormalities may occur. If sufficient oxygen is not delivered to the brain, death may even occur during sleep.

Slide 48
If severe sleep apnea is suspected, sleep specialists can evaluate the patient using POLYSOMNOGRAPHY, which records brain waves, heartbeat, and breathing during an entire night of sleep.

Slide 49
If sleep apnea is not severe several behavioral strategies can be successful in treating it. Probably the one that will have the most impact is losing weight. Others include forgoing alcoholic nightcaps or sedatives, avoiding allergens, not smoking, using a nasal decongestant spray, using a firm pillow and mattress, and not sleeping on your back. In addition, adjustable mouthpieces are available that extend the lower jaw, adding room to the airway.

Slide 50
NARCOLEPSY is a chronic neurological disorder characterized by frequent, irresistible sleep attacks. So this means that someone who has narcolepsy, not managed by medications, may unexpectedly fall asleep while driving, eating dinner or engaged in social activities - or at other times when he or she wants to be awake. About one in 2,000 people suffers from narcolepsy, however nearly 80% of narcolepsy cases are not diagnosed. It affects both men and women of any age, but its symptoms are usually noticed after puberty begins. For the majority of persons with narcolepsy, their first symptoms appear between the ages of 15 and 30. While there is no cure for narcolepsy, symptoms can be lessened with medication.

Slide 51
RESTLESS LEG SYNDROME is a disorder that causes unpleasant crawling, prickling, or tingling sensations in the legs and feet. Symptoms of the disorder include:
An urge to move the legs, often accompanied by uncomfortable sensations in the legs, usually described as a creeping or crawling feeling, but sometimes as a tingling, cramping, burning or just plain pain.
The need to move the legs to relieve the discomfort, by stretching or bending, rubbing the legs, tossing or turning in bed, or getting up and pacing the floor. Moving usually offers some temporary relief of symptoms.
A definite worsening of the discomfort when lying down, especially when you're trying to fall asleep at night, or during other forms of inactivity, including just sitting.
A tendency to experience the most discomfort late in the day and at night. Sleep experts estimate that about 4% of the population have this syndrome. There is no cure, but taking iron and vitamin E supplements may help reduce symptoms. Avoiding late-night alcohol and engaging in moderate exercise are also encouraged.

Slide 52
Whereas DYSOMNIAS involve the timing, quality or quantity of sleep, PARASOMNIAS involve physiological functioning or behavior during sleep. Body systems become activated as if the person were awake. Parasomnias include SLEEPWALKING DISORDER, NOCTURNAL EATING DISORDER, NIGHTMARE DISORDER, REM BEHAVIOR DISORDER, and TEETH GRINDING.

Slide 53
People with SLEEPWALKING DISORDER are aroused out of their deep sleep during motor activity, which usually includes, but is not limited to, walking. A sleepwalker can go back to sleep some place other than bed, depending on how far he or she has walked.
Sleepwalkers are usually unaware of their activity and rarely respond to others in this state. Episodes usually take place during the first third of the night's sleep and typically last less than 10 minutes. For most, sleepwalking begins in childhood and in most cases disappears during adolescence.

Slide 54
Those suffering from NOCTURNAL EATING DISORDER get up out of bed during the night and eat and drink while asleep. They may consume bizarre concoctions or enormous amounts of food. They may binge up to six times a night but have no recollection of the behavior the next day. There doesn't seem to be a relationship between this and other eating disorders such as bulimia or anorexia. Treatment success has been very limited.

Slide 55
A person suffering from NIGHTMARE DISORDER experiences recurrent, vivid, often frightening dreams during REM sleep. Typically, the dreamer awakens from the nightmare fully alert and able to recount the dream. While approximately 50% of very young children experience nightmares, by age 7 most no longer do. Only about 1% of the adult population experiences recurrent nightmares.

Slide 56
In REM BEHAVIOR DISORDER, which occurs most often in older adults, the inhibition of muscle movement that normally occurs during REM sleep does not take place. As a result, people with this disorder act out dramatic and/or violent dreams during rapid eye movement (REM) stage sleep. They are easily awakened and can recount the dream they were having. Medications have not been effective in treating this disorder and sleep experts recommend that the bedroom be structured to protect those with it from injury.

Slide 57
Most commonly occurring in 10 to 20 year olds, nighttime TEETH GRINDING, or "NOCTURNAL BRUXISM" is a movement disorder characterized by grinding or clenching of the teeth during sleep. This condition may cause damaged or sensitive teeth, headaches and jaw pain. Teeth grinders should be fitted with a tooth guard to protect their teeth.

Slide 58
Approximately 40 million Americans experience chronic sleep disorders each year and 20 million more have occasional sleep problems. Sleep disorders and the resulting sleep deprivation can interfere with school, work, driving and social activities. Yes, sleep problems are common and can have very serious consequences; however, they can also be treated. About 15% of adults use a prescription sleep medication and/or an over-the-counter sleep aid to help them sleep.

Slide 59
Video: What Do You Do When You Can't Sleep
The best sleep medications are those that can be safely taken at higher doses, are not addictive, do not produce serious side effects and wear off quickly. Historically, BARIITURATES and BENZODIAZEPINES like Valium were prescribed for sleep problems; however, both had serious side effects including addiction. NON-BENZODIAZEPINES, including IMIDAZOPYRIDINES, are the newest class of sleep medicines. These medications are not addictive and have a short half-life, which means they are eliminated from the body quickly. Because of this, they are not likely to cause daytime sleepiness. They are also "selective," which means they target specific receptors that are thought to be associated with sleep.

Nonprescription, or over-the-counter sleep medicines can be useful for treating short-term insomnia. However, they should not be taken long periods of time. OTC medications usually contain antihistamines which may induce drowsiness that lasts into the next day. Antihistamines can also cause dehydration, agitation and constipation and can interact with other medicines you may be taking.

Alternative products and approaches to sleep problems include herbal products, dietary supplements and aromatherapy. MELATONIN is a dietary supplement that has been widely sold as a sleep aid. it remains controversial in medical circles. Because melatonin (a hormone) is classified as a dietary supplement, it has not undergone the rigorous clinical testing that medicines do. And with insufficient data to support its claims, many experts question melatonin's true effectiveness and safety. VALERIAN is the herbal product most commonly used for insomnia. Others include chamomile, hops, and passionflower. Herbal remedies are generally considered safe; however they can interact with other medications and like melatonin, they have not been tested for effectiveness and safety.

In aromatherapy, certain essential oils, such as jasmine and lavender are used to induce relaxation and sleepiness. There is no strong clinical evidence to support these claims. Like melatonin, these herbal remedies have not undergone extensive testing, so their benefits are unproven. Herbal remedies are generally considered safe; however, there are some that can be harmful under certain circumstances. (Example: You should not use chamomile if you are pregnant or if you are taking blood thinners.)

Approximately 40 million Americans experience chronic sleep disorders each year and 20 million more experience occasional sleep problems. Sleep disorders and the resulting sleep deprivation can interfere with school, work, driving and social activities. Sleep experts agree that there are several important steps to getting a good night's sleep.

Our sleep-wake cycle is regulated by the brain's "CIRCADIAN CLOCK" and the body's need to balance both sleep time and wake time. A regular waking time in the
morning strengthens the circadian function and can help with sleep onset at night. That is also why it is important to keep a regular bedtime and wake-time, even on the weekends when there is the temptation to stay up late and sleep-in the next morning.

Slide 65
Create a sleep environment that includes the conditions you need for sleep - cool, quiet, dark, comfortable and free of interruptions. Sometimes in living situations like a dormitory, you may need to consider using blackout curtains, eye shades, ear plugs, "white noise," humidifiers, fans and other devices.

Slide 66
Caffeine is a stimulant and can remain in the body on average from 3 to 5 hours. Some people feel the effects of caffeine up to 12 hours later. Avoiding caffeine within 6-8 hours of going to bed can greatly improve sleep quality. Nicotine is also a stimulant. Smoking before bed makes it more difficult to fall asleep and when smokers go to sleep, they experience withdrawal symptoms from nicotine, which also cause sleep problems. Nicotine can cause difficulty falling asleep, problems waking in the morning, and may also cause nightmares. While alcohol may speed the beginning of sleep, it actually increases the number of times you awaken in the later half of the night. So if your sleep isn't restful, alcohol could be the cause.

Slide 67
In general, exercising regularly makes it easier to fall asleep and contributes to sounder sleep, but exercising too close to bedtime will make falling asleep more difficult. Exercise makes us more alert and causes our body temperature to rise. It can take as long as six hours for our body temperature to return to normal after exercise. A cooler body temperature is associated with sleep onset, so finish your exercise at least three hours before bedtime. Late afternoon exercise is the perfect way to help you fall asleep at night.

Slide 68
Stress is considered by most sleep experts to be the number one cause of short-term sleeping difficulties. Stress adversely affects sleep patterns by increasing physiological arousal. If stressors from your day keep you awake at night, try keeping a worry book by your bedside and record bothersome thoughts and problems. Once you've written them down, tell yourself you'll work on them during daylight hours and then let go of them.

Slide 69
A relaxing routine bedtime ritual helps separate your sleep time from activities that can cause excitement, stress or anxiety which can make it more difficult to fall asleep or remain asleep. Some studies suggest that soaking in hot water (such as a hot tub or bath) before retiring to bed can ease the transition into deeper sleep. Reading and listening to soothing music are also effective. The point is to establish a ritual that encourages your mind and body to associate bedtime with relaxation and peacefulness. Finally, avoid exposure to bright light before bedtime
because it signals the neurons that help control the sleep-wake cycle that it is time to awaken, not to sleep.

Slide 70
Video: What Are Your Bedtime Rituals

Slide 71
It is best to avoid a heavy meal too close to bedtime because too much food can make you feel less comfortable when trying to fall asleep. Also, spicy foods may cause heartburn, which leads to difficulty falling asleep and discomfort during the night. Try to restrict fluids close to bedtime to prevent nighttime awakenings to go to the bathroom, though some people find milk or herbal, non-caffeinated teas to be soothing and a helpful part of a bedtime routine.

Slide 72
Naps of 15 to 45 minutes can be refreshing and restorative; however, if you nap longer than 45 minutes your body is able to enter stage 4 deep sleep. It is more difficult to awake from this stage, and you are more likely to feel groggy. The only exception to this advice is a "preventive nap." Research suggests that if you know you are going to bed later than usual, you can take a 2 - 3 hour "preventive nap" and actually increase your level of alertness by about 30% over those who don't nap.

Slide 73
Video: What About Naps?

Slide 74
Sometimes sharing a bed with someone can wreak havoc on your own sleep. According to a recent Harris poll of adult Americans who share a bed with a partner, approximately one-in-four reported that their partners’ sleep habits interfere with their own sleep. The leading reasons for sleep loss attributed to a bedmate were snoring (34%), tossing and turning (15%), insomnia (14%), hogging the mattress or covers (14%), staying up late watching television, using a computer, or reading (11%). Encourage an annoying bed partner to improve his or her sleep habits or to see a sleep disorder specialist. If all else fails, you or your partner may need to sleep in a different bed or room.

Slide 75
Video: Sleeping Partners