### Computer Vision Syndrome

#### Signs, Risks and Strategies to Manage

**What is computer vision syndrome?**

Computer Vision Syndrome (CVS) is a term used to describe a wide range of visual symptoms experienced by operators of visual display terminals (VDT).

**What are the mechanisms of CVS?**

**Contributing factors in the workplace**

#### Ocular Factors:

- **Image quality**
  - Too small and low resolution will make fonts difficult to decipher.
  - High contrast or brightness tends to make the image blurry.
  - A low refresh rate on the screen appears to the computer user as a flicker on the screen.

- **Workstation design**
  - If the monitor is too high, it can lead to an upward position of the eye, which increases surface exposure.
  - Glare (overall light levels, reflected light on the screen and bright spots) increases difficulty in interpreting images and readability.

- **Environmental factors**
  - Dry air, high heating and excessive air movement can lead to evaporation of eye moisture.

- **Negative Visual Adjustments**
  - Squinting (improves visual accommodation and vergence), but it can lead to eye muscle fatigue.
  - Reduced frequency and quality of blinking to view an image can lead to dry eyes.

#### Non-Ocular Factors:

- **Workstation setup**
  - Sustained viewing at the computer monitor can lead to increased activity of the trapezius muscle (upper back and neck muscles).

- **Poor image quality and cognitive overloading**
  - Link between poor image quality or inability to read the screen can cause a reduction in cognitive performance.
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Computer Vision Syndrome

What can be done?

Recommendations for improving image quality
- Ensure font size and style are appropriate for the task and viewing distance.
- Dark characters on light colored background.
- Adjust contrast and brightness (if you have two screens, try to keep them similar).

Specifications on preventing screen glare
- Use blinds to limit natural daylight.
- "Warm" light within the office environment.
- Reposition monitor if glare source cannot be removed.

Specifications on VDT position relative to user
- Monitor should be positioned at least 20 inches from eyes.
- Monitor adjusted in height so main viewing area is 15-20 degrees below eye level.
- Proper placement of paper documents, input devices, adjustment of chair.

Other Strategies
- Regular eye exams
- Make sure you use proper corrective lenses
- Talk to your optometrist about strategies to help manage chronic dry eye
- Incorporate the 20/20/20 rule (every 20 minutes look away from the screen at an object 20 ft in distance for 20 seconds)
- Try using an app on your phone to remind you to take a regular eye break

Reference