

A POSITION PAPER ON OBJECTIVE SCREENING (February 1, 2008)
(Why We Should Recommend and Reimburse Photoscreening and Remote Autorefracton)

Amblyopia is an evolving, emerging process that can permanently interfere with brain learning of vision. The most common form of amblyopia, refractive amblyopia, is due to poorly focused eyes, usually from incompletely accommodated farsightedness in one or both eyes, in one or more meridia (astigmatism)¹. Children with refractive amblyopia usually appear normal. Strabismic amblyopia is the second most common cause but is usually observed by family members. Deprivational amblyopia is less common and much more difficult to treat unless detected very early.

“Conventional” vision screening has consisted of attempted monocular optotype recognition. While pediatric expert screeners have demonstrated the merits of such screening, acuity testing has been markedly outperformed by objective testing with respect to: younger children, developmental delays, time to screen, detection of monocular disease and Predictive value positive of referrals compared to predefined target conditions²⁻⁵. A large, publically-funded study (VIPS) used different outcome measures to compare acuity testing to photoscreening and concluded that, if one were seeking a single-age most sensitive vision assessment, then pediatric optometrist complete exam was better than remote autorefracton and patched acuity testing by internally determined referral criteria, and outperformed photoscreening by differently pre-determined referral criteria⁶. When remote autorefracton was compared with patched acuity testing by less expert screeners, the objective testing was superior in preschool children⁷.

Some of the best controlled studies on amblyopia have been done by the Pediatric Eye Disease Investigator Group (PEDIG)⁸. Children with refractive and /or strabismic amblyopia can be enrolled after they complete a standardized, patched computer acuity protocol. As a result of the entry criteria, PEDIG has rarely studied children starting amblyopia treatment younger than age 3. After intense, consistent PEDIG amblyopia treatment, the average acuity in the treated eye is still limited to about 20/32. The PEDIG study that documented the most amblyopia acuity gain was with appropriate refractive correction alone^{9, 10}.

Community photoscreening had sporadic, regional starts in the mid 1990s. With referrals rates of 5-8%, many years and many subjects with adequate follow up are required to get real estimates as to whether early objective screening with photoscreeners has potential benefit over acuity testing at a later age. This has just been achieved in the few consistent studies, one in UK¹¹ and two in America^{12, 13}. Compared to PEDIG intense therapy after conventional acuity screening, early (toddler) photoscreening and /or remote autorefracton has the opportunity to improve acuity gains by 30% or more, and potentially to decrease the intensity of the treatment due to milder initial amblyopia at age of detection. As long as

refractive correction and clinic follow up is available, there is NO evidence that early objective screening with high Positive predictive Value (PPV) has any long term adverse sequelae on children or their vision. Despite imperfect sensitivity for certain amblyopia risk factors (including moderate compensated hyperopia or intermittent strabismus), long term community photostcreening projects covering 120,000 children did NOT have eventual late referrals of missed amblyopia (extremely low false-negatives)¹⁴. American Academy of Pediatrics (AAP) recommends a series of age-appropriate tests that, unlike VIPS, do not all have to be perfectly sensitive^{15, 16}. New data demonstrating objective screening benefit has emerged since the latest AAP guidelines; expect stronger AAP endorsement for objective screening in the next publication cycle.

Community and Pediatric Office experience with objective screeners has been limited mainly because there has not been uniform guidelines or reimbursement for the initially expensive technology. Now a 'Current Procedural Terminology' CPT code 99174 is available to cover objective screening during the amblyopia critical period; what is needed is for a reasonable "relative value unit" RVU to be determined for 99174. ABCD recommends that all American children get AAP vision screening combined with scheduled, reimbursed, valid objective screening at least A) between age 1 and 2 years, B) between age 3 and 4 years and then C) for Kindergarten entry.

Robert W. Arnold

Robert W. Arnold, M.D.

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