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Educators hear the ticking of sleepy teens' body clocks

By **CHRISTOPHER CASKEY**
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SACRAMENTO, Calif. -- Jennifer Stayner rolls out of bed every weekday morning at 6, downing a bowl of cereal and rushing to make the bus by 6:50 a.m. for a half-hour commute, all to be at Pleasant Grove High with time to spare before her 8 a.m. class.



Like many teens, Jennifer might not get to sleep before 11 p.m. And like most of her peers, she isn't getting the sleep that experts say she needs.

"I go to sleep kind of late," she said, "because then I'll actually be ready to sleep."

Teens and parents know the drill: Once children reach adolescence, it can become more difficult to get them to bed early, and sometimes even more difficult to drag them out of bed in time for school.

Is it laziness? Pushing the limits?

Research indicates that it's actually biological, something teens can't control: With the onset of puberty, teenagers go to bed later and need to sleep later than children and adults.

Sleep research has led high schools in Minnesota to start classes later, and if a Bay Area mother has her way, Palo Alto schools will consider a similar move. Nearby, the Lodi Unified School District thought hard about it, too, but decided that changing start times would cost millions of dollars.

All point to research that has found teens are chronically tired -- putting them at risk for depression, poor school performance and even car accidents. One sleep expert urges schools to start no earlier than 8 a.m., and ideally, as close to 9 a.m. as possible.

"The average American adolescent is sleep-deprived," said psychologist David Walsh, who explores the effects of teens' sleeplessness in his book *WHY Do They Act That Way?: A Survival Guide to the Adolescent Brain for You and Your Teen* (Free Press, \$23, 288 pages.)

"Many kids are literally dragging themselves to school half-asleep. They are very sleepy during first, second, maybe even into the third period of the day."

Sleepiness is closely tied to the brain's release of a hormone called melatonin. Numerous sleep studies have found that during puberty, the brain naturally begins to release melatonin later than it does during childhood or adulthood.

The "central circadian pacemaker" is science's term for your body's biological clock. It is responsible for setting your daily rhythms, which include when you go to sleep and wake up. For normal adults, melatonin begins to be released around 9 p.m.

Through several studies in the 1990s, sleep expert Mary Carskadon found that when young people reach puberty, they experience a "phase delay" in their circadian timing. It is as if their inner clocks have been set back; their brain can release melatonin as late as 11 p.m.

But late to bed also means late to rise, and the teen-age brain will continue to release melatonin until 8 a.m. or later. With schools starting sometimes as early as 7:20 a.m., teens are often waking up when their bodies are supposed to be sleeping, Walsh said.

Even though experts say teen-agers still need 8.5 to 9.5 hours of sleep, the average teen in the United States

gets little more than seven hours, according to the National Sleep Foundation.

Mandy Carrillo gets even less sleep than average. The 17-year-old senior at Sacramento New Technology High School wakes up at 6:30 a.m. to be on time for her 7:45 class. Between activities such as serving as a student board member for the Sacramento City Unified School District, along with homework and family time, Carrillo is usually in bed by midnight.

She says she is alert during her morning classes but often will "just crash" if she has any down time in the afternoon.

"My internal clock is totally fouled up," Carrillo said. "My sleep schedule is so out there that I don't even know if it's daytime or nighttime."

Sleep deprivation can cause difficulty concentrating, depression, irritability, and learning and memory difficulties, according to the National Sleep Foundation. Because of the physical and emotional changes during adolescence, its effects can be magnified with teen-agers and lead to poor school performance, negative moods, impaired social interaction and an increased likelihood of using alcohol and other substances.

"It's a more vulnerable period of time because of the intensity of the cognitive and emotional changes that occur in adolescents," said Amy Wolfson, sleep researcher and associate psychology professor at College of the Holy Cross in Massachusetts. "If you have adolescents that are sleep-deprived, it may affect the way they feel about themselves."

And the effects of sleeplessness in adolescents can go beyond feelings and grades, becoming life-threatening when teens get behind the wheel. According to the National Highway Traffic Safety Administration, people ages 16 to 29 are more likely to be involved in fall-asleep crashes than older drivers.

Many in the sleep-research community find early school start times, when paired with the natural sleep delay, to be a major factor in this chronic teen-age sleep deprivation. In a 1999 study called "Sleep Schedules and Daytime Functioning in Adolescents," Wolfson made a direct link between school start times and sleeplessness in teens.

"Teen-agers who start school at 7:30 a.m. or earlier obtain less total sleep due to their early rise time," the study said.

Wolfson encourages schools to start between 8 and 9 a.m., although she said that any shift toward later start times is a good step.

Similar sleep studies, many of which were conducted in the early 1990s, have been making the same connection between school start times and teen-age sleepiness. And because of this, school districts across the nation have looked at the possibility of starting their high schools and middle schools up to an hour later. A handful of districts have even done it.

The Minneapolis Public School District changed its high school start times from 7:15 to 8:30 a.m. in 1997.

"We've seen an improvement," said Associate Superintendent Craig Vana, who was principal at Edison High School in Minneapolis at the time of the change. "We don't have kids coming to school so early that they can't function."

And statistics support Vana's observations. The Center for Applied Research and Educational Improvement at the University of Minnesota conducted a study of the effects of the new start times in Minneapolis. The study found that the extra hour of sleep resulted in higher attendance rates, fewer students dropping out and a significant decrease in the amount of reported depression.

"We had counselors and school nurses seeking us out to say that they had less students self-referring themselves for counseling and peer relationship problems," said Kyla L. Wahlstrom of the center, who worked on the study. "[Students] felt like they were awake and part of life instead of sleeplessly wandering through the day."

But a complete shift in high school and middle school start times is a major undertaking for a district, and some local schools have opted to continue with current start times after evaluating the cost.

Money aside, parents and students commonly are in favor of later start times, although some worry about extracurricular activities, including sports and after-school jobs.

Even though Linda Kirkland's teen-age daughters are involved in sports at Kennedy High School in Sacramento, she would not mind seeing the school start a little later than its current 8:15 a.m. When Kirkland was in high school, her school hours went from 10 a.m. to 4 p.m., which worked well for her.

"During the year, even if they start practice at 4 p.m., they'll be done before dark," Kirkland said.

Craig Vana noted that similar objections were voiced by coaches and parents when the changes were brought up in the Minneapolis schools, but the attitudes changed when they saw the positive effects.

Sources: National Sleep Foundation, National Highway Traffic Safety Administration, Center for Applied Research and Educational Improvement

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