Course Objective

- This course is designed to educate attendees on Computer Vision Syndrome and to teach the signs and symptoms associated with Computer Vision Syndrome. The course includes ergonomics and environmental factors associated with computer use and helpful ways to reduce the impact of CVS.

Overview

- Vision and the computer
- Dx for CVS
- Symptoms associated with CVS
- Relief for CVS
- The OSDI Evaluation
- Children and Computer Games

Vision and Computer

- What is a normal blink rate?
- How many times a day do you blink?
- Can computer use harm your eyes

The Value of a Blink

- Each blink spreads tears across the cornea to refresh the surface flora and cleans the bacteria from it

What is CVS

- The name for eye problems caused by computer use is computer vision syndrome (CVS). CVS is not one specific eye problem. Instead, the term encompasses a whole range of eyestrain and pain experienced by computer users
Research

- Research shows computer eye problems are common. Somewhere between 50% and 90% of people who work at a computer screen have at least some symptoms of eye trouble.

CVS... cont...

- Computer vision syndrome is similar to carpal tunnel syndrome and other repetitive stress injuries at work. It occurs when you’re carrying out the same motion over and over again. Just like those other repetitive stress injuries, computer vision syndrome can get worse the longer you continue the activity.

CVS Cont...

- Working at a computer requires that the eyes continuously focus, move back and forth, and align with what you are seeing. You may have to look down at papers and then back up to type, and the eyes have to accommodate to changing images on the screen in order to create a clear picture for the brain to interpret.

Contrast Different

- Viewing a computer screen is different than reading a printed page. Often the letters on the computer screen are not as precise or sharply defined, the level of contrast of the letters to the background is reduced, and the presence of glare and reflections on the screen may make viewing difficult.

Symptoms Associated with CVS

- There are none, however presbyopia, cataracts, and general eye health can have a significant impact on computer use.

Dx for CVS

Computer Vision Syndrome

Do you experience...

- Headaches?
- Blurry or double vision?
- Burning eyes?
- Eye fatigue?
- Eye irritation?
- Excessive tearing?
- Dry eye?
- Frequent blinking?

http://www.aoa.org/patients-and-public/caring-for-your-vision/protecting-your-vision/computer-vision-syndrome?ssl=1
Effects on the Eye

- Poor tear flow
- Poor blinking
- Corneal dryness

“Studies show that use of the devices even an hour or so before bedtime stimulates kids’ brains, with the bright blue screen light having a lasting effect and preventing sleep.”

“As a physician specializing in sleep disorders, Dr. Esparis knows full well the damage that electronic devices can do to children before bed, affecting their sleep patterns and potentially leading to a wide variety of health problems.”

3 Ways Blue Light Affects Us

- Blur & Glare
  
  400-420 nm

- Max Disruption of Sleep/Wake Cycle at night
  
  459-484 nm

- Macular Damage
  
  400-440 nm

Health Problems!

- Sleep Issues!
- Eye Strain!
- Obesity!
Blue Light Impact on Visual Performance – Light Scatter

Why is the sky blue?

Light Scattering: Spreading light through the atmosphere

During the day

Impact on Macular Damage

“Rusting of the back of eye”

Blue light is the highest energy visible light that gets to the retina (back of eye) where Macular Damage can occur. Most UV or non-visible light is screened out by the cornea and lens before it can hit the retina.

*The young human lens transmits a small window of UV-B light (320 nm) to the retina

REFERENCE:

Computer Use

• Some computer users experience problems with eye focusing or eye coordination that can’t be adequately corrected with eyeglasses or contact lenses. A program of vision therapy may be needed to treat these specific problems. Vision therapy, also called visual training, is a structured program of visual activities prescribed to improve visual abilities. It trains the eyes and brain to work together more effectively. These eye exercises help remediate deficiencies in eye movement, eye focusing and eye teaming and reinforce the eye-brain connection. Treatment may include office-based as well as home training procedures.

Examination of Eye

• Patient history to determine any symptoms the patient is experiencing and the presence of any general health problems, medications taken, or environmental factors that may be contributing to the symptoms related to computer use.

• Visual acuity measurements to assess the extent to which vision may be affected.

• A refraction to determine the appropriate lens power needed to compensate for any refractive errors (nearsightedness, farsightedness or astigmatism).

• Testing how the eyes focus, move and work together. In order to obtain a clear, single image of what is being viewed, the eyes must effectively change focus, move and work in unison. This testing will look for problems that keep your eyes from focusing effectively or make it difficult to use both eyes together.

Comprehensive Exam

• Computer Vision Syndrome can be diagnosed through a comprehensive eye examination. Testing, with special emphasis on visual requirements at the computer working distance, may include:

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Treatment for CVS

• Routine exam
• Dry eye evaluation
• Artificial tears
• Rx medications
  – Restasis
• Supplements
• Regular eye relaxation
Eyewear

• 1st Step is a comprehensive eye exam
• High Water Contact Lens
• Glasses prescribed for computer use

Testing

• Florescein staining
• Schirmer Tear Quantity tests (paper in 1901)
• Lissimine Green (conjunctival staining)
• TBUT (tear quality test)
• Tear Lab
• Lipi-flow
• RPS
• “SJO” Test (Sjogren test)
• Rose Bengal

Relief for CVS

• Dry Eye Testing
  – TBUT
  – Schirmer’s tear eval
  – Lissimine Green
• Current eye examination
• Check your lighting
• Positioning your computer system
• Check for environmental factors
• Get an hourly timer

Cut The Glare

• Change the lighting around you to reduce glare on the computer screen. If a nearby window is casting glare on your screen, move the monitor and close the shades until the glare disappears. Ask your employer to install a dimmer switch for the overhead lights if they're too bright, or buy a desk lamp with a moveable shade that distributes light evenly over your desk. Putting a glare filter over the screen monitor also can help protect your eyes.

20-20-20 Rule

• Be mindful of the amount of time that is spent looking at a computer screen without taking a break. Every 20 minutes, take a 20-second break and look at something that is 20 feet away. Looking far away relaxes the focusing muscle inside the eye and reduces eye fatigue

Rearrange Your Desk

• Researchers find that the optimal position for your computer monitor is slightly below eye level, about 20 to 28 inches away from the face. At that position, you shouldn’t have to stretch your neck or strain your eyes to see what’s on the screen. Put a stand next to your computer monitor and place any printed materials you’re working from on it. Then, you won’t have to look up at the screen and back down at the desk while you type.
Give Your Eyes A Break

- Look away from the screen every 20 minutes or so and close your eyes for about 20 seconds to rest your eyes. Blink often to keep the eyes moist. If eyes are getting overly dry, try using lubricating eye drops. Try a timer.

Adjust Computer Settings

- You don’t have to live with the factory-installed settings on your computer if you’re uncomfortable. Adjust the brightness, contrast, and font size until you find the best settings for your vision.

Helpful Hints

- Location of computer screen
- Lighting
- Anti-glare screens
- Seating position
- Rest breaks
- Blinking

Contributing Factor Include

- Contact lens wear
- Environmental factors
  - Wind
  - Fans
  - Dust
  - Dry air
- Overall Health
  - Disease
    - Diabetes
    - Corneal disease

Environmental Air Flow

- Directional fans
- Ceiling fans
- Air conditioning vents
- Heaters
- Outdoor windy days

Ergonomics
Every Front Desk Person

- How you sit can impact your ability to perform your job

Posture Matters

Proper Equipment Position

“IT's an ergonomic keyboard. Once you learn how to use it, it will increase your speed by six percent!”

The OSDI Eval

- The Ocular Surface Disease Index (OSDI) is perhaps the most frequently used survey instrument for the assessment of ocular surface disease severity in dry eye research. It has been used in a variety of studies, both in the assessment of the severity of dry eye associated with certain conditions

Identify Patients With Dry Eye

OSDI Survey Form

Key Reminder:
Up to 50% of Contact Lens Wearers experience Contact Lens Induced Dry Eye (CLIDE)

www.mydryeyes.com
Children and Computer Games

- Kids who stare at portable video games or who use computers throughout the day at school also can experience eye problems related to computer use, especially if the lighting and computer position are less than ideal.

Children cont...

- Vision is developed
- 0-20 years of age
- Rarely complains about vision
- Have a very high AC/A
- Can go years uncorrected
- Can torture themselves

Parents Concerns

- Parents are worried. Nearly a third say they’re concerned that computers and handheld electronics may damage their child’s eyesight. And 53% of parents believe 3D viewing may be harmful, according to a survey by the American Optometric Association.

Children cont...

- Children often have a limited degree of self-awareness. Many children keep performing an enjoyable task with great concentration until near exhaustion (e.g., playing video games for hours with little, if any, breaks). Prolonged activity without a significant break can cause eye focusing (accommodative) problems and eye irritation.

Theory

- One theory: Today’s kids spend far more time doing "near work," such as texting, looking stuff up on cell phones, and playing computer games. And the increased time spent looking at things close up may have an effect. Other possible factors may include genetics and lack of outdoor activity.

Patient Education

• Educate patients on available eyewear

• CVS education
  – Check physical clues
  – Limit amount of time
  – Glare
  – Lighting

• Wear schedule for eyewear

• Adjust computer height

Workstation Assessment

• OSHA Requires a safe work place

• Proper ergonomics can reduce time out from work due to physical conditions

• Documentation

Review

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Thank you

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