Why is early detection of visual impairments in young children so important?

“Amblyopia is reduced vision in an eye that has not received adequate use during early childhood. An estimated 2 to 5 percent of the general population suffers from this visual impairment. If not treated early enough, an amblyopic eye may never develop good vision and may become functionally blind. A condition that causes amblyopia and is left untreated until about the age of 6 most often will result in some permanent visual impairment. However, it is important that the treatment of amblyopia be pursued until at least age 10. The critical age for treatment to prevent permanent vision impairment varies from individual to individual. The earlier treatment is started, the more likely it will be easy and successful. Amblyopia is detected by finding a difference in vision between eyes. Amblyopia treatment involves two steps. First, correct the underlying vision problem if the amblyopia is caused by a refractive problem. Second, correct the amblyopia by retraining the brain.”


"Cortical visual impairment has emerged as the major cause of visual impairment in the United States. It is well known that appropriate procession of sensory cues is an important requirement for normal motor, mental, and emotional development in infants, and the association between vision problems and neurologic and mental disability is well recognized in several studies. An increased understanding of the impact of extrauterine stimuli on visual development along with improved methods of detecting vision problems can help in prevention, early diagnosis, and rehabilitation of visual impairment in infants."


Is VEP an option for pediatricians to test for visual impairments?

"Visual, auditory, and somatic EP are used clinically in pediatrics."


“Visual evoked potential (VEP) studies are of great value in a wide variety of pediatric patients, including those with disorders of the sensory visual pathway and those at risk for visual pathway damage. VEPs are simple, non-invasive, and are particularly appropriate for infants and young children who cannot communicate visual symptoms or cooperate for standard vision assessment.”


"The growing awareness of the sensitivity of immature visual systems to abnormal stimulation, the need to treat amblyopia early in life, and the prevention of visual deprivation amblyopia by overtreatment have stimulated development of quantitative methods to estimate visual acuity in infants. Three such methods (optokinetic nystagmus, preferential looking, and evoked cortical potentials) are now available."

How does VEP compare to other vision tests?
- Snellen
- Photoscreening
- Lang II, Frisby, Randot, Titmus, and TNO stereo tests

Is VEP easy to use, even with non-verbal patients?

"We conclude that the SPVER is effective in estimating vision objectively, particularly in patients in whom the standard Snellen test is impossible to perform or yields unreliable results."

"Photoscreening can detect amblyogenic risk factors such as strabismus, significant refractive error, and media opacities; however, photoscreening cannot detect amblyopia."

"None of the 5 stereo tests studied is suitable for screening for amblyopia or strabismus."

"CONCLUSION: With its easy electrode placement and rapid, attractive stimulus, the new system overcomes technical difficulties which were associated with older VEP techniques."

"Studies have demonstrated that the sVEP is a potentially important tool for assessing visual acuity and contrast sensitivity in non-verbal individuals with disorders affecting their visual system."
- The technique, validity and clinical use of the sweep VEP. Ophthalmic and Physiological Optics. 2008:28:5:393-403

"Now a simple test can detect early evidence of amblyopia in infants too young for conventional vision testing, reports a study in the April issue of the American Journal of Ophthalmology… The test, (is) called "sweep visual evoked potential vernier acuity..."