

## The Great Awakening?

A complete picture of overall sleep quality can help patients and clinicians alike to better treat sleep disorders in what is shaping up as an era of sleep awareness.

The year 2013 may ultimately become known as the year that consumers and medical specialists of all stripes started truly paying attention to sleep. High profile studies, plus an avalanche of consumer articles, seemed to signal a new awakening. These days, the logical question is: What aspect of health is not affected by poor sleep?

David Baker, president and CEO of Colorado-based SleepImage, has examined ways to analyze sleep for more than 20 years—a time that included a lengthy stint as CEO of the largest sleep diagnostics company in the world. For Baker, the question of overall sleep quality is crucial, because sleep docs can't treat what they can't measure.

Providing that elusive complete sleep picture, within a small physical framework, is the goal of the SleepImage. As a simple, low-cost, and objective way to measure sleep quality, Baker believes SleepImage fits the bill—and members of the medical community are increasingly getting the message.

Enthusiasm among so-called “integrative docs” has been particularly high, with MDs, DCs, and other complementary practitioners embracing the notion that good sleep matters to overall

health. “They really understand what SleepImage can do for their patients,” says Baker, an engineer by trade who many know as the former CEO of embla®. “These docs know that patients will pay for a test to look at overall sleep quality.”

That stable of “complementary” practitioners is growing to include dentists, who are dispensing oral sleep appliances. These practitioners want to provide patients with an astute assessment, and SleepImage could be the perfect choice. “We are getting a lot more interest from dentists recently,” reports Baker. “They are seeing that the value in understanding the extent to which sleep apnea is impacting sleep quality in addition to other underlying issues. They can fix the OSA to make the patient

the oral appliance, dentists can monitor patients' sleep quality with SleepImage,” explains Baker. “They can adjust patients to the appropriate titration, then test them again on a regular 6 month cycle, much like any regular dental exam, the dentist can now check the oral appliance for benefit, rather than just compliance.”

### CPC Makes its Case

With low cost and reduced setup times, SleepImage's proprietary cardiopulmonary coupling (CPC) technology measures sleep quality through breathing and heart rate patterns known to control stable, healthy sleep. During healthy sleep, the heartbeat slows down and speeds up in tune with regular respiration.

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sleep better, but of there are other issues, they can be addressed instead of the patient just thinking the Oral Appliance isn't helping.”

While SleepImage cannot yet officially justify an oral appliance for patients, dentists could use the device to titrate patients and determine optimal advancement of the lower mandible. “Over a period of time, after the fitting of

Unhealthy and unstable sleep is evident when the heart rate and respiratory rate are not in tune with one another. SleepImage measures the frequency at which CPC occurs and displays this information in a simple graph that gives clinicians an “Image” of a patients' sleep quality. The system also generates a single number called the Sleep Quality Index® (SQI).

"We can see the sensitivity of SleepImage when looking at changes in sleep quality within one or two centimeters of pressure on a CPAP, or mm of advancement on an oral appliance," explains Baker. "And with SleepImage's ease of use, and reasonable cost, we can identify a larger number of patients with sleep issues." Baker has seen the industry evolve and expand with renewed awareness, and he believes the burgeoning occupational health market may well serve to offer more opportunity for sleep docs and sleep lab directors looking to bring in more patients. "We have completed a study for a large manufacturer that showed that intervening with sleep treatments, from light therapy to better sleep hygiene, has a significant benefit to various types of shift workers," says Baker. "It was only a pilot, but we hope the results will lead to others looking at sleep as more than just one disorder. It's not just the overweight obese driver that is going to cause an accident, it's the skinny guy who has chronic back pain, or PLMs, or insomnia that cannot sleep who is probably more statistically likely to have a workplace accident."

### Identifying the Problem

Ultimately, SleepImage uses CPC to identify potential problems. After therapy, it tells clinicians how patients are responding to treatment. This capability is designed to move the device beyond a sleep monitor to the realm of health monitor.

"If you want to really understand a patient's health, the best way of doing that is through sleep," muses Baker. "The way I look at it is that if you are awake, you are driven by external stimuli that make monitoring or testing for a health problem very difficult, but when you're asleep, the external stimuli are no longer there and your body will react to these health issues in a way that is far easier to objectively measure and monitor over time."

With the raw data available and attainable, the worlds of occupational health, and even sports medicine, are potentially brought into the fold. "In sports medicine, if we can improve an athlete's sleep by 5%, does that reduce his time to run a mile by one second, which can be huge?" asks Baker. We are seeing more sports teams embrace sleep as a significant factor in performance, at the moment it is revolving (like everything else in sleep) around Apnea, but most athletes don't look like a line-backer, but do have issues from anxiety or pain or just would benefit from knowing the optimal time for them to sleep.

"This device does not disrupt sleep the same way most other recorders do," continues Baker. "You can put it on patients and they simply don't know it's there. It's the ideal tool to measure real sleep without the encumbrances of cables, boxes and tubes that must impact the very sleep they are trying to measure This is especially relevant to pediatric or special needs patients.

### What is SleepImage?

What is "good" sleep? For the sleep specialist, good sleep might be defined as sleep with high efficiency, normal sleep architecture and the absence of sleep disruptions. For the patient, good sleep is waking up feeling refreshed. This vague description of sleep is directly associated with the subjective way in which sleep has been measured in the past. Unlike other aspects of our health, such as temperature, blood pressure, or weight, we could not objectively measure sleep - until now.

Now there is a simple and easy way to measure "sleep quality" at home that identifies how well we sleep. This new measure of sleep was developed by Dr. Robert Thomas and colleagues at the Beth Israel Deaconess Medical Center, an affiliate of the Harvard Medical School, is called cardio pulmonary coupling, and it is now available exclusively with the SleepImage system.

### SleepImage

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