



# ADOLESCENT SLEEP

A WHITE PAPER ON TEEN SLEEP ISSUES

Compiled by  
MICHAEL SCOTT  
Research Consultant

Submitted: October 13, 2009

REFERENCE: SIMPLE TRUTHS  
Kevin Guest, Executive Vice President  
USANA CORPORATION

## **PART I: THE HOME AND ADOLESCENT SLEEP**

The objective of this white paper is to provide insight through preliminary research on the issues concerning "The Home and Adolescent Sleep". Obviously, there are many ways to handle this robust subject matter, but keeping in step with the basis of SIMPLE TRUTHS the goal is to first look into the home and identify elements that create unhealthy life patterns that translate directly into unhealthy cells, in this case the issues surrounding Adolescent Sleep. Once these home-based supportive contagions are isolated then we can begin to reverse the harmful patterns, live right, supplement our lifestyle with the proper vitamin supplements and live longer and happier lives.

Let us start with a basic premise: The foundation of the home is the support of the family. Within the family are living things such as parents, maybe grandparents, relatives and friends that come and visit, a few pets and, of course, the children. The children are the most vibrant component of the home, because of the astounding levels of growth and change occurring in a very short period of time.

The basics of sleep and the home has already been covered in the first chapter of SIMPLE TRUTHS, but when we look at the changes that take place in our children the subject becomes more complex. The nature of sleep actually changes physiologically from childhood to adolescence, and then from adolescence to adulthood. Sleep itself takes on a different dynamic biologically as well as from external conditions existing in and around the home.

One of the most obvious transitions in the teenager is their sleep patterns. The child that once woke up at the crack of dawn, staring at their parent's closed sleepy eyes, now becomes impossible to wake before noon, sleepy through the early day, only to become wide eyed and bushy tailed in the late evening hours. All that is well and good, but we have to ask ourselves, what part of the teen sleep pattern is biological, and therefore unavoidable, and what parts do the home and our social patterns play in the overall conditions of the adolescent sleep pattern.

Studies show that adolescents need 9 hours and 15 minutes of sleep compared to children that need 10 hours and adults that need 8 1/4 hours. As we have discussed, everyone has an internal clock that influences body temperature, sleep cycles, appetite and hormonal changes. The biological and

psychological processes that follow the cycle of this 24-hour internal clock are called circadian rhythms. Before adolescence, these circadian rhythms direct most children to naturally fall asleep around 8 or 9 p.m. However, puberty changes a teen's internal clock, delaying the time he or she starts feeling sleepy — often until 11 p.m. or later.

In fact, adolescents are experiencing a "phase shift" during puberty, falling asleep later at night than do younger children. Researchers long assumed that this shift was driven by psychosocial factors such as social activities, academic pressures, evening jobs and television and Internet use. In the past several years, however, sleep experts have learned that biology also plays a starring role in adolescents' changing sleep patterns and that the brain's circadian timing system--controlled mainly by melatonin--switches on later at night as pubertal development progresses.

Another possible change in the teen is that the brain's sensitivity to light changes during adolescence and exposure to even very dim lighting delays melatonin secretion for participants who were in middle or late puberty, but not for pre-pubertal participants.

As a result, it is common for many teenagers to lay awake at night and then sleep until the mid-afternoon during the weekends. Despite the increasing need for sleep, many adolescents are actually getting less and less sleep and, in turn, produce a potentially destructive pattern of early-morning sleepiness in teen-agers. More than 90 percent of teens in a recent study reported sleeping less than the recommended nine hours a night. In the same study, 10 percent of teens reported sleeping less than six hours a night.

## **PART II: GETTING UP FOR THE SCHOOL BELL**

One of the most important aspects of home life is to educate our children. Yet, going to school can be one of the major obstacles in teens getting the appropriate amount of sleep. The culprit seems to be the early starting time of schools.

Every day many adolescents across the nation are asked to get up at 6:30 a.m. to catch the school bus before 7:00 a.m. to get to the start of their classes at 7:30 a.m. As adults we are very aware of how the lack of sleep affects our work day. Yet, because adolescents are biologically driven to sleep longer and later than

adults, the effects of insufficient sleep are likely to be even more dramatic--so much so that some sleep experts contend that the nation's early high-school start times, increasingly common, are tantamount to abuse. In fact studies have shown that when school began at 7:20 a.m. that students were "pathologically sleepy" at 8:30, falling directly into REM sleep in an average of only 3.4 minutes--a pattern similar to what is seen in patients with narcolepsy.

With their circadian rhythm, or biological clock, in conflict with the school bell, many disastrous results follow fatigue at the start of the school day. Too many teens come to school too sleepy. This can impair memory and inhibit creativity to learn, and their fatigue often leads to behavior problems that contribute to a negative overall school performance and experience. As teens begin to cope with stress and controlling emotion, sleep deprivation makes it difficult, causing irritability, lack of self-confidence, mood swings and depression. In addition, not enough sleep can endanger their immune system and make them more susceptible to serious illnesses. Add to this the busy schedules of the teen such as extra-curricular activities and after school jobs, and the problems begin to escalate geometrically. On the other side of the issue, students who reported that they were getting C's, D's and F's in school obtained about 25 minutes less sleep and went to bed about 40 minutes later than students who reported they were getting A's and B's. Change at home can make a difference.

### **PART III: TECHNOLOGY, JUNK FOOD & JUNK SLEEP**

One of the most intriguing subjects facing our children and the home is the emergence of the electronic device. Every home has TV's, if not one in every room. Every home has at least one computer supposedly to help students study, although the actual usage is suspect. A cell phone is not a luxury, but a deeply embedded necessity in every teenager's life. It is difficult to imagine a teenager that does not communicate with their peers through texting, hand held gaming devices, cell phones, emails, MP3 players, Twitter, Facebook or YouTube. Digital downloads, access to a plethora of free content on the Internet, wireless communications all start with the miracle of technology found in every home. Yet, rarely do we ask ourselves what are the usage consequences of these devices on adolescent sleep.

First, here are some simple facts. Watching television is the most popular activity (76%) for adolescents in the hour before bedtime, while surfing the internet/instant-messaging (44%) and talking on the phone (40%) are close behind. Boys are more likely to play video games (40%) while girls are more likely to talk on the

phone (51%) in that time. Nearly all adolescents (97%) have at least one electronic item - such as a television, computer, phone or music device - in their bedroom. On average, 6th-graders have more than two of these items in their bedroom, while 12th-graders have about four. Yet, teens with four or more electronic devices in their bedrooms were more likely to get an insufficient amount of sleep. The term to describe this phenomenon coming into vogue is called “junk sleep”

Many teenagers sleep with their cell phones under their pillow just in case a friend calls or text messages them in the middle of the night. Many teens fall asleep with the TV blaring and it is a common practice among kids to surf the Net into the late hours while their parents are sound asleep. In fact, even adults complain about 24/7 access from work, relatives and friends as an intrusion into private time. The impact on teens does not even compare to what adults face. Technology gadgets are one of the biggest distractions in a teen’s life and one of the major reasons they do not go to bed earlier, regardless if they tell you it is the demanding homework.

At night, the lights from these devices trick the brain into thinking its daytime. Cell phones tucked under the pillow may be causing untold damage to brain cells and the constant interruption and anticipation distracts the teenager from much needed sleep. All these affects, in addition to the biological issues, invade the adolescent’s sleep pattern and may suppress the production of melatonin.

Some of the blame goes to the technology industry with unlimited text-messaging services, free digital downloads, and the fact that the phone is no longer just a communication device. It carries games, it facilitates research, it organizes schedules, acts as a video camera, alarm clock, calculator, and all around boredom quencher.

There is also a socio-psychological aspect to devices: they make people feel connected, networked, part of belonging to a group, that is always important to adolescents. In fact, the modern teen finds the idea of someone “not being connected” abhorrent, with an implied expectation that everyone “must be connected” at all times as part of normal social interaction.

The teens with the highest use of technologies after 9 pm were more likely to have decreased amount of sleep, higher incidence of falling asleep in school and increased caffeine intake. Teens that had an average of 8-10 hours of sleep per night were 1.5-2 times less likely to report multitasking technologies. About 33%

of all participating teens reported falling asleep during school, and 76% of those teens had higher rates of caffeine consumption compared to teens that did not report falling asleep during school hours.

Teens have always been fans of sugar-based drinks such as Coca Cola. However, with the advent of “Energy Drinks”, caffeine is becoming part of every teen’s mainstay diet, and everyone knows what caffeine will do to sleep. Add potato chips, fries, sodas, sugar foods, and a healthy dose of fast food morning, noon and night and it is not surprising that teens are heaping trouble onto their biological based sleeping problems.

Too much sedentary time, digital devices, TV and poor exercise habits fuel the obesity pandemic among adolescents around the world. Yet, studies also suggest that the poor sleep habits also contribute to the problem of obesity. More and more the life-style choices young people are making become an endless loop with catastrophic health consequences. Add drugs and alcohol to the mix and the affect to the brain’s sleep system are dismal at best.

#### **PART IV: CONCLUSION**

In conclusion, it is difficult to avoid the obvious fact that our teenagers are under assault on many fronts of their lives and we, as parents, teachers, adults and a social community are not doing enough to change the situation. The problem begins with biological changes that become exacerbated with the starting of school, the advent of digital technology and cell phones and the modern fast food diet. Our teens are taking the brunt of the onslaught, but more importantly, their sleep is suffering the most of all. Sleep deprivation lowers immune systems, increases the chances of obesity, creates psychological and mental problems and shortens the chances of living a healthy life. The good news is that most of the solutions can be found in the home, that is, with good parenting, a better choice of diet, guidelines for digital device usage and behavioral parameters to help the adolescent meet their basic sleep requirements.

Michael Scott  
Research Consultant  
925-600-1300  
[producer@xlrq.com](mailto:producer@xlrq.com)