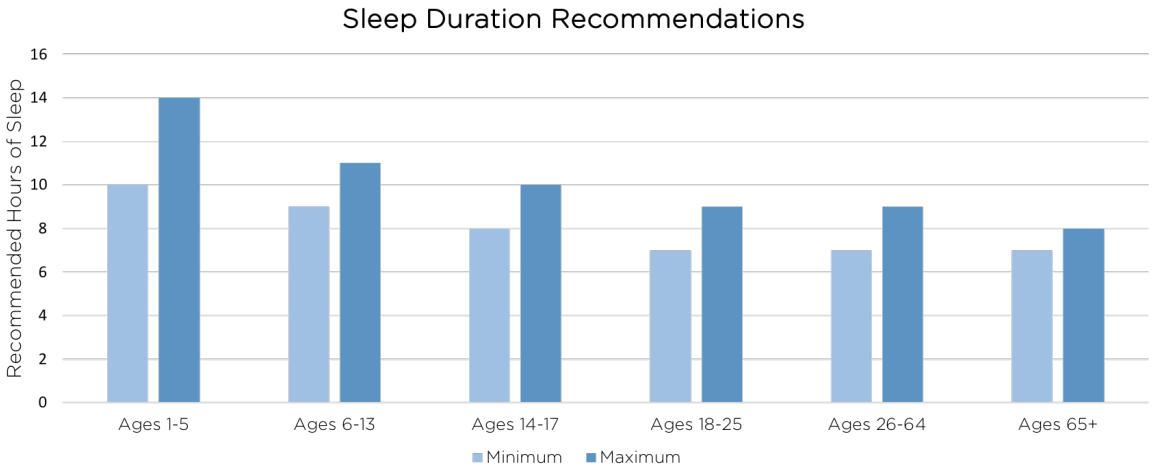
How Blue Light May Be Ruining Your Sleep and Combatting It With SleepLite™ Technology

Did you know that the screens we look at every day could have a negative impact on our sleep quality? Luckily, with the help of amber lighting – the end to a poor night's sleep could be closer than you think.

INTRODUCTION

According to the National Library of Medicine, we spend roughly one-third of our life sleeping.[1] But how much do we know about the sleep we are getting? Have you ever been curious about what you can do to get better (or even more) sleep? Are you wondering if there is anything you are doing to prevent yourself from getting the sleep you need?

In this guide, we hope to teach you everything you need to know about sleep, your circadian rhythm, how screen time may negatively impact your sleep cycle, the dangers of blue light on sleep, and how to combat those dangers with different color lighting options and SleepLite technology.



Circadian Rhythm and Sleep

The circadian rhythm is the "physical, mental, and behavioral changes that follow a daily cycle that respond primarily to light and darkness in an organism's environment."[2] This circadian rhythm helps to determine sleeping patterns by telling our body when to produce melatonin (the hormone produced in the pineal gland that helps controls sleep cycles).

When it is light outside our body does not produce melatonin, and when it becomes dark outside our body sends signals to our brain to produce melatonin. Activities like watching TV late at night, scrolling through Instagram in bed, or reading a book on your tablet before you go to sleep all send light to your brain during a time where you would usually not be exposed to light, thus throwing off your circadian rhythm and sleep cycle.

Sleep is More Important Than You Think

The quality of sleep you get can be as important to your health as food and water.[3]

To keep your mind and body healthy, the National Sleep Foundation has compiled a chart that shows how much sleep you need to be getting (above).[4]

From immune system functionality, to maintaining a normal metabolism, to regulating your mood – so many different parts of your body are maintained and impacted by getting adequate sleep.[3] Often times people will voluntarily get less sleep than they need because of things like work, school, children, etc. and think that they can catch up on sleep at another time - but this is not how sleep works.

Without adequate sleep you cannot form or maintain the pathways in your brain that learn and create memories. Lack of sleep also makes it difficult to concentrate on the task at hand and respond quickly in situations.[3]

Blue Light and Sleep

New research is coming out that is focused on the negative effects of light, particularly blue light, on your sleep. Devices that emit blue light are relatively new to us, with the emergence and rise in popularity of TVs, tablets, smartphones, and laptops and more – people today are absorbing more

blue light via screen time than ever before.

Historically, we have relied on the sun as our main source of light that helps regulate our sleep cycle and circadian rhythm. However, when you are absorbing light at all hours of the day through a screen, your body cannot regulate when to release melatonin and go to sleep. Blue light can stop or lower melatonin production levels. This is what has led major companies like Amazon and Apple to create ways to use your favorite devices in a way that doesn't emit as much blue light.

Blue light exposure, especially in the evening when we would otherwise be exposed to darkness, can negatively impact our body's circadian rhythm which can lead to decreased or poor sleep.[5]

A Revolution to End Blue Light

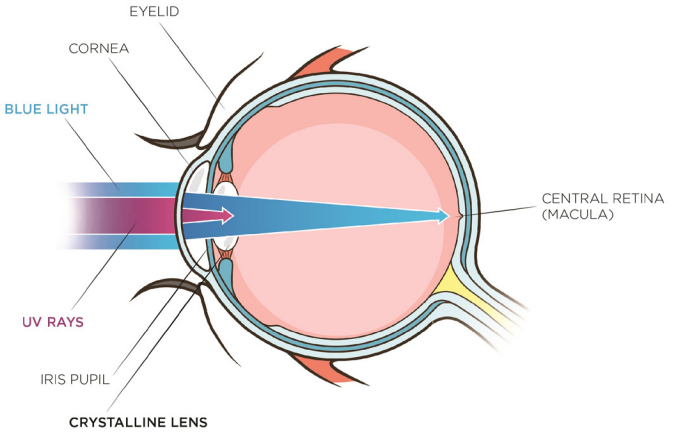
Technology companies are beginning to make the shift toward reducing blue light emission from their devices. Most recently two of America's powerhouse companies – Amazon and Apple have acknowledged the harm of blue light and acted against it.

Apple introduced "Night Shift Mode," which lets users transition an iPhone or iPad's normally bright and white screen to a warmer colored screen before going to bed. You can even preset your phone to be on "Night Shift Mode" during certain hours, this way you can stop blue light from impacting your melatonin production.

Amazon introduced the ability to change the screen on the Amazon Fire Tablet to have "Blue Shade," which lets you adjust brightness and the color. Amazon's Fire Tablet and Apple's iPad make up more than 40 percent of market share for tablets[6], making this big news toward lessening blue light amongst tablets.

Dangers of blue light to your eyes

Blue light effects our body in several ways outside of sleep cycles and sleep deprivation. Blue light can also have a negative impact on the actual health of your eyes. The visible light spectrum can be defined as a narrow band of light frequencies that our eyes are sensitive to[11]. Out of all of the color lights that our eyes absorb, blue light has the most energy due to it having the shortest wavelength. Our eyes are good at blocking out UV rays from reaching the retina of the eye, but our eyes are not as good at blocking out blue light.



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Nearly all blue light will pass through the cornea and lens of our eye and reach the retina (as can be seen in the image above). Blue light damages the eye over a cumulitive period, meaning the more blue light that your eye absorbs, the more damage can be done to the eye. Children's crystalline lens is more transparent to short wavelengths than an adults, making children more sensitive to blue light effects than adults[7].

Over exposure to blue light can cause problems to your eyes in the forms of:

- **Digital eyestrain:** Blue light emitted from screens can decrease contrast which leads to digital eyestrain. Bad lighting and how often you use technology can all cause irritated eyes and difficulty focusing.[8]
- **Retina damage**: Over exposure to blue light can lead to damaged cells in your retina which can lead to vision problems like age-related macular degeneration.[8]
- **Macular degeneration:** Blurred or reduced central vision, due to thinning of the macula, which is the part of the retina responsible for clear vision in your direct line of sight.[9]

Ask The Expert

We interviewed Susan White M.D. FAAP to get her perspective on blue light and how it impacts sleep.

Q: Are the effects of blue light a new topic in the medical world?

A: The negative effect of blue light exposure on sleep has been acknowledged, but there is still a lot of research being done on this subject. I do recommend avoidance of blue light emitting electronics in the evenings in my clinic, especially in adolescents who have trouble getting adequate sleep.

Q: What is the main danger associated with blue light exposure?

A: Blue light exposure, especially in the evening when we would otherwise be exposed to darkness, can negative impact our body's circadian rhythm which can lead to decreased or poor sleep.

Q: Is melatonin production impacted by light?

A: Melatonin is a hormone in our bodies that helps to regulate our circadian rhythms. Our eyes contain receptors that are sensitive to blue light. Exposure to blue light at night can give messages to our brain to decrease melatonin secretion, which tells us to wake up and be more alert. This can disrupt our circadian rhythm.

Q: What damage can blue light exposure do to our eyes?

A: Blue light exposure has been linked to damage to the retina leading to macular degeneration and permanent blindness.

Q: What are the most popular devices we use that emit blue light?

A: Sunlight is the main source of blue light. However, the most common man-made sources of blue light include electronic devices such as phones, tablets, and computers.

Q: Why is it important to get "good quality" sleep on a consistent basis?

A: Sleep is important for overall health and can impact every part of our body. Poor sleep has been associated with difficult focusing, increased risk of infections, depression, obesity, heart disease and diabetes. Poor sleep is also associated with behavior problems and trouble in school.

Q: Is there a situation where light exposure is beneficial to the body?

A: Exposure to blue light in the form of sunlight can be beneficial especially in the day time to help regulate the body's circadian rhythm. Blue light exposure can improve alertness, memory and mood.

Q: What advice would you give parents who are struggling with ways to limit their child's intake of blue light?

A: In teens, establishing set expectations regarding screen time and electronic uses at a young age can be helpful. Determine when and where they can use these devices and remove all electronics from bedrooms to reserve those spaces for sleep.

With younger children limit screen time to scheduled times during the day and avoid using screens as part of a bedtime routine. Keep bedrooms dark and avoid use of lights that emit blue light as a nightlight.

Use Light to Your Advantage

Using light can actually benefit you while you sleep, if you are using the right color of light. Research has shown that warmer colored lights can trigger the production of melatonin, thus helping you sleep better. There are new lights that have been developed to emit warm color, which can help your circadian rhythm rather than harm it.

Jasco's solution to the over exposure to blue light: GE-Branded LED SleepLite

[Shop SleepLite]

Until we can live in a world where there is no blue light emitted in our rooms while we sleep, amber/warm colored night lights provide an incredible alternative. A great solution that you can pick up today are the GE-branded LED SleepLite's. By promoting a natural sleep cycle, this LED SleepLite works to improve your overall sleep quality with the following features:

- Innovative light technology that removes virtually all blue light within the night light
- Adjustable color temperature allows you to choose from low brightness, high brightness, or off
- Light sensing feature that turns the light on when darkness is detected, meaning the light won't be on all night long`
- The light output is low enough to not disrupt sleep but sufficient enough to help you see if you need
- Indirect lighting disperses the light to the side of the night light, so you never have to look directly at the light

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SUMAMRY

In today's world it can seem impossible to get away from blue light. According to research done by the World Economic Forum, Americans over the age of 18 spend around 11 hours a day in front of a screen of some sort.[10] This over exposure to blue light is having a negative impact on our sleep, mainly our circadian rhythm, by blocking the production of melatonin to our brain and our eyes causing damage that could eventually lead to long-term harm such as macular degeneration.

Luckily, thanks to technology in other areas, we are able to combat the overexposure to blue light with by introducing more warm light into our routine with things like night shift mode on our Apple devices and adding in amber lighting to our bedroom.

Sources

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