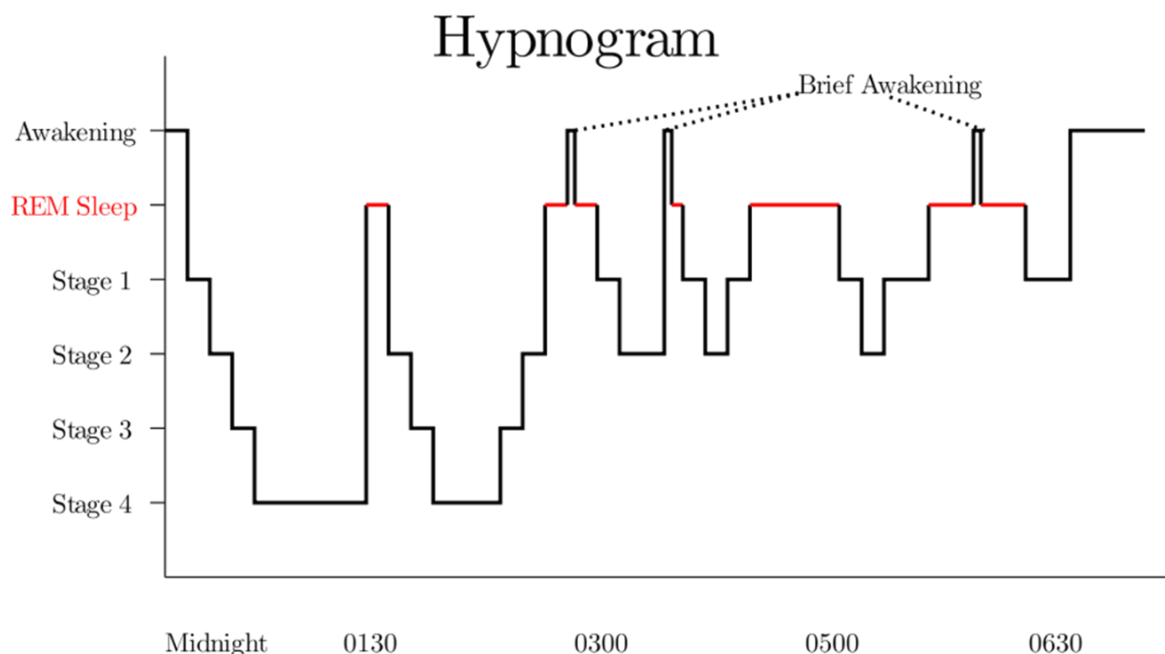


11.4.2

Sleep

One of the mysteries of science is why we have to sleep. Several theories have been proposed as to why we sleep. Some of the more probable include: 1) When one sleeps, they are not as likely to be seen and hunted by predators. 2) It may be a way of conserving energy. 3) It may allow the body to repair itself and/or recover from intense activities. 4) Sleep may allow the brain to work through emotional events and helps to eliminate accidental, repetitions and meaningless communications that have occurred throughout the day. 5) It may give the brain the opportunity to archive and store important memories and discard unnecessary ones. All of these are possible benefits and reasons for sleep, however, we really don't know exactly why we have to sleep. William Dement, a pioneer in sleep research and founder of Stanford's Sleep research center summed up why we sleep as follows, "As far as I know, the only reason we need to sleep that is really, really solid is because we get tired."

Let's examine what we know about sleep. There are two different kinds of sleep: rapid eye movement (REM) sleep and non-REM (NREM) sleep. In addition, NREM sleep can be divided into four stages (stages 1-4). In young healthy adults that sleep regularly (probably those who live alone or got married young) a typical night's sleep starts with NREM sleep, passing through all 4 stages and then quickly reverts to REM sleep. The stages of sleep will then alternate between REM and NREM throughout the night. The cycle of REM sleep occurs about every 90 minutes. Each time REM sleep is reached it lasts a little longer. For instance, the first REM stage lasts about 5 to 10 minutes and the final REM stage can last up to an hour.



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The different stages of sleep are marked by changing patterns of the EEG. During stage 1, 2 and 3 of NREM (light sleep), the predominant brain waves are theta waves (4-7 Hz). In Stage 4 (Deep Sleep) delta waves (.5-4 Hz) predominate and vital signs are at their lowest. This is the stage where sleep walking and night terrors occur. The normal progression takes about 30-45 minutes to reach this stage of deep sleep.

Upon reaching stage 4 sleep we cycle back to enter the phase of REM sleep. It is during this phase that we have our most vivid dreams. Also during REM sleep skeletal muscles are paralyzed (probably so that we don't act out our dreams) except for eye movements. Heart rate and respiration also increase and the brain uses even more oxygen than during the awake state.

So, do we really need to sleep? Well, individuals that do not get REM sleep become moody, depressed and even exhibit various types of personality disorders. (Does that sound like one of your roommates?) Some sleep medications increase NREM sleep but can actually decrease REM sleep, worsening their condition and potentially increasing their risk for developing other health problems. I like what Freud says about dreaming – that we are able to act out behaviors we wouldn't do while awake and to work through and resolve anxieties and fears.

And how much sleep do we need? Although we don't have a definitive answer, we do know that sleep requirements change with age and other factors. For example, infants require 16 hours while adults need 7-9 hours.

Despite the fact that we still don't understand the exact role of sleep there have been numerous scientific studies focused on sleep that show a correlation between inadequate sleep and various health conditions, including:

- Alzheimer's Disease
- Depression
- Anxiety
- Heart Disease
- Hormone Imbalances
- Immune Suppression
- Cancer
- Glucose Intolerance
- Many others

In 2007 Jeffrey R Holland said, "No misfortune is so bad that whining about it won't make it worse." (April 2007 General Conference) Sleep seems to be so important that we could modify that statement to state that no illness is so bad that poor sleep won't make it worse! Future studies will help us understand the relationship between sleep and wellness but the evidence certainly shows that sleep is one of the most important pillars of health! This is troubling in light of data showing that in 1942 the average American adult slept for 7.5 hours compared to 6.5 hours today. To wake up, neurons in the reticular formation begin to release chemicals that begin to arouse the cortex. As stated earlier, caffeine stimulates the reticular formation giving a jump start to the system. It does this by blocking adenosine receptors and thus preventing drowsiness. As a result, 68 million people in the US have a cup of coffee within one hour of waking up. The alternative is to sleep consistently so that the body develops its own natural "wake up" cycle.



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