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Health visitor referrals to secondary vision screening clinic: a 5-year review

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Abstract

Aim: **To analyse referrals from health visitors to a (secondary) orthoptic Children's Vision Screening Clinic (CVSC) over a 5-year period, to assess whether a change in the type of testing, increase in age at testing, and also training from an orthoptist, had influenced the accuracy of testing and referrals.**
Methods: **Data were collected from a departmental database to include a time span from 2 years prior to the changes to 2 years after implementation of operational changes. The changes were: (i) assessment at age 4 years instead of 3 years, (ii) visual acuity (VA) testing with a linear test instead of single optotypes and (iii) health visitor training on VA assessment. The referral reason and outcome of the visit to the CVSC were documented.**
Results: **The results show that, over the 5-year period studied, similar proportions of children were being referred each year with the three most common vision problems. The number of false-positive referrals fell following the operational changes made in 2004, i.e., the accuracy of referrals increased: accurate (positive) referrals of children referred with reduced vision in one eye improved from 18% to 81% and those of children referred with reduced vision in both eyes increased from 35% to 75%. These differences were statistically significant.**
Conclusion: **Changing to a linear test at an increased age of 4 years, along with regular teaching and updates, has had a beneficial effect on the quality of the referrals to the CVSC. To comply fully with national screening guidelines, further changes are needed and the service continues to evolve.**

Key words: logMAR, Pre-school vision screening, Visual acuity

Introduction

Current guidelines in the United Kingdom for primary vision screening recommend a pre-school vision check for children aged 4–5 years, preferably administered by an orthoptist, using a logMAR visual acuity (VA) test as recommended by the Hall Report (Health for all Children, 2003).[1]

Prior to this report (and still at the present time) numerous different screening programmes existed in the UK, utilising a variety of different VA charts, involving testing of children at varying ages and also utilising an array of people to administer the screening.[2]

In 2003, following the Hall Report, a bid to fund primary orthoptic vision screening in the Salisbury area was submitted to the local Primary Care Trust (PCT). The PCT did not prioritise the bid and hence there was no funding to implement such a service in the area. Therefore an agreement was reached with local health visitors that they would undertake part of this assessment and be supported by training from an orthoptist.

The practice prior to the Hall Report consisted of a uniocular VA check by the health visitors at age 3 years, using single optotypes and also checking corneal reflections. After the publication of Hall Report, this approach was changed to involve VA testing at the slightly older age of 4 years, using a linear test (linear Sheridan Gardiner), in addition to assessing the corneal reflections as performed previously. This change in both age at testing and type of testing was implemented in late 2003. Training on the use of the linear vision test was given at this stage and annual teaching sessions and updates have been held since.

The Children's Vision Screening Clinic (CVSC) is a secondary screening clinic, run on a weekly basis by an orthoptist and an optometrist. Children seen in this clinic receive a full orthoptic assessment together with a cycloplegic refraction and fundus check performed by the optometrist.

The aim of this study was to retrospectively review referrals from health visitors to the CVSC, to assess whether this change in the type of testing and age at testing, and also additional training and support from an orthoptist, have influenced the accuracy of testing and nature of referrals.

Methods

Information from the database of CVSC patients was obtained, spanning 5 years (2002–2006) of health visitor referrals to this clinic. The timescale chosen purposely included 2 years prior to the changes and the 2 years after their implementation.

The reasons for referral from health visitors and the results of the first CVSC appointment were documented.

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Table 1. Reason for referral

Year	RVB	RVO	Sq
2002 ($n = 218$)	25% (54/218)	5% (11/218)	54% (118/218)
2003 ($n = 216$)	25% (54/216)	12% (26/216)	58% (126/216)
2004 ($n = 189$)	21% (39/189)	10% (19/189)	59% (111/189)
2005 ($n = 234$)	19% (45/234)	11% (25/234)	58% (135/234)
2006 ($n = 192$)	31% (60/192)	11% (21/192)	47% (90/192)

RVB, reduced vision both; RVO, reduced vision one; Sq, squint.

Table 2. Positive referrals

Year	RVB	RVO	Sq
2002	35% (19/54)	18% (2/11)	21% (25/118)
2003	40% (22/54)	39% (10/26)	17% (21/126)
2004	49% (19/39)	58% (11/19)	26% (29/111)
2005	55% (25/45)	60% (15/25)	35% (47/135)
2006	75% (45/60)	81% (17/21)	21% (19/90)

RVB, reduced vision both; RVO, reduced vision one; Sq, squint.

The data were collated and first divided into reason for referral, the three main ones being Reduced Vision One eye (RVO), Reduced Vision Both eyes (RVB) and Squint (Sq). Other reasons included parental concern, other general health issues and a strong family history of childhood vision problems. The referral criterion for a 'pass' on VA testing was 6/9 in either eye.

For each of the three main referral reasons, the number of positive referrals was obtained each year from the database, these being patients who had either received or started treatment (glasses, occlusion, etc.), needed a further review by an ophthalmologist or were kept under observation in the orthoptic clinic. Those who were discharged at the first visit were classified as false positives.

Results

The results show that over the 5-year period similar proportions were being referred each year with the three main problems identified (Table 1). However, the accuracy of testing and referrals for VA abnormalities, i.e., RVO or RVB, improved over the 5-year period (Fig. 1, Table 2). These improvements are statistically significant (using the chi-squared test):

- The percentage of those referred with RVO who were actually found to have RVO increased from 18% in 2002 to 81% in 2006 ($p = 0.002$).
- The percentage of those referred with RVB who were actually found to have RVB increased from 35% in 2002 to 75% in 2006 ($p = <0.0001$).

Thus the number of false-positive referrals declined significantly in this period for both these groups. No significant change was detected in the accuracy of referrals for squint over the 5-year period.

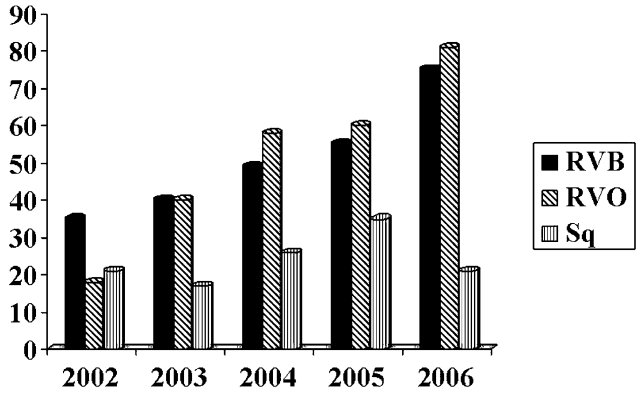

Fig. 1. Percentage of positive referrals. RVB, reduced vision both; RVO, reduced vision one; Sq, squint.

Discussion

Over 50% of patients seen in the CVSC are referrals from health visitors, so this is a significant part of the CVSC work-load. Changing to a linear test at age 4 years, along with annual teaching and updates from an orthoptist, had a beneficial effect on the quality of the referrals to the CVSC. Additional changes, such as the recent introduction of logMAR charts, which allow for a more robust, repeatable assessment of VA compared with Snellen-based tests,[3] may further reduce the number of false-positive referrals. It is acknowledged by the author that this study uses Snellen-based tests and not logMAR as recommended by the Hall Report and therefore this may have had some effect on the results.

The current referral criterion used is VA of less than 6/9 in one or both eyes. A trial of treatment of unilateral visual impairment detected at *pre-school* vision screening[4] concluded that children with 6/9 or 6/12 vision in one eye (and normal vision in the other) benefited little from treatment. As testing on pre-school children is often less reliable than that on school-age children, it was felt that 6/9 is within the normal range of VA on a crowded test and therefore this referral criterion currently remains our standard.

However, there continues to be a low positive referral rate (i.e., a low percentage of true positives) for the presence of squint. The annual teaching provided to the health visitors covers how to perform a corneal reflection test, which in the local area the health visitors perform at both the 8-month developmental check and also at the 4-year check. Health visitors are not asked to perform any further examination other than VA and corneal reflections and recently the emphasis has been moved to obtaining accurate uniocular visual acuities at the 4-year check, rather than concentrating on the corneal reflection test, as any amblyopia that a squint may cause would be detected by testing the VA.

Conclusions

Controversy has existed for many years as to the most appropriate method of vision screening, the appropriate people to carry this out and even whether such screening programmes should exist. A recent Health Technology Assessment (HTA) report[5] looked at the cost-effectiveness of screening programmes for amblyopia and concluded that there was limited evidence of the long-term utility effects of unilateral vision loss. A prior HTA report published in 1997[6] recommended the National Screening Committee (NSC) consider halting existing vision screening programmes.

There are currently vast inequalities in primary vision screening throughout the UK. This was found in a

previous study which looked at benchmarking vision screening in the UK,[2] and was also highlighted again recently in a letter from the UK NSC (November 2008) urging Directors of Public Health to implement primary orthoptic vision screening if this was not already taking place.

Currently in the Salisbury region, discussions with the new, enlarged PCT continue regarding the implementation of orthoptic primary vision screening using logMAR charts, as recommended by the current guidance.

It is inevitable (and preferable) that health visitors will continue to refer children if they are unsure about the presence of a squint and if there is also any parental concern, so with the present system it is impossible to fully eradicate false-positive referrals. The fact that there is a secondary screening clinic in which the majority of these patients are seen means that the false-positives and pseudo-squints should not be seen in the main orthoptic and ophthalmologist clinics. However, we continue to strive to reduce the number of false-positive referrals and to implement the recommendations of the NSC, as endorsed by the British and Irish Orthoptic Society and the Royal College of Ophthalmologists.

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