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EARLY CHILDHOOD SCREENING

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Abstract

A screening programme at Early Childhood Centres has resulted in 12% of children seen by the orthoptist at the request of the nursing staff being referred for further ophthalmic consultation. The reasons for referral included squint, suspected reduced visual acuity, ocular muscle imbalance, external pathology or a significant family history of eye problems.

Key words: *Amblyopia, strabismus, infancy, screening.*

The early detection of ocular abnormalities is recognised as being crucial for early intervention of treatment if return to normal or near normal function is to be attained. This approach has been reinforced by the acknowledgement of a critical period for visual development.

Screening programmes have proven their validity in the detection of abnormalities. There is considerable debate pertaining to the most acceptable age at which vision screening should be performed. Much of the literature is related to screening children between the ages of three to five years. This in part, is due to it being the earliest age at which a reliable and accurate visual assessment can be performed (in a screening capacity) as the children are more co-operative, and better able to understand more accurate vision testing techniques.

Screening programmes have shown success in the detection of visual acuity defects, the referral rate is high, and indicates the competency and capability of the nurses conducting the assessments. There is, however, documentation of under-referral of strabismus. MacFarlane, Fitzgerald and Stark,[1] in reporting Queensland school screening in 1987, showed that approximately 70% of children with manifest strabismus would have been detected on the basis of decreased visual acuity. There was a 28% under-referral rate, and this was attributed to the reduced detection of manifest strabismus on cover test.

The presence of nursing staff carrying out screening programmes is essential, as they provide an invaluable service, however, assistance is needed in the detection of strabismus. It is the detection of strabismus which is of major importance in those children aged from birth to three years. A severe and untractable amplyopia is that associated with unilateral strabismus of early onset. It is logical to assume that the earlier the intervention, the better the prognosis for achieving and maintaining a near normal standard of vision.

Newmann, Friedmann and Abel-Peleg[2] in 1987, clearly demonstrated the importance of early detection and treatment of strabismus. The study comprised 78 children. This group was

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divided into two groups: those who had commencement of treatment prior to two years of age and those where treatment started after this age. Treatment included prescription of glasses is necessary, occlusion or penalisation of the fixing eye and corrective surgery if warranted. This treatment continued to the age of six to eight years. Results showed better end result vision if treatment commenced prior to two years of age.

A screening programme to Early Childhood Centres was commenced in 1988 by the Orthoptic Department of the Children's Hospital, Camperdown with the co-operation of the clinic sisters at these Centres. The programme was initiated as a result of frequent referrals to the Eye Clinic for infants suspected of having strabismus. On examination, however, a large proportion of these children were found to have pseudosquint related to epicanthal folds or facial asymmetry. The nursing staff were overwhelmingly enthusiastic to the proposal of assistance. It was also important that ongoing education be integrated into the programme, with the aim of educating the clinic sisters in the detection of ocular anomalies.

During each screening session, if time allows, the clinic sisters observe the examination and gain insight as to what procedures they can apply to their own assessments.

Within each screening area, there are four base clinics which are located for easy accessibility to parents of three to four surrounding clinics. The objective of the programme being to take the service to the people, and the success of this approach is reflected in the high attendance rate of 84% of eligible children.

Developmental assessment of infants at Childhood Centres is at one month, six weeks, three and six months of age. At these visits, visual performance is also assessed. If the clinic sister feels that the responses are developmentally inappropriate, the children are referred to the orthoptic clinic (these referrals usually result from poor visual attentiveness, asymmetrical corneal reflections, abnormal ocular motility or a family history of strabismus). Any obvious ocular abnormality is referred immediately for ophthalmological investigation.

The aim of the orthoptic examination is to not necessarily give a quantitative evaluation of an infants vision, but to qualitatively assess that vision is present and functioning adequately, and that there are no barriers to impede normal visual development such as squint or ptosis.

Orthoptic assessment includes cover test at 1/3 metre, three metres or six metres, visual acuity, binocular status, convergence, ocular movements and pupillary responses.

Following orthoptic assessment, referral to an ophthalmologist is advised if any of the following criteria are found: intermittent/manifest strabismus, reduced or unequal visual acuity, objection to occlusion of one eye, ocular muscle imbalance, family history of ocular pathology, "At Risk" premature infants without review or external ocular pathology.

In eight months of service, the programme has seen the assessment of 298 children aged between three months and five years, 68% were less than 12 months of age, 21% aged between 12 months and 3 years, 10% aged three to five years. Of those children seen, 12% were referred for further ophthalmological consultation (see Table).

The incidence of squint in a screening population is documented as ranging from 0.5% to 5%. The RAHC figure of 4% is comparatively high, however, the children included in this study are not indicative of a random sample, as those assessed were either suspected of having a squint or had a pre-disposition to ocular problems through their family history.

Of the 12 children referred due to the presence

TABLE
Ocular Anomalies Detected

	No	% of General Pop.
Constant/intermittent strabismus	12	4%
Ptosis	8	2.6%
Reduced visual acuity	4	1.2%
Family history	4	1.2%
Anisocoria	3	1%
Facial asymmetry	2	0.6%
Photophobia	2	0.6%
External punctum	1	0.3%

of strabismus, the majority (nine) were from the "less than 12 month old" age group. Five of these had constant esotropia, one three month old child had an intermittent esotropia, and three had intermitten exotropia. This particular deviation was masked by the epicanthal folds, and, as a result presented to the clinic as suspected esotropia.

Four children were referred for reduced visual acuity — all were aged between three and five years.

Orthoptic screening, as with any screening programme, does have its limitations, especially with regard to detection of refractive error. With the current screening programme, we are only able to successfully detect ametropia in those children of verbal age. We rely on more gross methods of visual assessment which only indicate significant deprivation in infants. With the advent of video-refraction and more portable methods of preferential looking techniques, it is hoped that this hurdle will be crossed, thereby making orthoptic screening of infants a more comprehensive examination.

This programme has proven to be an effective means of detecting ocular abnormalities, particularly strabismus, and particularly in the younger age groups.

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