

Fighting the epidemic of fatigue



Treating sleep as a critical part of health and wellness

Sleeplessness in the United States has reached epidemic levels.

For millions of Americans, the forces of fatigue conspire against them every day in ways that make life unhealthy, dangerous and costly. Researchers today link a lack of sleep to a higher risk of weight gain, diabetes, depression and anxiety. Fatigue causes more than 328,000 traffic accidents each year, resulting in more than 109,000 injuries and 6,400 deaths.¹ Insomnia alone costs the U.S. economy \$63.2 billion annually in lost productivity, and sleep-deprived workers face lower earnings, loss of cognitive ability and lower job performance.²

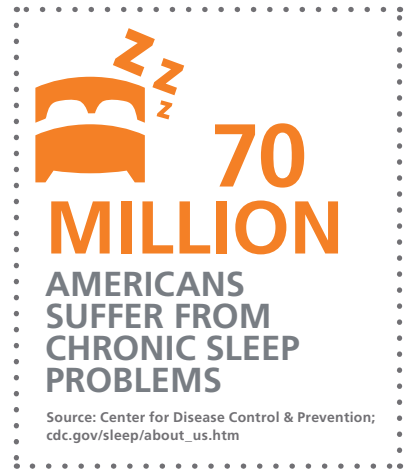
Fortunately, important advances in sleep health screening, diagnosis and treatment mean that employers have options available for addressing their employees' sleep deficits. Indeed, failing to do so not only poses risks to their employees' safety and health but also to their organizations' ability to thrive.

Our struggle with sleep

Obesity, diabetes, hypertension, cardiovascular disease, depression and other chronic health conditions sparked a wellness and disease management movement among employers and the health care community. As a result, we've seen innovations in benefits plans, wellness programs, incentives and preventive care. The epidemic of insufficient sleep, however, has gone mostly unnoticed — except by those suffering its effects. And in some cases, even *they* don't notice or take action.

An estimated 50–70 million Americans experience chronic sleep problems but are too seldom diagnosed or effectively treated.³ Sleep apnea, for example, affects approximately one in 12 employees, but fewer than 18% of them will be diagnosed.⁴ The consequences are significant and can be deadly.

The risks to workplace and transportation safety have been widely reported. According to *The Price of Fatigue*, a study by the Harvard Medical School and McKinsey Company, the costs of traffic accidents due to sleep apnea run from \$10 billion to \$40 billion on an annual basis, and every year, high-profile accidents involving sleep-deprived transportation workers and motorists cost hundreds of lives.⁵



While tragedies generate headlines, many of the other costs — and a full accounting of the toll associated with poor sleep health — remain largely unrecognized. These include findings that those suffering from sleep apnea are far more likely to develop an increased risk of stroke, diabetes, heart disease and even arthritis. Weight gain and bone density loss are also linked to sleep loss and fatigue.⁶

Employers also bear a burden, although some may not realize it. Studies show that sleeplessness can lead to higher health care costs, increased absenteeism, higher risk of accidents and measurable productivity losses. In fact, an employer may incur \$3,200 to \$4,000 in incremental health care costs for employees with sleep apnea, and insomnia alone is estimated to drive approximately \$2,000 in annual health care, prescription and disability-related costs.⁷



Reversing the epidemic requires a new approach that views sleep as one of three pillars of personal health and wellness — right beside nutrition and exercise. This paper outlines an effective approach to sleep health that incorporates the best practices of both prevention and disease management, addresses individual habits and behavior, and works across the health delivery system. Such an approach is urgently needed to combat a situation that drives costs and adversely influences the lives of millions of Americans.

Wake-up call: The growing prevalence and impact of fatigue and sleep disorders

A number of factors work against people trying to get a good night's sleep. These include individual bedtime habits, caffeine intake, use of electronic devices, the demands of family and stressful or disruptive life events.

Other sources of sleeplessness, however, are more deeply ingrained in a culture that celebrates sacrificing sleep for work, family, socializing and public service. For example, the sleep habits of celebrities, U.S. presidents and world leaders are often analyzed for the effect of their behavior on accomplishments and career success.

Winston Churchill famously slept in short bursts around the clock in his command bunker during World War II. Margaret Thatcher reportedly slept four hours each night, while former Italian prime minister Silvio Berlusconi requires as little as two. Over the years, media and pop-culture attention to examples like these often highlighted the message that the way to achieve more is to sleep less.⁸

Yet everyone has different sleep requirements, and the science is clear that most people require upwards of seven hours of sleep per night. The message that gets lost is that sleep is essential to individual health and wellness. When people suffer from lack of sleep or interruptions of restful sleep, the consequences can be unpleasant, harmful and even deadly.

Performance impact and productivity loss

Researchers and medical professionals harbor little doubt that sleep deprivation affects job performance.⁹

In one study, researchers gave business tasks in the form of a game to a group of healthy, sleep-deprived individuals. They found that the participants were able to keep up with simple tasks, but when the game's assignments became more complex, their play "collapsed."¹⁰

Sleep loss also affects productivity: employees with unmanaged sleep apnea were six times more likely to miss a full day of work and five times more likely to miss a partial day. One study found that an insomniac's decline in work performance — even while on the job — could equal 11.3 days of missed work. When generalized to the U.S. workforce, this accounts for \$63.2 billion in lost productivity.¹¹



SLEEP IS MONEY

In a University of California study, among those who slept too little, a one-hour increase in average sleep time increased their wages by 16% — equivalent to more than a year of schooling.

Source: Arends B. "A Full night's sleep can really pay off," *Wall Street Journal*, September 18, 2014.



Top three sleep disorders

SLEEP APNEA
Sleep apnea is an obstruction of the airway during sleep, which starves the body of oxygen and results in sudden awakening. A major cause of fatigue that is often linked to other chronic conditions, sleep apnea affects an estimated 18 million Americans.

RESTLESS LEG SYNDROME
Known as RLS, sufferers of this condition experience an irresistible urge to move their legs, which often carries over into sleep and causes sleep disruption. RLS affects about 10% of the U.S. population.

INSOMNIA
Defined as persistent difficulty in falling asleep and/or staying asleep, insomnia affects 20% to 40% of U.S. adults in any given year.

Source: CDC

Interestingly enough, productivity was mostly lost on days when workers were on the job rather than off work. In 2011, an analysis of the American Insomnia Survey found that sleep-deprived workers generally put in the same number of work hours as their more rested peers, but their on-the-job performance was lower. The result for these sleep-deprived workers was the equivalent of \$726 of direct salary lost each year.¹²

The tragic consequences of fatigue

Perhaps the most tragic consequences of sleeplessness are fatalities associated with transportation accidents.

A study by the AAA Foundation for Traffic safety found that 21% of all highway crashes from 2009 to 2013 in which a person was killed involved a drowsy driver, and 13% of crashes caused by drowsy driving resulted in a hospitalization. The Foundation concludes that drowsy driving is a likely contributor to a national average of 328,000 crashes each year, 109,000 of which result in injury and 6,400 that cause fatalities.¹³

The U.S. Department of Transportation’s Task Force on Pulmonary Disorders and Commercial Drivers calls sleep apnea an important preventable cause of motor vehicle accidents. The disorder is likely to blame for other transportation mishaps as well. Fatigue is repeatedly cited as a factor in deadly rail, aircraft and maritime accidents, which have also accounted for millions of dollars in legal judgments.^{14,15} According to the Harvard Medical School study, non-motor vehicle workplace accidents nationwide associated with sleep apnea cost \$5 billion to \$20 billion each year.¹⁶

In certain careers, fatigue is often considered part of the job. The response has been an increasing reliance on technologies that alert drivers and operators when they are about to nod off. While these devices will undoubtedly save lives, they do not address the root problem of chronic sleeplessness.

Impact on health and link to chronic conditions

As workplace wellness programs grow in popularity, addressing sleep with a similar management and preventative approach is a natural evolution. Lack of sleep and sleep disorders have been linked with an increasing number of chronic conditions, from obesity to depression to osteoporosis. In addition, the effective treatment of sleep disorders has been credited with improving the health of those with chronic conditions.

The examples are widespread. A 2013 Centers for Disease Control and Prevention (CDC) study found that those sleeping fewer than six hours per night “reported a higher prevalence of coronary heart disease, stroke and diabetes, in addition to obesity and frequent mental distress, compared with optimal sleepers who reported sleeping seven to nine hours on average in a 24-hour period.”¹⁷

A study by the Cleveland Clinic found that 58% of patients with severe sleep apnea had treatment-resistant high blood pressure, compared to 29% of those with moderate sleep apnea.¹⁸



**\$63.2
BILLION**

**ANNUAL COST
OF PRODUCTIVITY
LOSS IN U.S. DUE
TO INSOMNIA**

Source: Harvard Medical School & McKinsey Company. The price of fatigue; December 2010



Sleep disorders may lead to a higher risk of:

- Weight gain
- Diabetes
- Stroke
- Bone density loss
- Heart disease
- High blood pressure
- Arthritis
- Depression and anxiety

Source: Yu-Li C et al. Obstructive sleep apnea and risk of osteoporosis. *J Clin Transl Endocrinol*, 99(7);2014

Effective treatment of sleep conditions

While the health risks associated with sleep disorders are well documented, most sleep conditions go undiagnosed and untreated — and diagnosis alone does not guarantee a solution. Among those diagnosed with sleep apnea, for example, less than 50% continue treatment after one year.¹⁹

When sleep conditions are treated effectively, however, the results can be dramatic. A study of hospitalized cardiac patients recently demonstrated that effective treatment for sleep apnea reduced hospital readmission rates and emergency department visits in patients with both heart disease and sleep apnea.²⁰



Treatment for sleep apnea: Positive airway pressure

Many patients suffering from moderate to severe sleep apnea benefit from the use of a machine that delivers air pressure through a mask placed over the nose during sleep. This machine creates air pressure greater than that of the surrounding air and opens upper airway passages. The most common types prescribed include continuous positive airway pressure (CPAP), auto-titrating positive airway pressure (APAP) and bilevel positive airway pressure (Bi-PAP) devices.

Treating sleep apnea with a positive airway pressure (PAP) device has been found to improve blood pressure and arterial tone in adults.²¹ A better night's sleep in one study was also found to predict a longer survival time for women with advanced breast cancer.²²

The benefits of effective sleep care may seem obvious, but there is clearly room for improvement in diagnosis, treatment, awareness and education.

A new approach: Beyond pills and gadgets

Most people at one time or another feel tired during the day or complain that they don't get enough sleep. For some workers, however — medical professionals, long-haul truck drivers, and factory employees, for example — sleeplessness is just part of the job. Nationwide, nearly 30% of employees say they are unhappy or very unhappy with the quality or quantity of their sleep. Nearly 76% of employees say they feel tired many days of the week, and 15% say they doze off during the day at least once per week.²³

Many people are taking treatment into their own hands: over-the-counter sleep medications and sleep products like mattresses and pillows constitute a growing business sector. The global market for sleep-aid products is expected to grow to \$76.7 billion by 2019.²⁴

Sleep products — including a new crop of smart-phone apps and other electronic devices — may provide relief to many people suffering from inadequate sleep. Over-reliance on consumer products, however, could get in the way of seeking help for a serious and treatable medical condition.

For those who do seek medical care, the traditional route begins with a visit to a primary care physician, who may refer to a sleep lab or clinic. The result, for those with sleep apnea, for example, may include a recommendation for surgery or the use of a PAP device. For those with insomnia, a prescription may be a viable short-term option, but the majority of adults with insomnia can benefit from cognitive behavioral therapy.

But even the right solution can be elusive, for patient and employer. Admission to a sleep laboratory or clinic may cost thousands of dollars, and PAP equipment can be underutilized.

It's time to question the traditional approach. Are there other ways to help drive down costs while improving care for those suffering from fatigue and sleep disorders? Is an expensive sleep clinic session the best way to diagnose the problem when a simple screening would suffice? How often is weight loss or another behavioral approach recommended instead of a prescription?

Building an effective sleep wellness program

Experience has taught us much about how to screen people for undiagnosed health conditions, encourage patients to comply with their treatment and better manage costs through innovative technology and therapy. It's time to apply that knowledge to sleep.

Based on wellness and clinical management models, the components of an effective employee sleep wellness program would:

- **Activate executive champions.** Just as many executives have committed to programs encouraging weight loss and smoking cessation, they must commit to sleep health. This requires the appointment and activation of an executive champion — someone who encourages program engagement and can explain the personal, workplace and performance benefits of company-wide participation. An executive champion should also lead by example by telling employees about their personal commitment to getting a good night's sleep.
- **Engage and educate employees.** Use creative programs, incentives and communication tools to increase awareness of sleep-related health and encourage employee participation. Effective programs will feature a branded communications campaign, contests and on-site activities, screenings and clinics that get employees excited about improving their sleep health.
- **Effectively manage sleep conditions.** Like other chronic medical conditions, sleep disorders are most effectively managed when patients gain access to the right combination of treatment options, caregivers and long-term wellness resources. With at-home diagnosis and telemetry, at-risk patients can be identified before moving up the treatment ladder for additional diagnosis and care. Treatment tools should include coaching, mobile apps and other technologies that are less disruptive for patients and their families. Another critical element is effective sleep care management and support for those initiating treatment for sleep disorders. It is vital to ensure that fatigue sufferers have the tools and information they need to feel comfortable with their chosen course of treatment. Innovative remote-monitoring technology and alternative treatment methods will encourage adherence among those diagnosed with chronic sleep conditions, putting them on the road to a better night's sleep.



Sleep innovator: Aurora Health Care

In 2012, Aurora Health Care, the largest hospital system in Wisconsin, provided a six-week online course for 2,600 employees suffering from insomnia. Based on the results of a follow-up survey, Aurora realized an average of \$672 in productivity savings per participant.

Source: Weber L. Go ahead, hit the snooze button, Wall Street Journal, January 23, 2013

- **Set goals and measure outcomes.** By improving sleep health, most organizations seek to reduce medical costs and improve productivity, identify more undiagnosed cases and treat sleep conditions more effectively. In the early stages, outcomes may be measured in employee participation and program satisfaction. After a program has been in place long enough to have an impact, gathering hard data can be accomplished by surveying employees on improvements in their sleep and work habits, tracking the number of new diagnoses and measuring improvement in both sleep health and overall health, including co-morbid conditions. Finally, the program's impact on reducing overall medical costs over time will be measured.

Conclusion: Waking up to the importance of sleep health

For employers, improved sleep health will create a workforce that has higher energy, more creativity, better recall, increased focus and alertness, and improved cognitive capabilities. Adding sleep health to their wellness agenda will be good for business.

Reversing the epidemic of fatigue, however, will require new ways of addressing the root causes of sleeplessness. Professionals across the health care system should commit to more innovative and effective health management methods to prevent, diagnose and treat sleep disorders.

Inaction is too costly for any organization committed to the productivity, health and wellness of its employees. We know what works: education, employee engagement and creating workplace cultures that acknowledge sleep as the third pillar of health. Now we just need to do it. Good sleep is essential to good health.

The good news is that there is a recipe for improving sleep health in employee populations. It leverages employee awareness, engagement, coaching and education. It promotes a workplace culture that includes sleep as a key pillar of health. And it provides effective clinical and sleep care management programs to ensure that employees who need help, get help.

“My debilitating fatigue had me convinced I was dying from some terminal illness that my doctor, despite many tests, couldn't detect. I found out I even persevered through mononucleosis and didn't know it because that's 'how I always felt.' While I grew up in a family of physicians, and also discussed this with my primary care physician, it was my wife — not the medical experts — who thought to suggest the sleep study that confirmed the diagnosis of severe sleep apnea. It was like discovering a fountain of youth, just in time, as I was to the point where I wasn't sure how much longer I could go on. To this day, my children still refer to 'Dad before CPAP' as if I was a completely different person.”

— Chuck Officer, Vice President, Innovation R&D at Optum



Calgary wakes up

When the City of Calgary conducted an employee wellness survey in 2011, 60% of the city's 16,000 workers agreed they would like to learn how to get more sleep and feel more rested.

The result was the city's “Wake Up!” campaign that included distribution of a print and online magazine dedicated to sleep and a web-based “Sleep Challenge Tracker” that featured weekly prizes and an online personal assessment for employees and their families.

A sleep specialist conducted 11 workshops, participated in an online chat with almost 600 employees and answered emailed questions.

Source: Benefits Canada. The ABCs of catching ZZZs, Benefits Canada, September 1, 2014

SOURCES:

1. Tefft, BC. Prevalence of motor vehicle crashes involving drowsy drivers, United States, 2009–2013. AAA Foundation for Traffic Safety; Nov. 2014. aaafoundation.org/sites/default/files/AAAFoundation-DrowsyDriving-Nov2014.pdf. Accessed July 28, 2015.
2. Kessler RC et al. Insomnia and the performance of US workers: Results from the America Insomnia Survey. Department of Health Care Policy, Harvard Medical School; 2011. ncbi.nlm.nih.gov/pmc/articles/PMC3157657/. Accessed July 28, 2015.
3. Centers for Disease Control and Prevention. Insufficient sleep is a public health epidemic. Last updated January 13, 2014. cdc.gov/features/dssleep/. Accessed July 28, 2015.
4. Harvard Medical School & McKinsey Company. The price of fatigue: The surprising economic costs of unmanaged sleep apnea; December 2010.
5. Ibid.
6. Yu-Li C, Shih-Feng W, Yuan-Chi S et al. Obstructive sleep apnea and risk of osteoporosis: A population-based cohort study in Taiwan. *J Clin Transl Endocrinol*, 99(7); 2014. <http://press.endocrine.org/doi/abs/10.1210/jc.2014-1718>. Accessed July 28, 2015.
7. Kleinman NL, Brook RA, Doan JF, Melkonian AK, Baran RW. Health benefit costs and absenteeism due to insomnia from the employer's perspective: A retrospective, case-control, database study. *J Clin Psychiatry*. 2009;70:1098–1104.
8. Pesce NL. Do history's greatest figures owe their success to sleeping less? *New York Daily News*; June 26, 2009.
9. Arends B. A full night's sleep can really pay off — in salary and investments. *Wall Street Journal*; September 18, 2014.
10. Ibid.
11. Kessler RC et al. Insomnia and the performance of US workers: Results from the America Insomnia Survey. Department of Health Care Policy, Harvard Medical School; 2011. ncbi.nlm.nih.gov/pmc/articles/PMC3157657/. Accessed July 28, 2015.
12. Ibid.
13. Tefft, BC. Prevalence of motor vehicle crashes involving drowsy drivers, United States, 2009–2013. AAA Foundation for Traffic Safety; Nov. 2014. aaafoundation.org/sites/default/files/AAAFoundation-DrowsyDriving-Nov2014.pdf. Accessed July 28, 2015.
14. Susman T. Reverse-thrust controls on ferry failed, captain tells NTSB. *Los Angeles Times*; January 10, 2013.
15. Bain J, Marsh J. Paralyzed father sues for \$100M over Metro-North crash. *New York Post*; April 9, 2014.
16. Harvard Medical School & McKinsey Company. The price of fatigue: The surprising economic costs of unmanaged sleep apnea; December 2010.
17. American Academy of Sleep Medicine. Sleeping too little — or too much — associated with heart disease, diabetes, obesity; October 1, 2013. aasmnet.org/articles.aspx?id=4216. Accessed May 13, 2015.
18. Marshall NS et al. Sleep apnea and 20-year follow-up for all-cause mortality, stroke, and cancer incidence and mortality in the Busselton Health Study Cohort. *J Clin Sleep Med*; April 2014. aasmnet.org/jcsm/ViewAbstract.aspx?pid=29425. Accessed May 13, 2015.
19. Harvard Medical School & McKinsey Company. The price of fatigue: The surprising economic costs of unmanaged sleep apnea; December 2010.
20. American Academy of Sleep Medicine. Treating sleep apnea in cardiac patients reduces hospital readmission; October 15, 2014. Accessed May 13, 2015. aasmnet.org/articles.aspx?id=5090.
21. American Academy of Sleep Medicine. CPAP rapidly improves blood pressure and arterial tone in adults with sleep apnea; June 1, 2014. Accessed May 13, 2015. aasmnet.org/articles.aspx?id=4778.
22. American Academy of Sleep Medicine. Better sleep predicts longer survival time for women with advanced breast cancer; May 2, 2014. Accessed May 13, 2015. aasmnet.org/articles.aspx?id=4739.
23. Employee Benefits News. Why sleep is crucial to any wellness plan; April 15, 2014. Accessed May 13, 2015. benefitnews.com/news/why-sleep-is-crucial-to-any-wellness-plan-2740744-1.html.
24. BCC Research. Global market for sleep aids to reach \$76.7 billion in 2019; sleep apnea segment growing at 11.3% CAGR; July 8, 2014. [bccresearch.com/pressroom/hlc/global-market-sleep-aids-reach-\\$76.7-billion-2019](http://bccresearch.com/pressroom/hlc/global-market-sleep-aids-reach-$76.7-billion-2019). Accessed July 28, 2015.

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